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Household Financial Management of Palm Sugar Farmers Amid Declining Sap Production and Income Instability in Bonto

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Abstract
Purpose: This study analyzes the household financial management strategies of palm sugar farmers facing income instability caused by the structural decline in sap production in Bonto Salama Village, West Sinjai Subdistrict, Sinjai Regency.
Research Methodology: A descriptive qualitative approach was employed using a single embedded case study. Data were collected through in-depth interviews, participatory observation, and documentation involving one husband-and-wife pair of palm sugar farmers with at least three years of tapping experience, selected through purposive sampling. Data were analyzed using the Miles, Huberman, and Saldana interactive model, while credibility was ensured through source and technique triangulation and member checking.
Results: Farmers experienced unstable income due to declining palm productivity as trees aged. To maintain household financial stability, they reduced consumption, diversified income through vegetable cultivation and collecting dried clove leaves, and relied on social capital by borrowing from relatives and participating in rotating savings groups.
Conclusions: Household financial management remains informal and experience-based, with social capital serving as the primary financial buffer during periods of income instability.
Limitations: The findings are based on a single informant pair from one village, limiting broader generalizability.
Contributions: This study enriches the household finance literature by providing empirical evidence of adaptive financial strategies employed by palm sugar farmers in Indonesia's informal agricultural sector under persistent income uncertainty.

Keywords: *Bonto Salama Village, Household Financial Management, Income Instability, Palm Sugar Farmers, Social Capital*

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1. Introduction

Indonesia's agricultural sector encompasses millions of households that depend on the utilization of natural resources for their livelihoods, one form of which is the processing of palm sap into brown sugar. In Bonto Salama Village, West Sinjai Subdistrict, Sinjai Regency, South Sulawesi, the sugar palm tree (*Arenga pinnata*) stands as the principal commodity sustaining the local economy between harvest seasons. Sap tapped from the palm is processed through traditional methods into palm sugar, which is then sold to local markets or to intermediary traders (Arifianto, Awaliyah, & Adinasa, 2024).

The productivity of the sugar palm, however, is not stable over time. As a palm tree ages, the volume of sap it yields diminishes naturally, and at a certain point the tree stops producing altogether. This condition causes farmers to experience a decline in income that is significant and structural in nature, rather than merely a reflection of market price fluctuation (Makarennu, Sabar, Yumeina, Nipi, Magfira, Nurhidayah, & Pasau, 2023; Kehinde, & Ogundeji, 2023). The decline in income, in turn, affects the capacity of farming households to meet basic needs such as food consumption, education costs, and health services (Abebe, Chalchisa, & Eneyew, 2021). Under such conditions, household financial management becomes an especially critical concern. Unlike formal-sector workers who receive fixed and scheduled income, palm sugar farmers must contend with earnings that are uncertain and tend to decline over time. The literature on farmer household finance in Indonesia remains dominated by quantitative approaches that often fail to capture the depth of the informal adaptive strategies practiced by rural communities (Rigg, 2006; Ping, Xiaosong, & Jinzhao, 2022).

A qualitative approach was chosen for this study because it is capable of uncovering meaning, strategy, and the socio-economic dynamics that cannot be measured numerically. Qualitative inquiry allows the researcher to understand an informant's perspective in depth, including how farmers define what is 'enough,' how financial decisions are made within the household, and the role social networks play in maintaining family economic stability (Creswell, 2014; Sugiyono, 2022). This study aims to describe the household financial management patterns of palm sugar farmers in Bonto Salama Village, to identify the financial adaptation strategies farmers apply in response to declining sap production, and to analyze the role of social capital within the farmers' informal financial system. In doing so, this study is expected to offer a rich and contextual empirical picture of the economic reality faced by palm sugar farming households (Li & Hua, 2023).

The significance of this research is further underscored by the limited body of literature specifically addressing the financial dynamics of households cultivating perennial smallholder tree crops such as the sugar palm, particularly in rural South Sulawesi. Most prior studies have concentrated on the agronomic and productivity dimensions of palm cultivation, while the socio-economic dimension and household financial management of the farmers themselves have received comparatively little attention (Bandiera & Rasul, 2006). Yet a resilient household financial condition is a fundamental factor supporting the sustainability of the farming enterprise itself (Xiao, 2016).

