

Galesong Financial Literacy: Assistance with Family and Farm Financial Record-Keeping via Digital Media

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Abstract: Financial record-keeping remains a practical challenge for some farming families, as household and farm business funds often flow through the same channels. The "Galesong Cerdas Keuangan" (Galesong Financially Smart) program was implemented in Galesong Timur Village, Takalar Regency, to assist the community in organizing family and farm business records and to introduce simple digital record-keeping options. The 20 participants were drawn from farmer groups, the Family Welfare Movement (PKK), and MSMEs. The activity employed a Participatory Community Empowerment approach, featuring interactive lectures, experience-sharing discussions, case studies, cash book exercises, transaction separation simulations, digital practice sessions, and pre- and post-activity evaluations. The evaluation instrument consisted of 15 multiple-choice questions. The average score rose from 58.0% initially to 88.0% following the activity. Nineteen participants (95%) achieved a score of at least 70, and the N-Gain score of 0.714 fell into the high category. The most significant improvements were observed in the domains of financial planning and behavior, followed by record-keeping and digitalization, and farm business finance and performance. These results indicate a short-term strengthening of understanding, particularly regarding topics that were directly practiced during the mentoring sessions. As the activity lasted only one day, this success cannot yet be interpreted as proof that record-keeping habits have been firmly established. Post-activity monitoring remains necessary to determine whether participants maintain the separation of cash funds, record transactions routinely, and utilize these records when making financial decisions.

Keywords : financial literacy; digital financial record-keeping; family finance; farm business; community empowerment

1. Introduction

Financial management is an important determinant of household economic resilience and the sustainability of small-scale businesses in rural communities. For farming households, financial management is particularly complex because household income and expenditure are often closely intertwined with agricultural activities. Income generated from crop production may be allocated to household consumption, debt repayment, education, savings, or reinvestment in the next planting season. At the same time, farming households may receive additional income from microenterprises, trading activities, casual employment, or other informal sources. These multiple sources and uses of funds can make the boundary between household and farm-business finances unclear. When financial transactions are not systematically recorded, households may have difficulty determining their actual cash position, available capital, production costs, business profits, and capacity to meet future financial obligations.

In this context, financial record-keeping should not be perceived merely as an administrative activity but as a practical instrument for economic decision-making. Even simple financial records can help households identify sources of income, control expenditures, prepare budgets, develop saving habits, and allocate resources for unexpected needs. In farming businesses, financial records have an even more specific function because they allow farmers to identify production costs, including expenditures for seeds, fertilizers, pesticides, labor, transportation, harvesting, and post-harvesting activities. These costs can subsequently be compared with revenues to assess the actual performance of the farm business. Wulandari et al. (2023) demonstrate that farmers' financial record-keeping behavior is associated with several factors, including education, financing experience, and participation in financial record-keeping training. This finding suggests that strengthening farmers' record-keeping capacity requires practical learning activities that are adapted to their socioeconomic conditions rather than relying solely on theoretical financial education.

Financial record-keeping is also closely related to financial literacy. Financial literacy extends beyond knowledge of financial concepts and products; it involves the ability to apply financial knowledge when making economic decisions. Lusardi and Mitchell (2023) emphasize that financial literacy represents an increasingly important capability for individuals facing complex financial choices. Broader empirical evidence further indicates that financial education can improve financial knowledge and influence downstream financial behaviors, although the magnitude of these effects varies according to the context, intervention design, and intensity of educational exposure (Kaiser et al., 2022). Consequently, financial literacy interventions in rural communities should move beyond the transfer of conceptual knowledge and emphasize practical competencies that can be directly applied to everyday household and business activities.

One fundamental challenge in this regard is the separation of household and business finances. When business revenues are immediately used to finance household consumption without proper documentation, business owners may be unable to distinguish between revenue, capital, and profit. Conversely, when household expenses are paid from business funds without adequate records, working capital may gradually decline without being recognized. Such practices can create inaccurate perceptions of business performance and weaken financial planning. The challenge is particularly relevant to farming households because agricultural income often follows seasonal production cycles rather than regular daily or monthly cash flows. Therefore, consistent financial recording is necessary to enable households to understand their cash flows over longer periods and make more informed decisions concerning production, consumption, savings, and reinvestment.

The development of digital technology provides new opportunities to improve financial record-keeping practices among rural communities. The widespread use of smartphones enables households, farmers, and microentrepreneurs to utilize simple financial applications, spreadsheets, and other digital tools to document transactions. Digital record-keeping can facilitate the storage, classification, retrieval, and review of financial information. Nevertheless, the availability of technology does not automatically lead to improved financial management behavior. Technology becomes meaningful only when users understand what should be recorded, why transactions need to be documented, and how the resulting information can support financial decisions. Klerkx et al. (2019) argue that digital transformation in agriculture involves not only technological availability but also user capabilities, adoption processes, and supporting systems. Similarly, Ozili (2018) highlights the potential of digital finance to improve financial inclusion and efficiency while emphasizing the importance of user readiness and the broader conditions surrounding digital adoption.

Previous community empowerment initiatives indicate that digital financial management is more meaningful when technological introduction is combined with practical training and mentoring. Dhamayanti et al. (2025), for example, reported that digital financial record-keeping training strengthened participants' understanding of household financial management. In the context of micro, small, and medium enterprises (MSMEs), Nasihin et al. (2025) demonstrated that mentoring in the use of digital accounting applications can support improvements in financial recording and the separation of personal and business finances. Meanwhile, Poppe et al. (2023) emphasize the importance of integrating farm financial accounting with farm management information systems so that financial information can contribute to management and sustainability decisions rather than functioning merely as documentation. These findings suggest that digitalization should be positioned as an enabling mechanism for strengthening financial management practices rather than as an end in itself.

These issues are particularly relevant to the community of Galesong Timur Village, Galesong Timur District, Takalar Regency, Indonesia. An initial identification of community needs revealed several recurring financial management problems. These included irregular transaction recording, the mixing of household and business funds, limited systematic calculation of farm production costs and

profits, weak household financial planning, inconsistent preservation of transaction evidence, and suboptimal use of smartphones for financial documentation. Some financial transactions were still primarily remembered rather than recorded. Consequently, participants experienced difficulties when attempting to reconstruct their capital position, production costs, business revenues, profits, and household cash utilization. Such conditions indicate that the community's needs extend beyond learning how to operate a digital application. They require a more comprehensive strengthening of basic financial management competencies, including budgeting, fund separation, transaction recording, cost identification, profit calculation, and the use of financial information for decision-making.

The initial assessment further confirmed the need for intervention. Among the 20 participants representing farmer groups, the Family Welfare Movement (PKK), and MSMEs, the average initial score was only 58.0%. Across the four assessed domains, the average scores were 65.0% for household financial management, 60.0% for farm business finance and performance, 56.7% for financial record-keeping and digitalization, and only 45.0% for financial planning and behavior. These results indicate a gap between the participants' everyday financial needs and their ability to systematically document and utilize financial information. The relatively low score in financial planning and behavior is particularly important because financial knowledge alone may not necessarily translate into sustainable financial practices.

