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The Profitability Analysis of Palay Production in the Municipality of Bulan: An Assessment of Financial Conditions

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***Abstract*—** The study investigated the financial practices, profitability, and challenges faced by palay farmers in the Municipality of Bulan. This provided relevant insight in the improvement of financial management practices. The research particularly focused examination on budgeting, recordkeeping, and credit management employed by farmers together with the total cost incurred and average yields in farming operation. The study assessed profitability level through various key metrics: Gross Profit Margin, Return on Sales, and Return on Equity in all three major producers of palay in the area- San Francisco, Somagongsong, and San Ramon.

Findings suggest that even farmers demonstrate awareness in budgeting, inadequate record keeping and credit management limits their ability to assess financial performance effectively. Productions cost vary significantly across locations, with land rental as the primary contributor that impacted profitability. Despite high gross profit margin across locations, inconsistent profitability in terms of return on sales is evident, particularly due to high fixed costs specially in Somagongsong. Additionally, farmers reported several challenges in their farming activities, which includes limited capital, natural disaster, crop pests, weather condition, high production costs, limited access to credit, and labor shortages that hinders sustainable farming operations.

The study highly recommends a need for financial education and management training, exploring alternative land rental arrangements, and conducting regular financial performance assessments. By addressing these areas, this empowers palay farmers, enhance profitability, and promote sustainable financial and agricultural practices in the area.

***Keywords*—** Budgeting, Record Keeping, Credit Management, Profitability, Gross Profit Margin, Return on Sales, and Return on Equity.

I. INTRODUCTION

One of the most important agricultural activities globally is rice production. Rice is considered a necessity for daily lives specially for farmers primarily relying on palay farming as their main source of income and livelihood. In the recent years, demand for palay continued to rise because of the increasing consumption driven by continued growth in the population. This creates opportunities to improve productions not only in the profitability aspect but also its sustainability.

Internationally, market for rice are influenced by several factors such as the climate change and technological advancement. Countries who adapt to this changing environment has the higher chance of success than those who fails to integrate and unable to meet their demand for rice.

The Philippines is among the largest consumer of rice worldwide. Filipinos considered rice as one of the significant products for farmers. As of 2022, 4.8 million hectares of land has been cultivated for palay (Statista Research Department, 2023). Despite its role in contributing to the economy, economic viability of palay production becomes uncertain in the past years. Cultivation of palay or rice as one of the activities agriculturally be promoted (Uphoff & Dazzo, 2016). Essentially in the sustainability of the economic growth of the country profitability enhancement must be made. Various government intervention programs have been initiated over the years to provide support to the farmers and to improve its economic viability of palay production in the Philippines. These primarily focused on improvements in irrigation systems, pest management, and fertilizer support. The Philippine government has made significant investments in irrigation infrastructure through the National Irrigation Administration. As mentioned by the NIA, 1.2 million hectares of land were developed (National Irrigation Administration, 2024). This approximately can yield more than 50% than rainfed fields. In addition to that pest management was also essential component of

government supports that would provide trainings and resources to the farmers to manage pest and not relying solely to harmful pesticides. Furthermore, government supports farmers through fertilizer subsidy program that distributes fertilizer to those marginal farmers.

Despite governmental efforts, local palay farmers faced challenges and issues that directly affects profitability. Increasing cost of inputs, price volatility and natural calamities hinders the stability of income from palay production. This risk and uncertainty become a barrier to its productivity. Palay farming is crucial to the lives of small farmers and to the many landless workers who derive income solely in farming. It is essential for palay production to keep face to the increasing demand brought by a rapid increase population. In the province of Sorsogon, local farmers are exploring financial practices and farming methodologies that improve their financial conditions in palay production. Financial planning and budgeting enable farmers to acquire and utilize resources effectively. Assessing the farmers financial needs and sources of capital helps this palay production more efficient. Keeping record and tracking their financials contributed significantly in this context. This provides them a clear understanding of the revenue, expenses, and its profitability. Maintaining accurate record specially the expenses enables them to a comparative analysis of performance and use it to make sound decisions.

Moreover, better financial practices help farmers to be prepared for any unforeseen costs arising from unexpected fluctuations in prices of the inputs and natural disaster. Access to credit is relevant for the investment in its inputs such as seeds, fertilizer, equipment and the like. But financing through financial institution remains a challenge for many small palay farmers in the province. This is because of many reasons like lack of collateral and strict requirements fund providers implementing. Credit Management is crucial in this context as it facilitates management of funds effectively and efficiently. Palay farmers must have to strategize the utilization of credits to meet their currently maturing obligations without compromising its operation.

In the Municipality of Bulan, in the province of Sorsogon, where a mixed of agricultural land and coastal waters heavily dependent on palay farming in addition to fishing as its main source of income and food supply. Many would somehow say that selling price for palay in the municipality and even outside the municipality were unjust considering that the price of rice continues to rise for the past years. PSA highlighted a 30% increase in the farmgate price of palay from Php 17.68 to Php 22.98 per kilogram in December 2022, December 2023 respectively (PSA, 2023). The increase in palay prices is generally considered favorable for farmers, as it has the potential to enhance their revenue, especially if the yield per production cycle increases. However, during 2024, an average farmgate price of dry palay in Sorsogon was recorded at P19.44 which dramatically lower than what are expected by the farmers in the province (Rice Prices - Ricelytics, 2024).

Solely looking at the revenue itself would not indicate profitable or loss-making operation. It is with an equal prominence for farmers to account for the production costs such as expenses related to seeds, fertilizers, labor, and equipment. A detailed evaluation of profitability must be made that includes both revenues and production costs incurred. Understanding both revenues and expenses can create better understanding of its profitability and sustainability. Furthermore, basic financial practices employed by farmers such as budgeting, financial planning, bookkeeping, financial tracking, loan access and credit management is crucial for improving farmer's financial literacy and health.