The urgency of this research is further reinforced by the fact that Sinjai Regency is one of the centers of palm sugar production in South Sulawesi, with more than 2,000 households dependent on this commodity for their livelihood (BPS, 2024). Even so, no study to date has examined in depth and comprehensively how palm sugar farming households manage their finances amid the pressure of a structural and continuing decline in production. This research therefore seeks to fill that gap through an in-depth qualitative case study approach conducted in Bonto Salama Village. From a theoretical standpoint, this study is expected to contribute to the development of the Sustainable Livelihood Framework by Natarajan, Newsham, Rigg, and Suhardiman (2022) and Scoones (1999) enriching the understanding of how financial, social, and physical assets interact within the context of rural Indonesian communities. From a practical standpoint, the findings are expected to serve as a consideration for local government in designing more effective, well-targeted empowerment programs for palm sugar farmers that respond to the actual needs faced by communities on the ground.

The remainder of this article proceeds as follows. Section two reviews the relevant literature on household financial management, income instability, financial adaptation strategies, and social capital, and develops the research propositions that guide this case study. Section three explains the research methodology, covering the research design, informant selection, data collection techniques, and data analysis procedures. Section four presents the empirical findings together with a discussion of their theoretical and practical implications. Section five closes the article with concluding remarks, research limitations, and directions for future study.

2. Literature Review

Because this study employs a descriptive qualitative case study design rather than a variable-based quantitative model, the propositions developed in this section function as analytical hypotheses that orient the fieldwork and subsequent interpretation, rather than as statistical hypotheses subjected to significance testing. Each proposition below is grounded in the theoretical literature reviewed and is examined against the empirical evidence gathered from the informants in Bonto Salama Village.

2.1 Household Financial Management

Household financial management refers to a set of activities encompassing the planning, organizing, directing, and controlling of a family's financial resources in order to achieve household well-being (Xiao, 2016). Among farming households, financial management practices are typically simple and not yet systematically structured, and are heavily influenced by the harvest cycle and natural environmental conditions (Kochar et al., 2022). According to Fletschner and Kenney (2014), farmers' limited access to formal financial institutions leads them to develop a variety of community-based savings and financing mechanisms.

Within poor rural households, financial management is generally carried out through income diversification strategies, control of consumption spending, and the utilization of available social networks (Collins, 2008). The findings of Collins (2008) on financial diaries demonstrate that poor households are in fact quite active in managing their finances, only the instruments they use differ from those found in the formal financial system.

In practice, farmer household financial management cannot be separated from the influence of gender and the power relations formed within the family. Kochar et al. (2022) found that in many rural communities across Asia, women, particularly mothers, generally play a more dominant role in managing day-to-day spending, whereas decisions related to long-term investment tend to remain under the control of the male household head. This division of roles produces a complex dynamic of financial decision-making, since the woman managing the household is required to balance immediate consumption needs against longer-term financial obligations (Quisumbing & Pandolfelli, 2010). Recent evidence from Indonesian research further reinforces this picture, with Astuti (2022) showing that participation in arisan groups significantly raises both food and non-food household expenditure once informal financial mechanisms are actively used. Within the context of palm sugar farming households, women serve not only as household financial managers but also as working partners in the palm sugar production process. Their presence therefore constitutes a vital and strategic source of information for this research.

2.2 Income Instability and Its Impact on Households

Income instability is defined as the variation in the amount of income a household receives from one period to the next (Morduch & Sicular, 2002). Among farmers who depend on natural products, this instability originates from two sources: natural factors, such as crop productivity and weather, and market factors, such as price fluctuation. In the specific case of palm sugar farmers, the decline in production is structural in nature because it is directly tied to the life cycle of the sugar palm tree (Makarennu et al., 2023).