In response to these challenges, the “Galesong Cerdas Keuangan: Pendampingan Pencatatan Keuangan Keluarga dan Usaha Tani melalui Media Digital” program was developed as a community empowerment initiative integrating household financial literacy, farm-business financial management, and digital record-keeping. The program adopted a participatory approach in which participants were actively involved through experience-sharing discussions, case studies, cash-book exercises, simulations for separating household and business transactions, cost and profit calculations, budgeting exercises, and practical sessions using digital media. Rather than requiring participants to adopt a particular financial application, the program emphasized the selection of accessible tools that participants could realistically use on a regular basis. This approach recognizes that the sustainability of digital financial practices depends not only on technological access but also on usability, understanding, and behavioral consistency.

The contribution of this community engagement initiative lies in its integration of household financial management and farm-business financial recording within a single community-based digital financial literacy framework. This integration is important because the economic activities of farming households cannot always be separated from household financial decisions. Strengthening the ability to distinguish cash flows, document transactions, calculate costs and profits, prepare household budgets, preserve transaction evidence, and use digital media may provide communities with more reliable information for everyday financial decision-making. The initiative also contributes empirical evidence at the community level concerning the immediate learning response to an intervention that combines financial education, practical record-keeping, and digitalization.

Accordingly, this community engagement program aims to strengthen the financial knowledge and practical capabilities of rural households, farmers, and microentrepreneurs in managing household and farm-business finances through simple, systematic, and digitally supported financial record-keeping. Specifically, the program seeks to improve participants' ability to separate household and business funds, record income and expenditures, identify farm production costs and profits, prepare household financial plans, preserve transaction evidence, and utilize digital media for financial documentation. The initial effectiveness of the intervention is evaluated through a pretest-posttest design to examine changes in participants' understanding following the educational, practical, and mentoring activities.

2. Research Methodology

2.1. Research Design

This community engagement program employed a participatory community empowerment approach combined with a one-group pretest-posttest evaluation design. The participatory approach was selected because the intervention addressed practical financial management problems encountered directly by rural households, farmers, and microentrepreneurs. Rather than positioning participants as passive recipients of information, the program involved them actively in identifying financial problems, discussing their experiences, practicing financial recording, completing case-based exercises, and applying digital recording tools. The evaluation component was designed to assess changes in participants' financial knowledge before and immediately after the intervention. The one-group pretest-posttest design can be expressed as:

$$O_1 \rightarrow X \rightarrow O_2$$

where O_1 represents the pretest measurement, X represents the financial literacy and digital record-keeping intervention, and O_2 represents the posttest measurement. The design was selected because the primary purpose of the activity was to determine whether participants demonstrated an immediate improvement in their understanding after participating in the educational and practical sessions. Because the program did not include a control or comparison group and the posttest was conducted immediately after the intervention, the findings are interpreted as evidence of short-term changes in participants' knowledge and understanding, rather than definitive evidence of long-term behavioral change or causal effectiveness.

2.2. Study Setting and Participants

The program was conducted on 12 August 2026 in Galesong Timur Village, Galesong Timur District, Takalar Regency, South Sulawesi, Indonesia. The activity was implemented by the Community Service Team of the Faculty of Economics and Business, Universitas Muhammadiyah Makassar, in collaboration with the Government of Galesong Timur Village. A total of 20 community participants were involved in the program. Participants were purposively selected to represent three community groups that were considered directly relevant to the program objectives: farmer groups, the Family Welfare Movement (PKK), and micro, small, and medium enterprises (MSMEs). The participant composition consisted of 17 women and 3 men.

The selection of participants was based on their involvement in household financial management, agricultural activities, or small-scale business activities. This composition enabled the intervention to address financial management from both household and productive-business perspectives. The participation of different community groups also allowed the training materials to be connected to diverse financial situations, including household consumption, agricultural production costs, farm revenues, and MSME cash flows.

2.3. Community Needs Assessment

Prior to the intervention, the implementation team conducted an initial identification of community needs through coordination with the village government and discussions concerning participants' financial management practices. The needs assessment indicated several recurring problems. First, participants had not consistently recorded daily financial transactions. Second, household and business funds were frequently mixed, making it difficult to determine the actual financial position of the business. Third, production costs and farm profits were not systematically calculated. Fourth, household financial planning, including budgeting, saving, and preparation for unexpected expenses, remained limited. Fifth, transaction evidence was not consistently preserved and used as a basis for financial records. Finally, smartphones were not yet utilized optimally for financial

documentation. These findings were used to design the intervention materials. Accordingly, the program did not focus exclusively on introducing digital applications but combined financial literacy, practical bookkeeping, household budgeting, farm-business accounting, and digital record-keeping.

2.4. Intervention Procedure

The intervention was implemented through a series of interconnected learning and mentoring activities. The overall implementation consisted of eight stages: (1) coordination and preparation, (2) participant identification, (3) pretest administration, (4) financial literacy education, (5) practical financial recording exercises, (6) digital recording practice, (7) posttest and reflection, and (8) follow-up recommendations.

Stage 1: Coordination and Preparation

The implementation team first coordinated with the Government of Galesong Timur Village to determine the implementation schedule, participant composition, learning requirements, and technical arrangements. The coordination process also served to identify the financial management issues considered most relevant to the community.

Stage 2: Participant Identification

Participants were drawn from farmer groups, PKK, and MSMEs. The composition was intended to represent community members who actively managed household finances and/or participated in productive economic activities.

Stage 3: Pretest

A pretest was administered before the educational intervention to establish a baseline measure of participants' understanding. The pretest consisted of 15 multiple-choice questions covering household financial management, farm-business finance, financial record-keeping and digitalization, and financial planning and behavior.

Stage 4: Financial Literacy Education

The educational sessions introduced fundamental concepts of household and business financial management. Household financial topics included income sources, expenditure patterns, distinguishing needs from wants, budgeting, saving, and emergency funds. Farm-business topics included production costs, revenues, capital, simple profit calculation, and the importance of separating household and business funds.

Interactive lectures were used to establish the conceptual foundation, while participants were encouraged to relate the material to their own financial experiences.

Stage 5: Practical Record-Keeping Exercises

The conceptual material was followed by practical exercises using simplified cash-book formats. Participants practiced recording income and expenditure, identifying transaction categories, calculating balances, separating household and business transactions, and identifying agricultural production costs. Examples included expenditures for seeds, fertilizers, pesticides, labor, transportation, harvesting, and post-harvesting activities. Participants were also introduced to the basic calculation of farm-business profit by comparing total revenues with relevant recorded costs.

Stage 6: Digital Record-Keeping Practice

The digital session introduced participants to accessible digital recording options using smartphones, financial applications, or spreadsheet-based tools. The intervention did not require participants to adopt a single specific application. Instead, the emphasis was placed on selecting a medium that participants could realistically use on a regular basis.