This need for comprehensive financial assessment is present in the Municipality of Bulan, where farmers perceive that market price of rice as disadvantageous compared to the farmgate price of palay. This farmers perspective emphasizes possible disconnection between the price and cost of production. It also highlights a need for adaptation of better financial practices and evaluation to navigate with their actual financial performance.

In light of these considerations, determining the profitability of palay production would not solely benefits the farmers but also the community by understanding deeply its financial viability. According to Bayer, production cost and its components determination are essential for any business including farming business (Bayer UK, 2018). Recognizing those areas can contribute significantly to the profitability analysis (Akter et al., 2019). Moreover, it can improve efficiency by enabling farmers to identify room for improvements in result maximizing their output.

In conclusion, this research aimed to evaluate the financial conditions of palay production in the

Municipality of Bulan including farmers practices in financial aspects. This would also identify various challenges they face in their business operations. By closing the gap between the revenue generated and the cost management, the study hopes to enlighten farmers on the long-term sustainability of this agricultural activity in the area by helping them overcome issues encountered and enhance their overall profitability in palay farming business.

II. OBJECTIVES

The study determined the Profitability of Palay Production in the Municipality of Bulan for the year 2024, with a focus on farmers' financial practices and overall financial conditions. The study specifically addressed the following questions:

- What are the financial practices employed by farmers in their palay farming in terms of budgeting and financial planning, record keeping and financial tracking, and accessing credit and loan management?
- What is the status of palay farming in terms of cost incurred, and yield per farming cycle?
- What is the profitability level of palay farming in terms of Gross Profit Margin (GPM), Return on Sales (ROS), and Return on Equity (ROE)?
- What are the gaps and issues encountered by the farmers with their farming financial practices?
- What financial education and management strategies can be proposed to palay farmers to enhance their farming practices?

III. METHODOLOGY

The researcher employed a descriptive survey method to gather and examine quantitative data from a sample of respondents. Quantitative research is based on philosophical theories. This method involves collection and analysis of numeric data to identify patterns and trends.

The respondents in the study were the tenant palay farmers who directly manage the farm. They consist of palay farmers from the 3 barangays considered to be the top producers of palay in the Municipality of Bulan namely Brgy. San Francisco, Somagongsong, and San Ramon. Non-tenant farmers and barangays outside the municipality of Bulan are deemed excluded. The study was limited only to the basic financial practices in terms of budgeting and financial planning, record keeping and financial tracking, and accessing credit and loan management; profitability analysis limited to the indicators such as Gross Profit Margin, Net Profit margin or Return on Sales, and Return on Equity excluding return on assets and other key indicators of profitability.

Sampling method was employed in collecting data from the respondents. Respondents were selected based on their availability and willingness to participate.

Data drawn through convenience sampling, provided insights on the financial practices and profitability of palay farming that determined their financial conditions. This served as foundation to this study for an enhance economic viability of palay production in the area.

IV. RESULTS

The Financial Practices Employed by Farmers in Palay Farming

The palay crop farming has been known for its unique qualities and features that require farmers to develop certain farm management practices for them to develop coping strategies and techniques in their farm operation. These farm management practices have been evident in the various phases of palay production.

Table 1.1 shows the budgeting and financial planning practices employed by farmers in palay production. Budgeting and financial planning practices are known to be essential to ensure that the production process is sustainable, efficient, and profitable.

Considering the experiences of the sampled palay farmers, their budgeting and financial planning practices employed are disclosed.

Table 1.1 *Budgeting and Financial Planning Practices employed by Palay Farmers in Palay Production*

Budgeting and Financial Planning Practices	Frequency	Rank
Allocate Funds: Allocate funds from savings intended for seeds, fertilizers, pesticides, labor costs, irrigation expenses, and other operational expenses.	41	1
Estimate Potential Income: Estimate the potential income by being aware of the production costs and the possible selling price of your harvest.	32	2
Set Aside Income: Set aside a portion of your income during harvest to create a financial cushion for events affecting the farm operation, such as natural disasters and price fluctuations.	20	3

Keep Financial Records: Keep detailed financial records of what is spent.	16	4
Explore Informal Loans: Avail informal loans from local lenders, cooperatives, or even relatives in support of palay farming operation.	15	5

Of the five (5) identified practices, allocating funds from savings intended for seeds, fertilizers, pesticides, labor costs, irrigation expenses, and other operational expenses obtain a frequency of 41, placing it in the topmost, or rank 1. A proof that most of the 65 farmer respondents set aside funds for palay production inputs primarily for the agricultural inputs, chemical inputs, crop protection inputs and labor inputs. This is followed by the practice on estimating the potential income by being aware of the production costs and the possible selling price of the harvest with 32 as its acquired frequency, placing it 2nd in rank. This shows that few of the sampled farmers appraise their potential income by being mindful of the production costs and the possible selling price of their produce. Such is reflective that majority of the farmers are not mindful in terms of gauging their earning potential.

Meanwhile, setting aside a portion of income during harvest to create a financial cushion for events affecting the farm operation, such as natural disasters and price fluctuation is a financial practice of the 20 sample respondents, putting such in the 3rd. It is indicative that a lesser portion of the sampled farmers save for their later use as contingency fund. The financial practices on keeping detailed records of farm expenses and availing informal loans from the local sources have the frequencies of 16 and 15 which made them in ranks, 4th and 5th, respectively. Their numbers show that only few palay farmers log their financial details relative to farm financial transactions. A number of them avail personal loan for the purpose of financing their palay production expenses.