Income instability affects a household's capacity to meet basic needs, service debt, and invest in human capital such as education and health (Temesgen et al., 2022). Research by Kehinde and Ogundeji (2023) in Southeast Sulawesi shows that palm sugar farmers experiencing a decline in sap production tend to reduce spending on nutritious food consumption as a short-term coping strategy. Similar structural pressure has also been documented among other Indonesian smallholder tree-crop communities, where Race et al. (2022) show that diversified, landscape-embedded livelihood arrangements have become a defining feature of how modern Indonesian smallholders manage exactly this kind of long-horizon agrarian risk.

2.3 Farmer Financial Adaptation Strategies

Adaptation strategy is an active response undertaken by individuals or households in facing changes in external conditions that have the potential to disrupt their well-being (Natarajan et al., 2022). Within rural farming communities, financial adaptation strategies can take the form of livelihood diversification, whether on-farm or off-farm, reduced consumption, delayed investment spending, and the mobilization of available social networks (Scoones, 1999). Research conducted by Haggblade, Hazell, and Reardon (2010) across developing regions shows that diversity of income sources is an important factor distinguishing households capable of withstanding economic shocks from those that struggle to cope with them. A more recent systematic review by Habib et al. (2023) similarly concludes that the combination of financial, social, and physical livelihood capital available to a household is what ultimately determines whether diversification functions as an effective buffer or merely as a stopgap measure.

Morduch (1995) distinguishes between income smoothing and consumption smoothing as household responses to income instability. Income smoothing is pursued by diversifying income sources so that the variability of cash inflow is reduced, while consumption smoothing is pursued by leveling out expenditure through savings, debt, or social transfers. Palm sugar farmers in Bonto Salama Village rely on a combination of both strategies, albeit with very limited capacity due to the scarcity of financial assets that can be mobilized. This limitation makes social networks the most critical component of their survival strategy.

It should be understood that adaptation strategies are not always anticipatory or proactive in nature. In many situations, such strategies instead emerge as reactive responses undertaken only once a crisis has already occurred. Natarajan et al. (2022) distinguish between livelihood adaptability, meaning a household's capacity to respond to changes already underway, and livelihood resilience, meaning the capacity to anticipate and prepare for potential future shocks. Farmers with greater resilience generally also have broader access to market information, education, and a more diverse form of social capital, namely bridging social capital. Within the context of Bonto Salama Village, differences in adaptive capacity between households become clearly visible in the uneven pattern of livelihood diversification among informants.

2.4 Social Capital as a Financial Buffer

Within the context of the rural economy, social capital is understood as the network of social relationships that enables the exchange of resources, information, and various forms of support among individuals or groups within a community (Coleman, 1988; Chuong, 2023). Among Indonesian farming communities, social capital is commonly reflected in practices such as rotating savings groups, interest-free loans between neighbors, and mutual cooperation in agricultural work (Bebbington, 1999). Ping et al. (2022) found that social capital functions as an informal safety net that is critical for farming households when formal income proves insufficient.

Prior studies conducted across Southeast Asia show that the form and function of social capital within farming communities are diverse and shaped by local social context. Pretty (2003) found that among natural-resource-dependent farming communities, the practice of borrowing and lending between neighbors functions not merely as a financial mechanism but also as a symbol of social identity and an expression of loyalty to the community. In addition, Quisumbing and Pandolfelli (2010), in a comparative study conducted across Asia and Africa, affirm that strengthening community social capital is one of the most effective intervention strategies for improving the financial resilience of poor farming households. Evidence from rotating savings research also supports this pattern more broadly, with Maitra et al. (2023) documenting that Rotating Savings and Credit Association (ROSCA) participation in rural settings generates measurable welfare gains through accumulated household assets, while Pambekti et al. (2022) show that community-based rotating savings arrangements can additionally function as a springboard for small-scale entrepreneurship.

Within the context of Bonto Salama Village, social capital serves not only as a mechanism for transferring economic resources but also carries an important psychological dimension. The presence of a strong social network provides a sense of security and certainty that there will always be someone to rely on when economic conditions worsen. This is consistent with the view of Coleman (1988), who asserts that social capital is a resource embedded within the structure of relationships between individuals and can be drawn upon to achieve goals that could not be reached individually.