Participants were encouraged to record transactions as soon as they occurred, retain transaction evidence, conduct periodic recapitulation, and review financial records when making decisions concerning household expenditures, working capital, or future production activities.

Stage 7: Posttest and Reflection

After the educational and practical sessions, participants completed the same 15-item evaluation framework through a posttest. The posttest was intended to identify immediate changes in financial knowledge following the intervention.

A reflection session was also conducted to allow participants to discuss the usefulness of the material, difficulties encountered during the exercises, and potential applications of financial record-keeping in their daily activities.

Stage 8: Follow-Up Recommendations

The final stage focused on sustainability. Participants were encouraged to continue recording household and business transactions after the activity. Farmer groups were encouraged to apply the recording format throughout a planting and harvesting cycle, while PKK participants could integrate household budgeting and saving practices into routine activities. MSME participants were encouraged to maintain separate household and business cash records.

The community engagement team recommended subsequent monitoring over one to three months to assess whether participants continued recording transactions, separating funds, retaining transaction evidence, calculating business profits, and using financial records in actual decision-making.

2.5. Learning Materials

The intervention materials were organized into four main competency domains. First, household financial management, which included sources of income, household expenditures, needs and wants, budgeting, saving, and emergency funds. Second, farm-business finance and performance, which included production costs, revenues, capital, and simple profit calculation. Third, financial record-keeping and digitalization, which included transaction documentation, preservation of transaction evidence, cash-book preparation, and the use of smartphones, applications, or spreadsheets for digital recording. Fourth, financial planning and behavior, which included budgeting practices, financial priorities, emergency preparedness, and healthy financial habits. The four domains were integrated rather than presented as independent topics because household and productive-business finances frequently interact in the economic activities of rural families.

2.6. Evaluation Instrument and Measurement

The evaluation instrument consisted of 15 multiple-choice questions. Each correct answer received a score of 1, while an incorrect answer received a score of 0. The total score was converted into a percentage using the following equation:

$$\text{Financial Knowledge Score} = (\text{Number of Correct Answers} / 15) \times 100$$

The resulting scores were classified into four categories:

Score Range	Interpretation
86–100	Very Good
71–85	Good
56–70	Fair
≤55	Needs Strengthening

The 15 questions were distributed across four competency domains. Items 1–5 assessed household financial management; items 6, 7, 8, and 14 assessed farm-business finance and performance; items 9, 12, and 13 assessed financial record-keeping and digitalization; and items 10, 11, and 15 assessed financial planning and behavior. The instrument was administered twice: before the intervention as a pretest and immediately after the intervention as a posttest. Using the same

competency framework enabled direct comparison of participants' performance before and after the program.

2.7. Data Analysis

The data were analyzed using descriptive quantitative techniques. The analysis included the mean, standard deviation, minimum and maximum scores, individual score changes, item-level changes, domain-level changes, achievement categories, and normalized gain (N-Gain). The mean score was calculated to describe the overall level of participant achievement before and after the intervention. Standard deviation was used to identify the dispersion of participants' scores. Minimum and maximum values were examined to identify the range of participant performance. Individual changes were assessed by comparing each participant's pretest and posttest scores. Item-level analysis was conducted to identify which financial competency areas demonstrated the greatest improvement. Domain-level analysis was subsequently performed to compare changes across household financial management, farm-business finance and performance, financial record-keeping and digitalization, and financial planning and behavior. The normalized gain was calculated using the following formula:

$$\text{N-Gain} = (\text{Posttest Score} - \text{Pretest Score}) / (100 - \text{Pretest Score})$$
The resulting N-Gain value was interpreted using the following classification:

N-Gain	Interpretation
≥ 0.70	High
0.30–0.69	Moderate
< 0.30	Low

This analysis was used to assess the magnitude of learning improvement relative to the maximum possible improvement.

2.8. Program Success Criteria

The program established two principal learning indicators. First, the mean posttest score had to exceed the mean pretest score, indicating an overall improvement in participant understanding. Second, at least 75% of participants were expected to achieve a posttest score of ≥ 70 . These criteria were established as practical indicators of short-term learning achievement rather than measures of long-term behavioral adoption. Therefore, achievement of the indicators was interpreted as evidence that the educational intervention successfully improved participants' immediate understanding of financial management and record-keeping concepts.

2.9. Ethical and Interpretive Considerations

The evaluation was conducted within the framework of a community engagement activity, with participants involved in educational and learning activities rather than clinical or experimental research. The evaluation data were used to assess program learning outcomes and improve future community mentoring. Participant results were analyzed at the aggregate level, and individual performance was not used to make judgments regarding personal financial capability. Furthermore, because the intervention involved only one group and the posttest was conducted immediately after the activity, the results should be interpreted cautiously. In particular, an increase in posttest scores cannot by itself demonstrate that participants subsequently developed sustained financial recording habits. Accordingly, the program distinguishes between immediate learning outcomes and longer-term behavioral outcomes. The former were assessed through the pretest-posttest evaluation, whereas the latter require follow-up monitoring over a longer period. Future monitoring should examine whether participants consistently record transactions, separate household and business funds, retain financial

evidence, calculate farm-business profits, and use financial records when making actual financial decisions.

3. Results and Discussion

3.1 Result

3.1.1. Implementation of the Community Engagement Program

The “Galesong Cerdas Keuangan” program was implemented on 12 August 2026 in Galesong Timur Village, Takalar Regency, South Sulawesi, Indonesia. The activity involved 20 participants representing farmer groups, the Family Welfare Movement (PKK), and micro, small, and medium enterprises (MSMEs). The implementation was supported by the Government of Galesong Timur Village and facilitated by the Community Service Team of the Faculty of Economics and Business, Universitas Muhammadiyah Makassar. The intervention was designed as a participatory learning process rather than a conventional one-way training session. Participants were encouraged to discuss their actual experiences in managing household income, farm revenues, production expenditures, and business transactions. Initial discussions indicated that some participants still relied on memory when recording transactions, while household and business funds were frequently used interchangeably. These conditions provided a practical basis for introducing financial separation, cash-flow recording, cost identification, budgeting, and digital financial documentation. The learning process combined interactive presentations, experience-sharing discussions, case studies, cash-book exercises, transaction-separation simulations, cost and profit calculations, and digital record-keeping practice. The combination of conceptual and practical learning was intended to ensure that participants did not merely understand financial terminology but were able to apply basic financial recording procedures to situations relevant to their everyday economic activities.



(a) Delivery of financial management materials



(b)) Participants completing financial worksheets



(c) Mentoring and group discussion



(d) Participants with the implementation team

Figure 2. Documentation of the Community Engagement Activities

Source: Community engagement documentation, 2026.

As illustrated in Figure 2, the learning environment involved direct interaction between participants and facilitators. Participants worked with worksheets, discussed financial cases, and practiced recording transactions. This participatory setting was particularly important because the program sought to develop practical competencies rather than merely transfer theoretical knowledge.