Table 1.2 presents the record keeping and financial tracking practices employed by palay farmers in palay production. This practice pertains to the maintenance of records of all business-related transactions and monitoring as such specially in their production expenses. Keeping records of all transaction is crucial for any business establishment to keep track of their performance in terms of profitability.

Table 1.2 *Record Keeping and Financial Tracking Practices employed by Palay Farmers in Palay Production*

Record Keeping and Financial Tracking Practices	**Frequency**	**Rank**
Estimate Profit or Loss: Calculate whether you are making a profit or loss on your farm.	43	1
Enterprise Analysis: Analyze the performance of different farming activities or crops.	22	2
Record Transactions: Write down all your business transactions.	20	3
Keep Receipts: Save all your income and expense receipts.	18	4
Monthly Ledger: Transfer your entries into a monthly ledger.	7	5

The widely practiced by farmers is calculation whether they are making a profit or loss on their farm garnering a frequency of 43, ranked as 1st. This data imply that of 65 farmers, most of them prioritized estimation of generated profit or loss of their farming business regardless of the recording practices they have. This is followed by analyzing performance of different farming activities and writing down all business transaction with a frequency of 22, ranked 2nd and 20, ranked 3rd respectively. This indicates that some of the palay farmers analyze and maintain records of their transactions to calculate their profit or loss. Writing down all transaction and analyzing its performance in farming are considered equal importance in the tracking and understanding their farming financial conditions.

On the other hand, saving all income and expense receipts is the 4th most practiced by the farmers with a frequency of 18. Keeping all receipts is essential to support the accuracy of the transaction records. The variance in the frequency between rank 3 and 4, could indicate that some farmers may record transactions but not consistently retaining a copy of supporting receipts. It may lead to difficulties in verifying the financial data. With a frequency of 7, transferring entries to a monthly ledger is significantly less common of all other practices which rank 5. A monthly ledger serves as a master record or consolidated financial information the business has. The data show that even though farmers keep receipts of all transactions and write down them all, consolidating this information through a monthly ledger is not commonly practiced. Therefore, majority of the farmers are estimating or calculating their profit or loss based on their memories of income and expenses instead of relying on their recorded transactions.

Accessing to loan and effective credit management are critical of any agricultural operations specifically in palay farming. Table 1.3 presents what loan access and credit management practices palay farmers employ in their palay production operation.

Table 1.3 *Accessing Credit and Loan Management Practices employed by Palay Farmers in Palay Production*

Accessing Credit and Loan Management Practices	Frequency	Rank
Apply for Loans: Apply for loans when needed.	32	1
Repay Loans: Keep track of my loan repayments.	19	2
Understand Interest Rates: Have a good understanding of interest rates on my loans.	13	3
Use Microfinance: Use microfinance services for my farming needs.	8	4

The most frequent practice is the application for loan when needed with 32 farmers doing it, ranked as 1st. This is an indicator of financial need in farming operations such as need to buy inputs, hiring labor for planting, and other expenses. However only 19 of these farmers avail credits and keep tracking of their loan repayments, ranked 2nd. This suggests that significant number of farmers are aware of the payment maturity date. But some are not tracking their loan repayments in an organized manner.

Before applying for a loan, this is what a farmer must know, understanding interest rates on loans which garnered a frequency of 13 and rank 3. Decision on to apply of loan or not lies on the interest charges. The result shows that there is a low understanding on interest rates which is vital in making informed decision on loan accessing. Finally, of 65 farmers only 8 availed services of microfinance rank 4. This explains that majority of the farmers who apply for loan are not eligible for microfinance.

The status of palay farming

Palay farming plays a key role in ensuring food sufficiency and economic development. It is important to assess and examine specific cost in every activity and associated yields of palay farmers. The examination of data gives insights on the revenue along with the cost incurred per farming cycle. This would help understand the financial health of the palay farmers in their farming activities.

Table 2.1 provides activities involved in palay production with corresponding cost in peso and percentage to the total cost. This shows the breakdown of the production costs incurred in palay farming.

Table 2.1 *Cost Incurred in Palay Farming*

Cost of Production	SAN FRANCISCO		SOMAGONGSONG		SAN RAMON	
	Cost	Percentage	Cost	Percentage	Cost	Percentage
Tillage	P 7,000	8.6%	P 9,875	10.6%	P 6,839	9.5%
Harrowing	P 5,706	7.0%	P 8,125	8.7%	P 5,607	7.8%
Seedlings	P 2,938	3.6%	P 3,780	4.0%	P 2,989	4.1%
Planting	P 7,206	8.8%	P 8,650	9.2%	P 6,884	9.5%
Fertilizer	P 6,735	8.2%	P 7,125	7.6%	P 6,017	8.3%
Herbicide	P 1,955	2.4%	P 2,985	3.2%	P 2,135	3.0%
Insecticide	P 3,647	4.5%	P 4,825	5.2%	P 3,339	4.6%
Hired Labor	P 9,706	11.9%	P10,425	11.1%	P 8,464	11.7%
Transportation Cost	P 2,102	2.6%	P 2,447	2.6%	P 2,075	2.9%
Harvesting	P 9,889	12.1%	P10,094	10.8%	P 9,305	12.9%
Rent (Land)	P24,724	30.3%	P25,234	27.0%	P18,610	25.7%
Total Cost	P 81,608	100.00%	P 93,565	100.00%	P 72,264	100.00%

The result shows “Rent” as the single largest contributor, ranging from 25% to 30% of the total cost for all three locations. This implies that land rental costs are an important factor to be considered that affects profitability the most. This is followed by “harvesting”, 2nd most contributor and “hired labor”, 3rd contributor with a range from 10% to 13% of the total cost for all three locations. Other operational costs like "Tillage," "Harrowing," "Fertilizer," "Seedlings," "Planting," "Herbicide," "Insecticide," and "Transportation Cost"

are essential but smaller cost component depending on the location.