2.5 Financial Literacy and Farmers' Access to Financial Services

Financial literacy is an individual's ability to understand and apply financial knowledge in making effective financial decisions (Fong, Koh, Mitchell, & Rohwedder, 2021). Among rural farming communities in Indonesia, low financial literacy is often a primary obstacle to accessing and utilizing formal financial services. Findings from Ankrah Ankrah, Jiang, Adhikari, and Asare (2022) show that the average financial literacy level of farmers in rural Sulawesi remains below 40%, a figure relatively lower than the national average, which had reached 49.68% according to data from the Financial Services Authority (Otoritas, 2022).

This low level of financial literacy is closely linked to a similarly low level of financial inclusion among farmers. According to the Financial Services Authority (FSA), although national financial inclusion has reached 85.10%, farmers living in remote areas remain the group with the most limited access to bank accounts, insurance products, and formal investment instruments. This situation drives farming communities to develop informal systems that operate alongside the formal financial system. Although these informal systems tend to be less efficient from an economic standpoint, they are considered more accessible and carry a higher degree of trust from the local community (Karlan, & Morduch, 2010; Otoritas, 2022).

2.6 Conceptual Framework

Building on the literature review presented above, this study develops a conceptual framework that integrates three principal dimensions. The first is the household finance dimension, covering patterns of income, expenditure, savings, and debt. The second is the livelihood adaptation dimension, describing farmers' responses to economic pressure through strategies such as livelihood diversification and expenditure reduction. The third is the social capital dimension, reflecting the role of trust networks, social relationships, and community solidarity as a form of informal financial infrastructure. These three dimensions interrelate and interact in shaping a distinctive and adaptive financial management system among palm sugar farming households in Bonto Salama Village.

3. Research Methodology

3.1 Research Design

This study employs a descriptive qualitative approach. This approach was chosen because the research aims to obtain an in-depth understanding of the experiences, strategies, and meanings constructed by palm sugar farmers in managing their household finances (Creswell, 2014). Through this approach, the researcher is able to explore comprehensively the complex phenomena that cannot be adequately explained through quantitative data or statistical figures alone (Moleong, 2021).

3.2 Research Location and Timeframe

This research was conducted in Bonto Salama Village, West Sinjai Subdistrict, Sinjai Regency, South Sulawesi Province. The research location was determined purposively, taking into consideration that this village is one of the centers of palm sugar production in Sinjai Regency and faces a considerable decline in sap production. Fieldwork was conducted over a period of one month, from May to June 2026.

3.3 Research Informants

Informants were selected through purposive sampling based on several criteria, namely being a husband-and-wife pair whose family has actively tapped palm sap for at least the past three years, residing and settled in Bonto Salama Village, and being willing to participate in an in-depth interview. This study applies a single case study approach with one unit of analysis, namely a palm sugar farming household consisting of a husband (*P1*) and wife (*P2*), as presented in Table 1 focusing the study on a single informant pair allowed the researcher to obtain deep and comprehensive data regarding the dynamics of household financial management from two distinct vantage points, namely the husband as sap tapper and the wife as household financial manager.

Table 1. Profile of research informants

No.	Informant Status	Code	Description
1	Palm sugar farmer (husband, household head)	*P1*	Sap tapper
2	Wife of the palm sugar farmer (housewife)	*P2*	Household financial manager; assists in palm sugar processing

In qualitative research, data quality is determined not by the number of informants but by the depth of information and the diversity of perspective obtained. The use of a single case study approach in this research made it possible to conduct repeated interviews with both informants on several separate occasions, producing data that is rich, in-depth, and mutually complementary between the husband's and wife's perspectives (Creswell & Poth, 2018). Furthermore, selecting a husband-and-wife pair as the unit of analysis directly accommodates the gender dimension of household financial management, which is one of the central concerns of this research (Kochar et al., 2022).

3.4 Data Collection Techniques

Data collection in this study relied on two principal methods. First, in-depth interviews were conducted with all informants using a semi-structured interview guide. These interviews focused on eliciting information regarding income patterns, expenditure management strategies, borrowing sources, and the savings mechanisms applied within the household. Second, participatory observation was carried out to gain a direct understanding of sap tapping activities, the palm sugar production process, and the various social and economic interactions taking place within the local community. Interviews were conducted in Indonesian mixed with the local Konjo language, according to the comfort of the informants.