3.1.2. Changes in Participants' Financial Knowledge

The evaluation results indicate a substantial improvement in participants' financial knowledge following the intervention. The mean raw score increased from 8.70 out of 15 items in the pretest to 13.20 in the posttest. In percentage terms, the average score increased from 58.0% to 88.0%, representing an improvement of 30.0 percentage points. The minimum score increased considerably from 6.7% to 66.7%, while the maximum score remained at 100%. The standard deviation declined from 22.90 to 8.81, indicating that participants' posttest scores were more concentrated around the group mean than their pretest scores. This pattern suggests that the intervention was associated not only with an increase in average performance but also with a reduction in the dispersion of participants' learning outcomes.

Table 2. Summary of Pretest and Posttest Learning Outcomes

Indicator	Pretest	Posttest	Change	Interpretation
Mean score (maximum 15)	8.70	13.20	+4.50	Increased
Mean score (%)	58.0	88.0	+30.0 points	Substantial increase
Standard deviation	22.90	8.81	-14.09	Posttest scores more concentrated
Minimum score (%)	6.7	66.7	+60.0	Increased
Maximum score (%)	100.0	100.0	0.0	Unchanged
Participants scoring ≥ 70	5/20	19/20 (95%)	—	Target achieved
N-Gain	—	0.714	—	High category

Source: Community engagement evaluation data, 2026.

The proportion of participants achieving the minimum target score of 70 also increased considerably. Before the intervention, only 5 of 20 participants (25%) achieved a score of at least 70. Following the intervention, this number increased to 19 participants (95%). Thus, the program exceeded its predetermined success criterion requiring at least 75% of participants to achieve a posttest score of ≥ 70 . The calculated N-Gain value of 0.714 falls within the high category. This result indicates a substantial improvement relative to the maximum possible improvement from participants' baseline scores. However, the N-Gain result should be interpreted within the limitations of the evaluation design. Since the program employed a one-group pretest-posttest design without a control group, the observed increase cannot be interpreted as definitive causal evidence of program effectiveness.

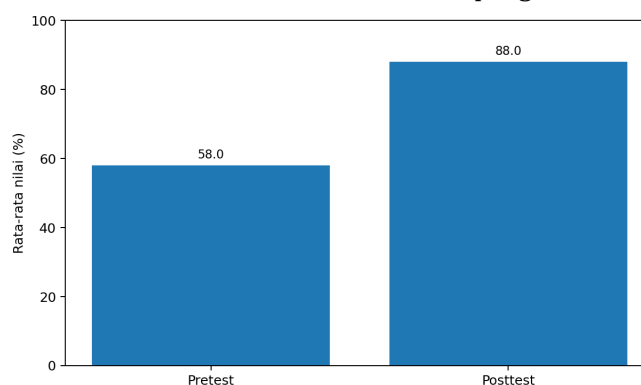


Figure 3. Comparison of Mean Pretest and Posttest Scores

Source: Community engagement evaluation data, 2026.

Figure 3 visually demonstrates the substantial difference between participants' baseline and post-intervention performance. The increase from 58.0% to 88.0% suggests that the combination of financial education, practical exercises, and digital recording practice was effective in strengthening participants' immediate understanding. The finding is consistent with the broader financial education literature. Lusardi and Mitchell (2023) emphasize that financial literacy is an important capability for making informed financial decisions. Similarly, Kaiser et al. (2022), based on a large body of experimental evidence, demonstrate that financial education can improve financial knowledge and influence subsequent financial behavior. The present program extends this perspective to a community-based rural context by combining financial literacy education with practical household and farm-business record-keeping. Nevertheless, the results should primarily be interpreted as evidence of short-term learning improvement. The posttest was administered immediately after the intervention and therefore cannot establish whether participants subsequently maintained the practices introduced during the program.

3.1.3. Individual-Level Changes in Learning Outcomes

Although the aggregate results show a strong improvement, individual-level analysis provides additional insight into the heterogeneity of participant responses. Of the 20 participants, 17 participants experienced an increase in their scores, one participant obtained the same score, and two participants experienced a decline. This finding demonstrates that the group-level increase does not necessarily imply identical learning outcomes for every participant. Individual differences may reflect differences in prior financial knowledge, educational experience, familiarity with smartphones or digital tools, and previous exposure to financial record-keeping practices. The presence of two participants whose scores declined also indicates that a single training session may not be sufficient for all participants. Likewise, one participant remained below the minimum posttest threshold of 70. These participants represent an important target group for subsequent mentoring. The finding is relevant to the argument of Kaiser and Menkhoff (2017), who emphasize that the effects of financial education depend partly on the intensity, timing, and context of educational interventions. For community-based financial literacy programs, repeated exposure and opportunities to apply newly acquired knowledge to actual financial decisions may therefore be necessary to produce more persistent outcomes.

3.1.4. Item-Level Changes in Financial Competencies

An item-level analysis was conducted to identify which specific competencies demonstrated the greatest improvement. The results reveal considerable variation in the magnitude of improvement across the 15 assessment items.

Table 3. Item-Level Analysis of Pretest and Posttest Responses

Item	Competency Focus	Pretest (%)	Correct	Posttest (%)	Correct	Gain (points)
1	Purpose of household financial recording	65		85		+20
2	Initial step in financial management	75		85		+10
3	Identification of household income	65		90		+25
4	Essential household expenditures	65		85		+20
5	Separation of household and farm-business funds	55		75		+20
6	Farm-business costs	60		90		+30
7	Farm-business revenue	50		85		+35
8	Farm-business profit calculation	55		90		+35
9	Transaction evidence	60		85		+25

10	Benefits of household budgeting	45	90	+45
11	Emergency funds	60	90	+30
12	Digital financial record-keeping	50	90	+40
13	Benefits of digital record-keeping	60	95	+35
14	Simple profit calculation	75	95	+20
15	Healthy financial habits	30	90	+60

Source: Community engagement evaluation data, 2026.

The largest improvement was observed for healthy financial habits, which increased from 30% to 90%, representing a 60-point gain. The second-largest improvement occurred in the perceived benefits of household budgeting, which increased by 45 points, followed by digital financial record-keeping, which increased by 40 points. The substantial improvement in these areas may be related to the practical nature of the intervention. Rather than presenting financial planning as an abstract concept, the facilitators connected budgeting, saving, emergency funds, and financial discipline to participants' everyday situations. The results therefore suggest that competencies with a low initial level of understanding may respond strongly to context-specific practical learning.