Comparing all three locations, San Ramon appears to be the most cost-effective location with a total cost of P72,264 significantly lower than the other two location. The most expensive location is Somagongsong with a total cost of P93, 565 and San Francisco falls in the middle with a total cost of P81, 608.

Table 2.2 provides input on the average yield in kilograms and its corresponding average farmgate price. This is crucial in understanding the profitability of palay in each location.

Table 2.2 *Average Yield per Farming cycle*

Indicators	SAN FRANCISCO	SOMAGONGSONG	SAN RAMON
Average Yield (kg)	5,250	6,100	5,200
Average Farmgate Price (kg)	P19	P16	P18

Note: The average yield was converted from sacks to kilograms using 50 kg/sack

An average yield of 122 sacks (6,100 kilograms) exhibits the highest which pertains to Somagongsong. It shows that this location might be the most productive in terms of outputs. San Francisco yield an average of 105 sacks (5,250 kilograms) of palay which considered as the second best compared to other locations. On the other hand, San Ramon has the lowest yield at 104 sacks (5, 200 kilograms).

As to the farmgate price, San Francisco farmers sell their palay at P19 per kilogram, San Ramon farmers at P18, and Somagongsong farmers at P16 per kilogram. This could be due to several factors such as quality of palay, cost associated with transporting palay to market, and other factors.

The profitability level of palay farming

Profitability of business is the primary goal of any agricultural operations. It refers to the ability of the business to generate revenue more than its costs. Assessing profitability helps farmers to understand the financial conditions and health of the business. There are several metrics to measure profitability such as gross profit margin (GPM), return on sales (ROS), return on equity (ROE), and return on asset (ROA).

Profitability in terms of gross profit margin is presented in table 3.1. Gross profit margin measures the ability of a business to generate revenue net of cost directly associated with the production of palay.

Table 3.1 *Gross Profit Margin (GPM) in Palay Production*

Location	Sales Revenue	Less: Variable Cost	Gross Profit Margin	Gross Profit Margin %	Verbal Interpretation
SAN FRANCISCO	P98,894	P37,434	P61,460	62%	High Profitability
SOMAGONGSONG	P100,935	P44,870	P56,065	56%	High Profitability
SAN RAMON	P93,048	P34,521	P58,527	63%	High Profitability

Note: 35% and Above - High Profitability; Below 35% - Low Profitability

The results show high profitability on all three locations with a gross profit margin of P61,460; P56,065; and P58, 527 for San Francisco, Somagongsong, and San Ramon respectively. All three locations garnered 62%, 56%, and 63% respectively which are higher than 35% Gross Profit Margin Ratio, thus considered as having a "High Profitability". This exhibits the effectiveness of controlling direct costs while maximizing revenue through sales to cover variable and fixed costs.

In all three locations, San Ramon generated the most GPM, followed by San Francisco, and Somagongsong. The result suggests that for every peso sale in San Ramosn, farmers earned P0.63. Likewise, San Francisco farmers earned P0.62 for each kilo of palay sold. And Somagongsong farmers earned P0.52 for every kilo of palay sold. It demonstrates a favorable gross profit margin for all three locations.

Table 3.2 *Return on Sales (ROS) in Palay Production*

Location	Sales Revenue	Less: Variable Cost	Gross Profit Margin	Less: Fixed Cost	Net Profit	Return on Sales	Verbal Interpretation

SAN FRANCISCO	P98,894	P37,434	P61,460	P36,715	P24,745	25%	High Profitability
SOMAGONGSONG	P100,935	P44,870	P56,065	P37,774	P18,291	18%	Low Profitability
SAN RAMON	P93,048	P34,521	P58,527	P29,989	P28,538	31%	High Profitability

Note: 25% and Above - High Profitability; Below 25% - Low Profitability

After deducting all cost associated with the production of palay and all other operating expenses from sales revenue, the resulting amount is the net profit, which determines the return on sales. Return on sales measures the ability of the business to generate revenue after considering fixed cost in palay production. Table 3.2 reveals the return on sales of palay production in each location.

San Ramon and San Francisco farmers show ROS of 31% and 25%, respectively, which indicate "High Profitability". In contrast, Somagongsong farmers have a ROS of 18% which is interpreted as "Low Profitability". Though all are earning profit in palay production, Somagongsong farmers must strategize on how to enhance its sustainability and profitability. The percentage depicts that for every peso sale made, only P0.25 earned after considering all other operating expenses and fixed cost for San Francisco farmers, P0.31 for San Ramon farmers, and only P0.18 for Somagongsong farmers. This variance on return on sales evidence a factor that hinders its earnings due to prone to flooding of Somagongsong area that negatively affects its palay harvest.

Table 3.3 presents return on equity of palay production. Return on equity measures how efficient a business is using its capital investment to generate profit. A high ROE indicates a more efficient utilization of its capital.

Table 3.3 *Return on Equity (ROE) in Palay Production*

Location	Sales Revenue	Less: Variable Cost	Gross Profit Margin	Less: Fixed Cost	Net Profit	Equity	Return on Equity	Verbal Interpretation
SAN FRANCISCO	P98,894	P37,434	P61,460	P36,715	P24,745	P41,441	60%	High Profitability
SOMAGONGSONG	P100,935	P44,870	P56,065	P37,774	P18,291	P44,600	41%	High Profitability
SAN RAMON	P93,048	P34,521	P58,527	P29,989	P28,538	P37,729	76%	High Profitability

Note: 10% and Above - High Profitability; Below 10% - Low Profitability

The gathered data show that San Ramon farmers have the highest percentage garnering 76% ROE. Followed by San Francisco farmers with 60% ROE and Somagongsong farmers with 41% ROE. Thus, this explains a" high profitability" in terms of ROE which are higher than 10% in the same industry.