3.5 Data Analysis Technique

Data analysis in this study follows the analytical model developed by Miles, Huberman, and Saldana (2014), which involves three stages of activity carried out simultaneously. The first stage is data condensation, the process of selecting, simplifying, focusing, and transforming raw data through the application of thematic coding. The second stage is data display, carried out by organizing the condensed data into descriptive narrative form to aid comprehension. The third stage is drawing and verifying conclusions, aimed at identifying the research findings and ensuring the validity of the resulting conclusions.

The trustworthiness of the data in this study is secured through two forms of triangulation. First, source triangulation was conducted by comparing data obtained from the husband (*P1*) and the wife (*P2*) to ensure the consistency of information across two distinct perspectives within a single household unit. Second, technique triangulation was conducted by comparing the results of interviews, participatory observation, and documentation, so that each finding could be confirmed through more than one method of data collection (Creswell & Poth, 2018). In addition, the credibility of the data was further strengthened through member checking, the process of confirming the researcher's interpretations back to the informants prior to finalizing the findings, to ensure that the research results accurately reflect the informants' actual experiences and perspectives.

3.6 Research Ethics

This research was conducted with attention to the ethical principles governing qualitative research. Prior to participation, all informants were given a clear and adequate explanation of the study's purpose, benefits, and procedures as the basis for informed consent. The confidentiality of informants' identities was protected through the use of special codes, namely *P1* for the husband and *P2* for the wife, throughout all research documents and reports. The researcher further ensured that the interview process proceeded without generating pressure or discomfort for the informants. Informants were also given the freedom to withdraw from the study at any time without incurring any adverse consequence (Denzin & Lincoln, 2018). All data obtained in this study were used exclusively for academic purposes in accordance with the agreement mutually established with the informants.

4. Results and Discussions

4.1 Overview of Palm Sap Production Conditions in Bonto Salama Village

Bonto Salama Village covers an area of approximately 12 square kilometers dominated by hilly topography, making it suitable for sugar palm cultivation. Based on interviews with both informants, the number of productive palm trees around their place of residence has continued to decline in recent years. According to the husband informant (*P1*), many palm trees belonging to residents, including his own family, no longer produce sap. Meanwhile, regeneration efforts through the planting of new palm trees have not been able to offset the reduction in the number of trees still productive. Informant *P1*, as the sap tapper, stated the following.

"In the past, I could get 10 liters of sap in a day from four trees. Now, at most, I get 5 to 6 liters from the same trees. The trees are old, the sap has become scarce."

This statement was confirmed by the wife (*P2*), who added that over the past two years several of their family's palm trees have stopped yielding sap altogether. This condition directly presses down on household income, since the current average selling price of palm sugar, at IDR 18,000 to IDR 22,000 per kilogram, does not compensate for the drop in production volume.

According to information provided by the husband informant (*P1*), the palm trees still being tapped today are generally very old. Most of these trees were planted by their parents decades ago, meaning their age has already exceeded the optimal productive lifespan of a sugar palm tree, estimated at a range of 10 to 15 years (Makarennu et al., 2023). *P1* further explained that over roughly the past decade, no planned and sustained effort had been made to plant new palm trees in the surrounding area. As a result, the regeneration process for palm trees has experienced a significant gap. This condition indicates that the decline in production is likely to worsen in the coming years as the number of unproductive old trees continues to grow.

From a price perspective, although local palm sugar prices have risen by roughly 15% to 20%, from an average of IDR 15,000 to around IDR 18,000 to IDR 22,000 per kilogram, this increase has not been sufficient to offset a decline in production volume exceeding 40%. As a result, farmers' real net income is estimated to have fallen by an average of 25% to 30% compared to conditions five years earlier. This situation is further complicated by price fluctuations that are difficult for farmers to predict (Arifianto et al., 2024).