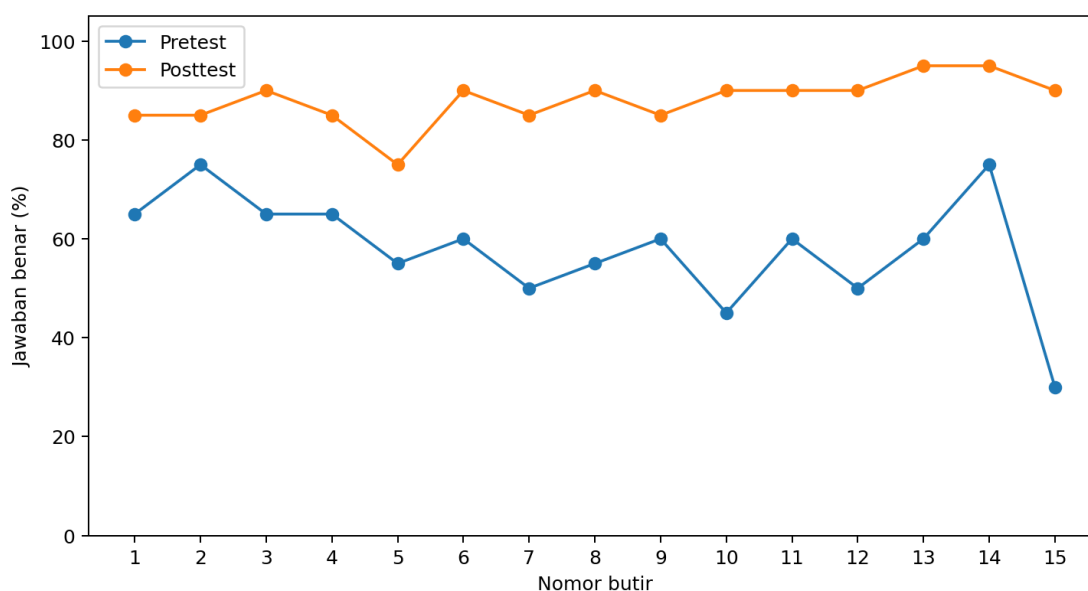


Figure 4. Changes in the Percentage of Correct Responses by Assessment Item

Source: Community engagement evaluation data, 2026.

Figure 4 illustrates that all 15 assessment items recorded higher posttest than pretest percentages. However, the magnitude of improvement differed substantially. Item 2 recorded the smallest gain (+10 points), partly because its baseline score was already relatively high at 75%. In contrast, Item 15 began at only 30%, leaving greater room for improvement. This pattern highlights an important methodological consideration: item-level gain should not be interpreted independently of the baseline score. A smaller gain may reflect a relatively high starting level rather than weak intervention performance, while a large gain may partly result from a low initial baseline.

3.1.5. Improvement Across Financial Competency Domains

To provide a broader interpretation of the learning outcomes, the 15 assessment items were grouped into four competency domains: household financial management; farm-business finance and performance; financial record-keeping and digitalization; and financial planning and behavior.

Table 4. Pretest and Posttest Achievement by Financial Competency Domain

Competency Domain	Items	Pretest (%)	Posttest (%)	Gain (points)
Household financial management	1, 2, 3, 4, 5	65.0	84.0	+19.0
Farm-business finance and performance	6, 7, 8, 14	60.0	90.0	+30.0
Financial record-keeping and digitalization	9, 12, 13	56.7	90.0	+33.3
Financial planning and behavior	10, 11, 15	45.0	90.0	+45.0

Source: Community engagement evaluation data, 2026.

The domain-level analysis indicates that financial planning and behavior recorded the largest improvement, increasing from 45.0% to 90.0%, or 45 percentage points. Financial record-keeping and digitalization increased by 33.3 points, while farm-business finance and performance increased by 30.0 points. Household financial management recorded the smallest, although still substantial, improvement of 19.0 points.

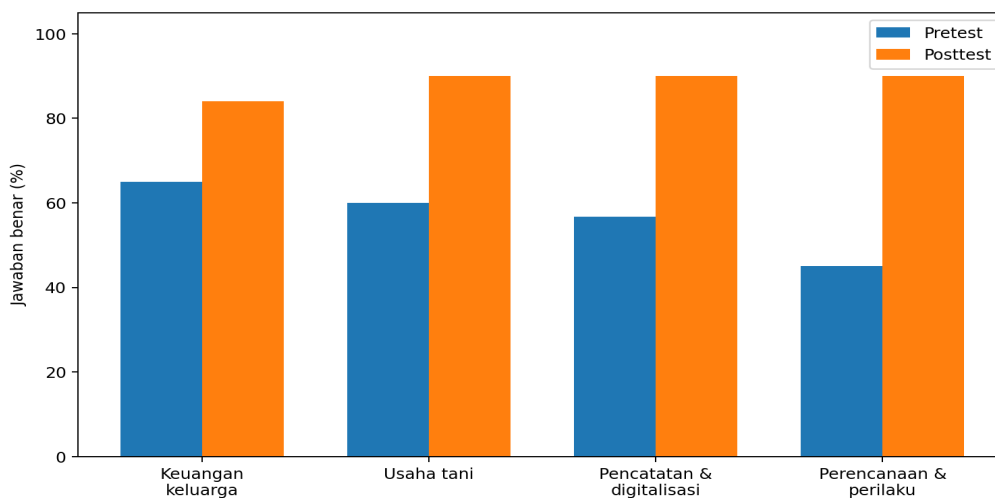


Figure 5. Comparison of Pretest and Posttest Scores Across Financial Competency Domains

Source: Community engagement evaluation data, 2026.

The relatively large improvement in financial planning and behavior is particularly relevant because this domain had the lowest baseline score. Participants initially demonstrated limited understanding of budgeting, emergency funds, and healthy financial habits. The substantial posttest improvement suggests that these concepts were responsive to direct explanation, discussion, and practical examples. The improvement in financial record-keeping and digitalization is also important because the program did not introduce digital tools independently of financial concepts. Participants first learned what should be recorded and why the information was important before practicing digital recording. This sequence may have helped participants understand digital tools as instruments for financial management rather than as technological products in isolation. This finding is consistent with Klerkx et al. (2019), who conceptualize agricultural digitalization as involving not only technological innovation but also user capabilities, adoption processes, and institutional support. Similarly, the findings of Poppe et al. (2023) indicate that financial information becomes more useful when it is integrated into broader management processes. In the Galesong Timur context, the equivalent principle is that financial records become useful when participants can use them to determine costs, monitor cash balances, evaluate profits, and plan future expenditures.

3.1.6. Distribution of Participants Across Achievement Categories

The changes in participants' achievement categories provide another perspective on the program's immediate learning outcomes. Before the intervention, 10 participants were classified as Needs Strengthening, 5 as Fair, 2 as Good, and 3 as Very Good. After the intervention, no participants remained in the Needs Strengthening category. One participant was classified as Fair, four as Good, and 15 as Very Good.

Table 5. Distribution of Participants by Financial Knowledge Category

Achievement Category	Pretest (n)	Posttest (n)	Change
Needs Strengthening	10	0	-10
Fair	5	1	-4
Good	2	4	+2
Very Good	3	15	+12

Source: Community engagement evaluation data, 2026.