A high ROE is an indication that farmers are earning sufficient enough to get back their capital investments. All the farmers in the three locations are efficiently using their capital to generate profit in palay production activities. This shows a sustainable and profitable palay business in the municipality.

The gaps and issues encountered by the farmers

Palay farmers face various problems in farming. Understanding these gaps and issues is critical in designing effective intervention and support programs. Table 4 presents the ranking of various gaps and issues encountered by farmers based on the response they reported.

Table 4. *Gaps and Issues encountered by the Farmers*

Gaps and Issues	Frequency	Rank
Limited Capital	24	1
Natural Disaster	22	2
Crop pests	19	3
Weather Condition	11	4

High cost of production	9	5
Limited access to credit	6	6
Labor shortages	4	7

The result clearly identifies three most significant challenges faced by the farmers. Limited Capital is ranked 1st from 24 farmers. The second most common is the Natural Disaster which gained a frequency of 22 ranked as 2nd. Followed by Crop pests with a total of 19 farmers ranked as 3rd. This results clearly show that farmers are having financial constraint which limit their ability to invest in inputs such as seeds, fertilizer, etc. Natural disaster and crop pests also significantly affect their palay yields which in turn leads to poor profitability.

Of the 65 palay farmers, 11 experienced a problem with the weather condition because of climate change, ranked as 4th. Next is the high cost of production as the 5th mostly encountered issues. On the other hand, limited access to credit ranked as 6th. This implies that limitation on the capital is not due to limitation in accessing. Lastly, 4 farmers faced shortage in labor who would perform farming task. This shortage is due to seasonality reason in palay farming.

The financial education and management strategies guide for palay farmers

Several financial education and management strategies can be proposed to enhance financial management practices of the palay farmers. The insights gained through the analysis of the budgeting, recordkeeping, profitability assessment, and challenges faced by the farmers are the foundation of this education and management strategies. Potential strategies are categorized into topics or modules.

This aims to give solutions to key lacking financial practices and the challenges faced by palay farmers, including inadequate budget and financial planning, inaccurate record keeping, limited access to finance, high input costs, low harvest due to natural disaster or pests, and labor shortage during peak season. By providing palay farmers with the necessary knowledge and skills in financial management, this will add value to farmers by an improved profitability and sustainable agricultural business.

Modules (English Version)

Module 1: Budgeting and Financial Planning

Objective: Equip farmers with the necessary knowledge and skills to create a financial plan and budgeting.

Financial Planning

- Utilize resources effectively to minimize waste.
  What to do: Implement a resources plan before acquiring to prevent overstocking of inventory inputs.
  How to do: Regular inventory checking of inputs such as seeds, fertilizer, etc.
- Allocate land, labor, and capital efficiently.
  What to do: Prioritize high costs inputs to maximize capital utilization.
  How to do: Use farm planning, schedules, task assignment properly.
- Set asides for any unforeseen events
  What to do: Establish separate funds for unexpected costs
  How to do: Save percentage of the revenue as a contingency fund.
- Maximize yields and profitability
  What to do: Track yields and inputs to determine most profitable practices.
  How to do: Adopt best practices in improving harvest and pest control.

Budgeting

- Keeps spending in check to prevent overspending.
  What to do: Set maximum amount of spending per input
  How to do: Create a detailed list of expenses based on past experience.
- Establish savings for future investments
  What to do: Set aside fund for savings.
  How to do: Invest part of the income to savings accounts to earn interest.
- Create a budget plan to guide your decision-making.
  What to do: Use spreadsheet or excel for recordkeeping.
  How to do: Create a forecast of revenue and expenses and update data using actual data.

Steps to create a Farm budget

1. List down all your cost (expenses) you will spend on like seeds, fertilizers, labor, and equipment.
2. Estimate how much revenue you will realize based on your anticipated sales and yields.

3. Compare your expenses against revenues (revenue minus expenses). Are you earning profit? if not, adjust your plans.
4. Allocate funds for savings and unexpected expenses.

Module 2: Record Keeping and Financial Tracking

Objective: Enable farmers to establish a proper record keeping and financial tracking.

Five (5) steps to record keeping and financial tracking

1. Keep all revenue and expense receipts
2. Record all business transactions.
3. Transfer entries into monthly ledger. The monthly ledger sums all the revenue and expenses.
4. Estimate profit or loss (revenue minus expenses)
5. Analyze farm performance and keep track of the expenses.

Module 3: Accessing and Managing Credit

Objective: Empower farmers with effective access and management of credit skills.

Steps to effective credit access and management

1. Identify different sources of funds through different types of credit providers including banks, microfinance, lending institutions, and government programs.
2. Compare advantages and disadvantages types of credit providers, assessing factors such as interest rates, payment terms, and credit standards.
3. Look for alternative sources of funds such as informal lenders and the like.

Module 4: Profitability Analysis and Improvement

Objective: Equip farmers with the proper calculation to assess financial conditions of the farming business. This will help them identify areas for improvement and develop strategies to enhance profitability.

Steps to Profitability Analysis

1. Gather essential financial data such as revenue, costs, and expenses.
2. Calculate each profitability metrics:
   - Gross Profit % = (Gross Profit /Total Revenue) x 100
   - Profit margin % = (Net Profit / Total revenue) x 100
   - Return on Equity = (Net Profit / Equity) x 100
3. Analyze each financial ratio.
4. Identify areas for Improvements and develop strategies for enhancement.

Modyul (Bikol Version)

Modyul 1: Pagbadyet asin Pagplano Pinansyal

Obheto: Matagan an mga para-oma san kinakaipuhan na kaaraman nan kakayahan tanganing makahimo sin plano pinansyal asin badyet.

Plano Pinansyal

- Gamiton sin epektibo an pondo pinansyal para mabawasan an pagkasayang.
  Nano an hihimoon: Mag-implementar sin plano sin kaipuhan na suplay bago magbakal para makalikay sa sobra na istak san suplay o imbentaryo.
  Papanu hihimoon: Regular na pagtsek san suplay o imbentaryo parehas san gahi, abono, nan iba pa.
- Mag-alokar sin mayad para sa renta sa ingod, patrabaho, nan kapital.
  Nanu an hihimoon: Iprayoridad an may halangkaw na presyo san suplay para magamit san mayad an kapital.
  Papanu hihimoon: Magkamay'on san plano nan iskedyul san mga himoon sa pag-oma.
- Magtagama para sa anuman na diri linalaoman na mga pangyayari
  Nanu an hihimoon: Magtagama san siway na pondo para sa dire inaasahan na mga gastos.
  Papanu hihimoon: Magtipid para may tuda para sa pondo san mag dire inaasahan na gastos.
- Pataluboon sin mayad an ani asin ganansya
  Nanu an hihimoon: Bantayan an mga ani nan an ginastos sa mga suplay para maaraman kun arin an may pinakamayganansya na aktibidad.
  Papanu hihimoon: Magsunod san mga mayad na hinihimo para sa mas produktibo na ani nan pagkontrol sa mga peste.

Pagbadyet

- Magmonitor san mga gastos para maharayo sa sobra na paggastos.
  Nanu an hihimoon: Magbutang pinakahataas na gastos na di dapat maglampas kada suplay o imbentaryo.
  Papano hihimoon: Maghimo san detalyado na listahan san gastos san mga suplay o imbentaryo base sa nakaagi na panahon.
- Magtipon para sa mga puhunan sa maabot na panahon

Nanu an hihimoon: Magtagama san pondo para may ipon.
Papano hihimoon: Ibutang o ihulog sa bangko an pondo para magtubo.

- Magplano asin mghimo san badyet para may gabay sa paghimo desisyon.
  Nanu an hihimoon: Maggamit san "excel" para sa pagrekord.
  Papano hihimoon: Maghimo san karkulo san kita nan gastos sa sunod na panahon nan hingayadon base sa nakaagi na aktuwal na datos.

Mga sunod sunod na aktibidad sa paghimo sin badyet sa pag-oma

1. Ilista an intero mo na gagastuson parehas san sa gahi, abono, patrabaho, asin mga kagamitan.
2. Tantyahon kun pira an kita na saimong makukuwa base sa saimong inlalaoman na ani.
3. Ikumpara an saimong mga gastos sa mga kita (kita minus an mga gastos). May ganansya? kun wara, i-adjust an saimong plano.
4. Mag-alokar sin pondo para may tipon para sa diri linalaoman na mga gastos.

Modyul 2: Pag-mantenir sin Rekord asin Pagsubaybay sa Pinansyal

Obheto: Madanunan an mga para-oma na makaestablisar sin tama na pagmantenir nan pagrekord asin pagsubaybay pinansyal.

Limang (5) madali na aktibidad sa pag rekord asin pagsubaybay sa pinansyal

1. Itago an intero na resibo sin kita asin gastos
2. Irekord an intero na transaksyon sa pag-oma.
3. Ibalyo an mga narekord sa bulanan na libro. An bulanan na libro nagsusumatotal san intero na kita asin gastos.
4. Tantyahon an ganansya o lugi (kita minus an mga gastos)
5. Analisaron an pagtalubo san pag-oma asin subaybayan an mga gastos.

Modyul 3: Pamamanehar sin mga utang

Obheto: Tagan san kaaraman an mga para-oma na kun pano magka may-on san epektibong pag manehar sa pag-utang nan mga utang.

Mga sunod sunod na aktibidad sa epektibong pag-utang asin pagmanehar san utang

1. Maghanap san iba iba na pinagkukuhaan sin pondo sa paagi nin manlaen-laen na klase sin mga parapautang parehas san mga bangko, mga saragday na institusyon sin pagpapautang, asin mga programa san gobyerno.
2. Ikumpara an mga bentahe san mga klase sin mga parapautang, na iniimud an mga bagay na parehas san mga interes, mga termino sin pagbayad, asin mga kaipuhan na dokumento para pautangon.
3. Maghanap sin alternatibo na makukuwaan sin kapital na pondo parehas sa mga impormal na parapautang asin iba pa.

Modyul 4: Pag-analisar asin Pagpatalubo san Ganansya

Obheto: Maghatag sin tama na kalkulasyon sa mga para-oma para maaraman an pinansyal na kamugtakan san pag-oma. Makakadanun ini sa kanira na maaraman an mga dapat pamayadon asin makahimo sin mga estratehiya para mapamayad nan mapatalubo an kapital sa pag-oma.

Mga sunod sunod na aktibidad sa pag-analisar kan ganansya

1. Magtipon sin mga importante na datos pinansyal parehas san kita asin gastos.
2. Karkulohon an mga sukolan sin ganansya:
   - Gross Profit Ratio = (Gross Profit / Total Revenue) x 100
   - Profit margin ratio = (Net Profit / Total revenue) x 100
   - Return on Equity = (Net Profit / Equity) x 100
3. Analisaron an kada sukolan san ganansya.
4. Aramon an mga lugar na kaipuhan pamayadon asin maghimo sin mga estratehiya para mas mapaayad pa.

V. DISCUSSION

This provides statistical interpretation of the findings regarding financial practices, profitability, and challenges faced by palay farmers in the Municipality of Bulan. Likewise, this identifies weaknesses in the financial practices and profitability of palay production in the area.