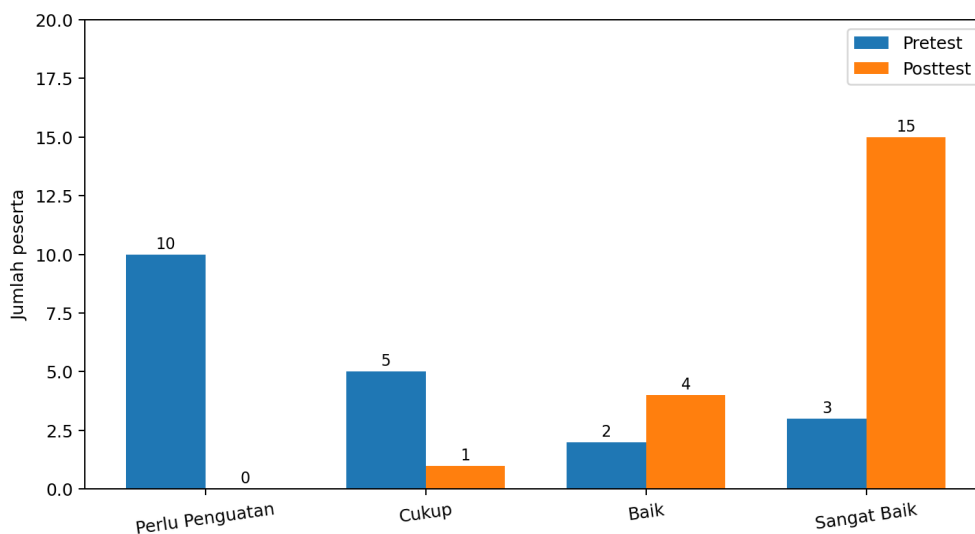


Figure 6. Distribution of Participants Across Financial Knowledge Categories

Source: Community engagement evaluation data, 2026.

The categorical distribution confirms that the increase in the mean score was accompanied by a substantial shift in the overall distribution of participants. The number of participants in the Very Good category increased from 3 to 15, while the Needs Strengthening category decreased from 10 participants to zero. This result indicates that the intervention was not driven solely by a small number of high-performing participants. Rather, a substantial proportion of the participants moved toward higher achievement categories. However, the remaining participant in the Fair category highlights the need for differentiated follow-up support. The categorical findings should nevertheless be interpreted as an indicator of immediate learning achievement rather than evidence of sustained financial behavior. Without follow-up measurements, it is not possible to determine whether participants continued applying the financial practices introduced during the activity.

3.1.7. Descriptive Comparison by Gender

A descriptive comparison was also conducted according to participants' gender. Of the 20 participants, 17 were women and 3 were men. The mean pretest score among female participants increased from 59.2% to 88.2%, representing a 29.0-point improvement. Among male participants, the mean increased from 51.1% to 86.7%, representing a 35.6-point improvement.

Table 6. Descriptive Learning Outcomes by Gender

Gender	n	Mean Pretest (%)	Mean Posttest (%)	Change
Female	17	59.2	88.2	+29.0
Male	3	51.1	86.7	+35.6

Source: Community engagement evaluation data, 2026.

The results are presented descriptively and should not be interpreted as evidence that the intervention was more effective for one gender than another. The number of male participants was only three, making statistical comparison between the two groups inappropriate. The primary purpose of presenting these data is to describe the participant composition and the direction of change within each group.

3.1.8. Program Outputs and Initial Outcomes

The overall program outcomes can be understood through the distinction between inputs, processes, outputs, and outcomes. The program received institutional support from the village government and involved 20 participants from different community groups. The implementation process included financial education, discussion, simulation, practical record-keeping exercises, and digital practice. The most measurable output was the improvement in participants' financial knowledge. The mean score increased from 58.0% to 88.0%, while the N-Gain reached 0.714. Furthermore, 95% of participants achieved a posttest score of at least 70.

Table 7. Summary of Program Outputs and Initial Outcomes

Level	Achievement/Impact	Evidence/Indicator	Status
Input	Institutional support and participation of 20 community members	Village government support and participant attendance	Achieved
Process	Education, discussion, simulation, and practical exercises	All planned learning activities implemented	Achieved
Output	Improvement in financial knowledge	Mean score: 58.0% → 88.0%; N-Gain = 0.714	Achieved
Initial outcome	Improved understanding of cash separation, cost-profit calculation, budgeting, and digitalization	95% achieved posttest ≥ 70	Achieved at the knowledge level
Longer-term outcome	Consistent application of financial record-keeping	Requires 1–3 month follow-up	Requires further monitoring

Source: Community engagement evaluation data, 2026.

The distinction between output and outcome is important for interpreting the contribution of the program. The immediate output was an improvement in knowledge and practical exposure to financial record-keeping tools. The longer-term outcome, however, concerns whether participants actually change their financial practices after returning to their households, farms, and businesses. In this respect, the program should not claim that a one-day intervention has permanently changed financial behavior. Instead, the findings indicate that the intervention created an initial foundation for improved financial management. Continued monitoring is required to establish whether participants maintain transaction records, separate household and business funds, retain transaction evidence, calculate farm-business profits, and use financial information in actual decision-making.

3.1.9. Practical Implications and Sustainability

The findings have several practical implications for community-based financial empowerment. First, financial literacy interventions should be connected to participants' actual economic activities. For farmers, this means using examples involving seeds, fertilizers, pesticides, labor, transportation, harvest revenues, and reinvestment. For households, the focus should include budgeting, saving, emergency funds, and expenditure priorities. For MSMEs, the central issue is the separation of personal and business finances and the maintenance of daily cash records. Second, digitalization should be introduced as a supporting mechanism rather than as an independent objective. Participants should first understand the purpose and structure of financial records before transferring those records to digital media. This approach can reduce the risk that digital tools are used merely as electronic storage without generating useful financial information.

Third, sustainability requires continuous mentoring. Farmer groups could be encouraged to maintain records throughout an entire planting-to-harvest cycle. PKK groups could incorporate household budgeting and saving exercises into routine activities, while MSMEs could maintain separate household and business cash records. The university can subsequently support the community through periodic monitoring, review of actual financial records, and problem-solving sessions. The role of the village government is also strategically important. Institutional support can help ensure that financial literacy activities are not limited to a single training event. Collaboration between the university, village government, farmer groups, PKK, and MSMEs provides an opportunity to establish a community-based financial management ecosystem in which knowledge, tools, and follow-up mentoring reinforce one another.

3.1.10. Limitations of the Intervention

Several limitations should be acknowledged. First, the evaluation involved only 20 participants and did not employ a control group. Consequently, the observed improvement cannot be attributed exclusively to the intervention with the same level of confidence as a randomized controlled design. Second, the posttest was administered immediately after the intervention. The results therefore primarily capture short-term changes in knowledge and understanding. They do not demonstrate whether participants subsequently maintained financial record-keeping practices. Third, the assessment relied on 15 multiple-choice questions. Although the instrument was useful for measuring immediate learning achievement, behavioral outcomes such as recording frequency, separation of household and business funds, quality of financial records, and actual use of financial information require additional observational or longitudinal measures. Future community engagement should therefore incorporate follow-up assessments at one and three months, preferably combined with reviews of participants' actual financial records. Such an approach would allow the evaluation to move from measuring immediate knowledge acquisition toward assessing behavioral adoption and practical financial management outcomes.

3.2 Discussion

3.2.1. Improvement in Financial Literacy Following the Intervention

The findings demonstrate a substantial improvement in participants' financial literacy following the community engagement intervention. The mean percentage score increased from 58.0% in the pretest to 88.0% in the posttest, representing a 30.0-percentage-point improvement. The N-Gain score of 0.714 was classified as high, while the proportion of participants achieving a minimum score of 70% increased from 5 participants (25%) to 19 participants (95%). These findings indicate a substantial short-term improvement in participants' understanding of household and farm-business financial management.

The improvement can be attributed to the contextual and practice-oriented nature of the intervention. Rather than presenting financial literacy as a purely theoretical concept, the program connected financial knowledge with participants' actual economic activities. Participants practiced recording transactions, distinguishing household and business expenditures, identifying production costs, calculating revenues and profits, and using digital media for financial recording. This approach enabled participants to immediately connect newly introduced concepts with their everyday financial decisions. The findings are consistent with previous financial literacy research indicating that financial education is more meaningful when learning materials are relevant to participants' socioeconomic circumstances and are accompanied by opportunities for practical application. Financial knowledge can provide a foundation for better decision-making, particularly when individuals are given concrete tools and procedures for applying that knowledge.

Nevertheless, the results should be interpreted as evidence of short-term learning improvement rather than definitive evidence of sustained behavioral change. The one-group pretest–posttest design does not include a comparison group, while the posttest was administered immediately following the intervention. Therefore, the observed improvement cannot be interpreted exclusively as a causal effect of the program, nor can it establish whether participants will maintain the newly acquired practices over time.

3.2.2. Strengthening Household Financial Management

The household financial management domain increased from 65.0% to 84.0%, representing a 19.0-percentage-point improvement. Although this was the smallest improvement among the four competency domains, the posttest result indicates that participants reached a generally good level of understanding. The relatively smaller improvement may reflect participants' prior familiarity with basic household financial concepts, such as identifying income and distinguishing routine expenditure categories. However, the intervention provided a more systematic framework for managing household cash flows through budgeting, expenditure prioritization, savings, emergency funds, and the distinction between needs and wants. An important component of this intervention was the separation of household financial resources from farm-business funds. In rural households, household consumption and productive activities frequently rely on the same cash resources. Without adequate separation, households may have difficulty determining whether available cash represents disposable household income, working capital, or funds required for future production. Therefore, financial recording should not be viewed merely as an administrative obligation. It represents an information mechanism that enables households to understand their financial position and make more rational allocation decisions. The findings suggest that community-based financial literacy programs should address household financial management within the broader economic context in which participants actually live and work.

3.2.3. Improvement in Farm-Business Financial Management

The farm-finance and performance domain increased from 60.0% to 90.0%, representing a 30.0-percentage-point improvement. Particularly notable were the improvements in identifying farm revenue and calculating farm profit, both of which increased by 35 percentage points. The findings indicate that participants initially had difficulty distinguishing between revenue and profit. This distinction is fundamental to agricultural financial management because high sales revenue does not necessarily indicate high profitability. Farmers may generate substantial sales while simultaneously facing significant costs associated with seeds, fertilizers, pesticides, labor, transportation, harvesting, and post-harvest activities. The practical exercises enabled participants to identify these cost components and subsequently calculate revenue and simple profit. By using examples related to actual agricultural activities, the intervention transformed accounting concepts into practical decision-making

instruments. Improved financial information can help farmers evaluate the economic performance of their activities, compare production periods, identify excessive expenditures, and make better-informed decisions regarding future production. However, financial literacy alone cannot guarantee increased agricultural profitability because farm performance is also influenced by input prices, productivity, market prices, weather conditions, market access, and other external factors. Thus, the contribution of this intervention should primarily be understood as strengthening participants' capacity to generate and interpret financial information for decision-making.

3.2.4. Financial Record-Keeping and Digitalization as an Enabling Mechanism

The financial record-keeping and digitalization domain increased from 56.7% to 90.0%, representing a 33.3-percentage-point improvement. This was one of the most substantial improvements observed across the competency domains. The result suggests that participants benefited from combining fundamental financial knowledge with practical digital applications. Smartphones and spreadsheet-based tools can simplify transaction recording, reduce calculation errors, and facilitate the periodic review of financial information. However, technology itself does not automatically produce better financial management.

Effective digital financial recording requires users to understand what should be recorded, when transactions should be recorded, how transactions should be classified, and how the resulting information can support financial decisions. Consequently, digitalization should be positioned as an enabling mechanism rather than the ultimate objective of financial education. The intervention deliberately avoided dependence on a single sophisticated application. Instead, participants were introduced to accessible digital media that could potentially be used with devices and technologies already available to them. This approach is particularly relevant in rural settings, where differences in digital literacy, technological confidence, and access to infrastructure can influence adoption. The findings therefore suggest that digital financial literacy programs should prioritize simplicity, usability, contextual relevance, and continued mentoring rather than technological complexity.

3.2.5. Planning and Financial Behavior as the Most Responsive Competency

Planning and financial behavior recorded the largest improvement among the four domains, increasing from 45.0% to 90.0%, or 45.0 percentage points. The strongest item-level improvement was observed in healthy financial habits, which increased from 30.0% to 90.0%. Understanding the benefits of household budgeting also increased from 45.0% to 90.0%. This substantial improvement indicates that participants initially had relatively limited conceptual understanding of systematic financial planning and healthy financial habits. Having experience in managing household finances does not necessarily mean that individuals engage in structured budgeting, saving, emergency-fund preparation, or periodic financial evaluation. The intervention provided participants with a practical framework for transforming financial activities into planned financial behavior. Budgeting, for example, allows households to anticipate expenditures and allocate resources according to priorities rather than relying solely on spontaneous decisions. Similarly, emergency funds can strengthen household financial resilience when unexpected expenditures or income disruptions occur.

However, improved knowledge should not automatically be interpreted as sustained behavioral transformation. Financial behavior is influenced by income stability, household responsibilities, unexpected expenditures, social norms, and access to financial resources. Consequently, future interventions should incorporate repeated mentoring and monitoring to determine whether participants continue to apply the practices introduced during the training.

3.2.6. Individual-Level Improvement and Participant Heterogeneity

At the individual level, 17 of the 20 participants improved their scores, one participant recorded the same score, and two participants experienced a decline. The predominance of positive changes indicates that learning improvement occurred across most participants, although the magnitude of improvement was not uniform. This variation is important because community-based interventions typically involve participants with different educational backgrounds, financial experiences, levels of digital familiarity, and learning capabilities. A standardized training format may therefore produce different outcomes among individual participants. The participants who showed limited or negative changes should not immediately be interpreted as evidence of program failure. Variation in test performance can arise from differences in attention, comprehension, confidence, or familiarity with the assessment format. Nevertheless, these findings indicate the importance of differentiated assistance. Future programs could provide additional exercises for participants with lower baseline knowledge, peer-learning mechanisms, simplified worksheets, and individual mentoring. Such strategies may help reduce learning disparities and ensure that the benefits of the intervention are distributed more evenly across participants.