The Financial Practices Employed by Farmers in Palay Farming

Budgeting and Financial Planning Practices

The primary findings that allocating funds for seeds, fertilizer, labor cost, irrigation expenses and other operational expenses emphasizes the critical role on allocating funds in ensuring sustainable palay production. This aligns with the existing literature where budgeting stresses importance in every production operation. In addition, budget process is tied up with

financial statement when analyzing operating results (Roestel, 2016). However, estimating potential income demonstrates a concerning trend where many farmers may operate without a clear understanding of their financial health. This lack of knowledge may hinder long term planning and profitability.

Saving part of the income during harvest for contingency purposes depicts that only some are ready for any unplanned expenses due to calamities and inflation. Keeping financial records of what spent and exploring services of informal loans are the least priority of the farmers. Therefore, they are solely estimating what possible income and expenses can be earned or incurred without relying on recorded transactions. This lack of financial records indicates an inaccurate budget calculation might be made because of using zero based approach in the formulation of the budget. It would also result to improper financial forecasting.

Record Keeping and Financial Tracking Practices

The fact that most farmers prioritized calculating profit or loss despite inadequate record keeping practices suggests immediate decision making rather than systematic financial management. This is supported by existing literature that highlights the importance of maintaining accurate records for better financial outcomes and assess performance (Guide, 2025). Furthermore, not keeping of receipts of income and expense transactions suggest insufficient supporting documents in verifying income or expenses data. Likewise, limited practice on maintaining monthly ledger emphasize no opportunities to analyzed financial data comprehensively.

Accessing Credit and Loan Management Practices

The most frequent practice of applying for loans reflects the reality that in palay farming capital is necessary to cover operational cost. However, low understanding of interest rates is alarming because it indicates farmer are availing loan without fully knowing the impact of such charges. This finding is consistent with the literature suggesting farmers' financial literacy directly affects farmers credit access (Cheng et al., 2023).

Status of palay farming

Cost Incurred in palay farming

The findings illustrate that land rental cost are the primary factor that affects profitability of palay farming which is consistent with existing literature that highlights the significance of rental costs in the total production costs for farmers renting land (Land Costs Short Training Course on Agricultural Cost of Production Statistics, 2017). This high percentage of the total cost attributed to rent suggest that farmers must be careful in considering leasing options. Harvesting and hired labor cost stresses the importance of managing variable cost effectively, as these can fluctuate significantly based on seasonality and availability for such services. Harvesting is a critical step in the farming process to ensure crop quality and proper storage in prevention of spoilage and losses (Geeks for geeks, 2024).

A study by Simnit (2022) founds that labor is among the biggest expenses' growers face, and farm wages are increasing as fast as non-farm wages. In palay farming, hired labor is a critical component in ensuring profitability (Martin, 2022).

Other operational costs like tillage, harrowing, fertilizer, seedlings, planting, herbicide, insecticide, and transportation cost are also essential in palay farming. Tillage is crucial in enhancing soil quality and manage weeds effectively (Abhishek, 2021). Harrowing significantly adds value to the soil quality and fertility that results to a consistent crop yields (Villanueva, 2023). Without fertilizers, nature cannot sufficiently give nutrients in replenishment stage (Yara, 2024). Weed management is a key factor in obtaining higher farm yield (Parameswari et al., 2018). The combination of hand weed and herbicides are shown to be effective against variety of weeds in palay farming in the Philippines (Donayre et al., 2022).

Average Yield per farming cycle

The productivity differences observed across locations, particularly higher yield in Somagongsong that indicates variation in farming efficiency. By knowing their yields, farmers can assess whether they yielding sufficient return to cover production inputs such as seeds, fertilizers, labor, and machinery (Balasubramanian et al., 2019).

However, despite of the highest yield, lower farmgate price suggests that price is not solely determined by yield but also includes several factors like the quality of produce, access to market, and seasonality. This is consistent with the report by the Philippine Rice Research Institute in agricultural sector that dictates factors such as quality, seasonality, supply disturbance, and import volumes in determining the price of palay (PRRI, 2020). Business world also highlights external factors pressured to local traders and millers that reduces

their willingness to pay higher prices for palay (Business world, 2022).

While San Ramon, appeared to have the lowest yield, but a combination of lower cost and competitive pricing which aligns with the theories of competitive advantage. This conformed with the feedback received by the National Food Authority (NFA) that farmers compelled to sell their harvest to traders at a lower price particularly during peak season where supplies surplus occur (NFA, 2023).

The profitability level of palay farming

Gross Profit Margin (GPM) in Palay production

Gross profit margin focuses on the percentage of revenue after deducting production cost (variable costs). Result shows high gross profit margin ratio across all location which are excellent at generating revenue relative to their production costs. Brand (2024) stated that a high gross profit margin means that the farm efficiently converting farm's revenues into operating profits while controlling the costs. This aligns with the literature that emphasizes effective cost management is crucial for profitability in farming, as it directly influences production costs and outcomes (Bondina et al., 2021). This shows that farmers can supplement high market prices of their harvest, especially San Ramon and San Francisco farmers to enhance sustainability and profitability. The result also consistent with the farmers response that they are earning from farming palay and they loss due to uncontrollable weather change conditions like disaster, flooding, and pests.

Return on Sales (ROS) in Palay production

While gross profit margin concentrates on revenue net of production cost, return on sales on the other hand, reflects the overall profitability of the farming activity by including operating expenses such as fixed cost in the deduction to the revenue. The lower Return on Sales findings in Somagongsong emphasizes a concern about the long-term sustainability of farming practices in the area. A low return on sale implies business inefficiency that it has generated not enough profit (DealHub Experts, 2023). This low return may be attributed to external factors such as natural disaster such as typhoons and flooding which hinders operational efficiency and quality of harvest. This observation supports research highlighting that climate change impacts for paddy farming potentially reduce profitability and sustainability of palay farming in Ifugao Rice Terraces in the Philippines (Soriano et al., 2020).

Return on Equity (ROE) in Palay production

The high return on equity across locations highlights efficient utilization of capital. The high value of return on equity suggests efficiency in using equity at generating profit. This reflects substantial return from farmers investment in palay farming. The difference in the return emphasize successful capital utilization in San Ramon farmers than in Somagongsong where potential areas for improvement may be observed. This is consistent with literature that high return on equity indicates efficient capital utilization and reflects the firm's ability to generate profit from shareholders equity (Ting, 2012).

The gaps and issues encountered by the farmers

The findings highlight the critical role that capital plays in the success of palay production. Limited capital, as number one issue, supports existing literature that highlights financial constraints has a significant impact on productivity growth (Amos & Zanhouo, 2019). Farmers are struggling to secure access to capital for sufficient fund for inputs and other necessary expenses.

Natural disaster reflects an increasing concern with the frequency of such events. This align with research indicating that natural disaster such as flood and typhoon have negative impact on palay (rice) productivity (Nguyen et al., 2018).

The frequency of crop pests illustrates an ongoing threat to palay productivity. The relationship between pest and limited capital is critical. Farmers without sufficient capital may not afford necessary pest control measures, thus, experiencing yield losses. This is consistent with the findings, that integration of pest management approaches is urgently needed in enhancing resiliency and to minimize crop yield losses (Baker et al., 2020). Pest management is essential for optimizing crop production, maintain crop quality, ensuring and promote environmental sustainability by helping farmers protect their crops (Beck et. al, 2021).

Moreover, issues like weather conditions and high production cost also reflects agricultural challenges farmers face. High production cost can discourage investments in critical areas that could mitigate other risks.

Theoretical Implication

The findings from the study of financial practices employed by the farmers contribute substantially in the existing agricultural theories. The emphasis on the financial literacy, budgeting, record keeping and credit

management aligns with the theoretical frameworks in financial management in farming suggesting effective budgeting, record keeping, and credit management practices that are pivotal in enhancing overall sustainability and profitability of the farmers. The inadequacy in financial bookkeeping emphasize the need of exploring theories of financial literacy.

Practical Implication

The researcher pointed several solutions as demonstrated in the financial education and management strategies and guide suggesting support to farmers in improving their financial management practices. Better financial education for training programs are suggested that aims to enhance insights on budgeting, record keeping, and loan management that in turn to an improved overall financial health or condition. Additionally, realizing gaps and issues on high cost production and rental costs reflects a need for policy makers to explore alternative financing options and support system. A better access to credit with a better interest rate knowledge would empower farmers to a sound financial decision thus, improving long term sustainability and profitability.

Limitations of the Study

The study is limited only to palay farmers within the municipality of Bulan which may not capture the diversity of financial practices across agricultural context in the Philippines. Additionally, sample size may not be the representation of the population due to its sampling techniques used. Furthermore, other external factors are not considered that could influence the results. Future research should consider a more extensive investigation, that is assessment of the profitability of farming in a long run which can give a trend analysis of the patterns on the growth and sustainability of palay production.

Future Research Direction

Though the study is able to identify areas of concern by the farmers, there are areas needing further investigation such as the impact of the interventions and improved financial management practices. Further studies could also investigate specific financial literacy programs impact on financial performance.

The future researcher could focus on the different factors that may hinder financial literacy such as age, years in farming, educational background, income level, and others. Studies outside the municipality but within the province may be conducted for comparable findings with different environment.

VI. CONCLUSIONS

The financial practices employed by farmers in their palay farming across three categories reveal critical insights into their financial management. The most practiced identified was “karkuluhon kun pira an ganansya o lugi” (estimate profit or loss) which indicates a pivotal role in financial management. In addition, “pagbadyet san pondo para sa gahi, abuno, pampatay-insekto, patrabaho, patubi, asin iba pa” (allocation of funds intended for seeds, fertilizers, pesticides, labor costs, irrigation expenses, and other operational expenses) reflects a strong understanding of budgeting and financial planning. However, it is concerning that many of them were not actively engage in “pag-utang sin pondo sa mga impormal na parapautang kun kinakaipuhan” (applying for loans when needed). Moreover, insufficient practice of “magmantenar san record-pinansyal asin pagtago san mga resibo” (keeping financial records and keeping receipts) indicates significant gap in their financial management practices.

- The status of palay farming in terms of cost incurred and yield per farming cycle vary across land location with land rental as the highest contributor of the total cost.
- The overall profitability level of palay production in the Municipality of Bulan was high indicating a strong financial performance among farmers. A substantial gross profit margin (GPM) has been observed, suggesting farmers effective and efficient management of production costs. Furthermore, high Return on Sales (ROS) achieved by the farmers reflects operational efficiency. Lastly, High Return on equity (ROE) attained by farmers indicates high profit generated relative to its equity highlighting effective capital utilization.
- Gaps and issues encountered by the farmers with their farming financial practices identified are limitation on capital, natural disasters, crop pests, weather conditions, high cost of production, limited access to credit, and labor shortages.
- Financial education and management strategies intended for palay farmers in the Municipality of Bulan is proposed.

VII. RECOMMENDATIONS

- Financial management training be conducted focusing on budgeting, financial planning, record

keeping, and the importance of effective credit management.

- Farmers be encouraged to explore alternative land renting arrangements with the owner or consider other land vacancy for negotiating lower rental fees.
- Regular assessments be conducted on financial performance and analysis workshops for farmers for better understanding of the costs incurred with their farming operation.
- The proposed financial education and management strategies be applied by the farmers to enhance their farming and financial practices.
- The financial education program be adopted by the farmers to enhance their financial practices in the palay production.

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