3.2.7. Integration of Household and Farm Financial Management

One of the central contributions of the program is the integration of household financial management with farm-business financial recording. This integrated approach is particularly relevant for farming households because household and productive activities are often financially interconnected. When household and farm funds are mixed, participants may find it difficult to determine the actual financial performance of their agricultural activities. Conversely, treating farm finances as completely independent from household financial planning may also overlook the reality that agricultural income frequently supports household consumption and other obligations. The intervention therefore introduced financial separation as a practical mechanism for improving financial visibility. Participants were encouraged to distinguish household income and expenditure from farm-business transactions while maintaining an understanding of their overall household cash flow. This integrated perspective extends conventional financial literacy approaches by connecting individual financial knowledge with the financial management of productive economic activities. It also creates an opportunity for future interventions to examine whether improved financial separation contributes to better budgeting, savings, reinvestment decisions, and farm-business sustainability.

3.2.8. Practical Implications for Community Empowerment

The findings provide several practical implications for future community empowerment programs. First, financial literacy interventions should be context-specific. Rural participants are likely to benefit more from examples involving household expenditure, agricultural inputs, farm revenue, transportation costs, and harvest income than from generic financial examples. Second, financial education should combine knowledge, practical exercises, and digital tools. The results demonstrate that participants can achieve substantial learning improvements when financial concepts are immediately practiced through realistic cases. Third, digitalization should be introduced according to participants' technological capabilities. Simple tools that are easy to access and operate may be more sustainable than sophisticated applications requiring extensive technical skills. Fourth, community empowerment should include a post-training mentoring mechanism. Monitoring participants' financial records after one, three, and six months would provide valuable evidence regarding the sustainability of the intervention and whether knowledge improvements are translated into actual financial behavior. Finally, village governments and community organizations can potentially support sustainability by establishing periodic financial literacy sessions, peer-learning groups, or simple financial-recording

routines. Institutional support may help transform a one-day educational intervention into a continuing community financial empowerment process.

4. Conclusions

4.1. Main Conclusions

The “Galesong Cerdas Keuangan” community engagement program demonstrates that participatory and practice-oriented financial education can substantially improve participants’ short-term financial literacy. By integrating household financial management, farm-business financial recording, financial planning, and accessible digital tools, the program enabled participants to understand and apply financial concepts within their everyday economic context. The mean financial literacy score increased from 58.0% in the pretest to 88.0% in the posttest, representing a 30.0-percentage-point improvement. The N-Gain score of 0.714 was categorized as high. In addition, the proportion of participants achieving a minimum score of 70% increased from 25% to 95%. These findings indicate a substantial improvement in participants’ immediate understanding of basic household and farm-business financial management. Among the competency domains, planning and financial behavior recorded the greatest improvement, increasing by 45.0 percentage points, followed by financial record-keeping and digitalization, farm-business financial management, and household financial management. This finding highlights the potential value of practical financial education in strengthening areas of financial capability that were relatively weak at baseline.

4.2. Contribution to Community Empowerment

The program contributes to community empowerment by treating financial literacy as a practical capability rather than solely as theoretical knowledge. Participants were directly involved in exercises related to recording income and expenditure, separating household and business funds, identifying agricultural production costs, calculating revenue and profit, preparing simple budgets, and utilizing digital media for financial record keeping. The integration of household and farm-business financial management is particularly relevant to rural communities because household and productive financial activities are often closely interconnected. Improved financial records can provide households with clearer information about their cash flows and the actual economic performance of their agricultural activities. The program also demonstrates the potential of simple digital tools to support financial empowerment. However, digitalization should function as an enabling mechanism for better financial information and decision-making rather than being treated as the primary objective of the intervention.

4.3. Practical Implications

The findings provide several practical implications for future community empowerment programs. First, financial literacy training should be context-specific, using examples and cases that reflect participants’ actual household and agricultural transactions. Second, financial education should combine theoretical explanations with hands-on learning activities. The substantial improvement in participants’ knowledge suggests that practical exercises can facilitate the translation of financial concepts into usable skills. Third, the separation of household and farm-business funds should be emphasized in rural financial education. Such separation enables participants to distinguish household consumption from productive capital and obtain a clearer understanding of farm-business profitability. Fourth, accessible digital tools can be incorporated into financial record-keeping activities to facilitate transaction documentation, calculation, and periodic review. Nevertheless, participants should receive adequate assistance to ensure that technological adoption remains simple and sustainable. Finally, village governments, farmer groups, PKK organizations, and local community institutions can support

the sustainability of financial literacy initiatives through periodic mentoring, peer-learning activities, and community-based financial recording practices.

4.4. Sustainability and Future Development

The substantial posttest improvement demonstrates the immediate learning potential of the program; however, a one-day intervention cannot by itself guarantee the formation of long-term financial habits. Continued mentoring is therefore necessary to transform newly acquired knowledge into sustained financial practices. Future program development should establish structured follow-up activities at one, three, and six months after the intervention. These activities could include reviewing participants' household and farm financial records, assessing the consistency of fund separation, discussing financial challenges, and providing individualized assistance where necessary. The program could also be developed into a continuous village-based financial literacy model involving farmer groups, women's organizations, MSMEs, and village government institutions. Future topics could progressively include savings management, emergency funds, responsible financing, digital financial security, financial inclusion, investment literacy, risk management, and Islamic financial management. Such development would allow the program to move beyond short-term knowledge transfer toward a more sustainable model of community financial resilience and economic empowerment.

4.5. Limitations and Recommendations

Several limitations should be acknowledged. The program involved only 20 participants from a single village and employed a one-group pretest–posttest design without a control group. Therefore, the findings demonstrate substantial changes in participants' learning outcomes but should not be interpreted as definitive evidence of causal effectiveness or generalized directly to other rural communities. Furthermore, the evaluation focused primarily on financial knowledge and was conducted immediately after the intervention. Consequently, the study does not yet establish whether participants consistently apply financial recording, budgeting, fund separation, or digital financial management practices in their daily activities. Future research should involve larger samples, comparison groups where feasible, and longitudinal evaluation. Assessment should also extend beyond knowledge outcomes to include behavioral and economic indicators, such as the frequency and completeness of financial recording, budgeting consistency, savings behavior, separation of household and business funds, and changes in farm-business profitability. Overall, the “Galesong Cerdas Keuangan” program provides evidence that participatory financial education integrated with practical exercises and accessible digital tools can strengthen short-term financial capabilities among rural households and agricultural actors. Sustained mentoring and longitudinal assessment are recommended to determine whether these learning gains can be transformed into durable financial behavior, greater household resilience, and more effective farm-business management.

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