4.2 Household Financial Management Patterns of Palm Sugar Farmers

4.2.1 Income Receipt

Income earned by palm sugar farmers is irregular and received on a daily basis. The palm sugar production process takes place every day, beginning with sap tapping in the morning and evening, which is then immediately processed into sugar on the same day. Palm sugar is subsequently marketed to intermediary traders or sold directly at the market two to three times a week. This pattern causes cash inflow to occur relatively frequently, though in limited amounts. This characteristic differs from food crop farmers, who generally receive income based on a seasonal harvest cycle. Consequently, when production declines, household daily income also declines directly, without sufficient time for adjustment.

4.2.2 Routine Expenditure

Household expenditure among palm sugar farmers is generally directed toward meeting daily basic needs, children's education costs, fuel needs in the form of firewood or gas for the sap processing process, and health costs. Spending on clothing and household equipment, meanwhile, tends to be incidental and is typically postponed when income conditions decline. Based on the interview results, no practice of written financial record-keeping was found at the farmer household level. All financial management activity is carried out based on experience, memory, and habits that have developed over time. The wife informant (*P2*), who serves as the family's financial manager, revealed the following.

"I don't keep records, I already know myself how much comes in and how much goes out, the important thing is that daily household needs are still met."

4.2.3 Savings Mechanisms

Based on the interview results, both informants stated that they do not hold savings at a formal financial institution such as a bank. As an alternative, a portion of palm sugar production is set aside rather than sold immediately, kept as a reserve that can be used when an urgent need arises. Informant husband (*P1*) stated the following.

"If there is extra sugar produced, we don't sell all of it right away. We keep some of it at home first, and if there is an urgent need later, then we sell it."

This statement shows that the savings held by the informants do not take the form of monetary deposits at a financial institution, but rather savings in kind, in the form of palm sugar itself. This approach is chosen because it is considered more suited to the gradual manner in which income is received from sugar sales. In addition, the wife informant (*P2*) participates in a rotating savings group followed by a group of women in the village, with contributions sourced from weekly palm sugar sales proceeds. Informant *P2* explained the following.

"I join the women's rotating savings group in the village, the money comes from sugar sales, little by little. When it's my turn, the money is usually used for household needs or if there is an urgent necessity."

In practice, this rotating savings group functions not only as a means of regular saving but also as an informal credit mechanism that operates on a rotating basis among its members. When income received is insufficient to meet household needs, both informants admit that they rely on informal loans from relatives and repay them once they have enough money from sugar sales proceeds. The interview results also show that neither informant has ever made use of credit facilities provided by cooperatives or banks.

4.3 Financial Adaptation Strategies to Address Declining Production

In facing the ongoing tendency of declining sap production, farmers in Bonto Salama Village apply a range of financial adaptation strategies to sustain the economic continuity of their households. Based on the research findings, three principal adaptation strategies were identified and are summarized in Table 2.

Table 2. Financial adaptation strategies of palm sugar farmers

No.	Adaptation Strategy	Description	Informants Applying It
1	Consumption expenditure reduction	Reducing the frequency of side-dish purchases, delaying purchases of clothing and household equipment	*P1* and *P2*
2	Livelihood diversification	Working as farm labor, growing vegetables, or collecting dried clove leaves for sale	*P1* and *P2*
3	Social network mobilization	Borrowing from relatives and joining a rotating savings group	*P1* and *P2*

The strategy of reducing consumption expenditure is one form of adaptation applied by both informants in facing income limitations. The husband (*P1*) explained: “*If sugar output is low, we eat whatever we have. We cut back on side dishes, as long as there's rice. New clothes can wait until there's extra.*” Under such conditions, meeting food needs becomes the top priority, while secondary and tertiary needs, such as purchasing new clothing, tend to be postponed until financial conditions improve. This finding shows that farming households make consumption adjustments as a strategy to sustain basic needs amid the economic pressure they face.

Livelihood diversification is one of the adaptation strategies applied by both informants in facing declining income from the palm sap business. The wife informant (*P2*) developed vegetable gardening in the yard around the house as a source of supplementary income, while the husband informant (*P1*) occasionally works as farm labor. They also collect dried clove leaves for sale when sap production is at a very low level. This finding aligns with the concept of livelihood diversification put forward by Natarajan et al. (2022), who state that the diversity of income sources is one of the principal adaptation strategies used by farming households to face various forms of economic pressure and shock.

It should be understood that farmers' capacity to apply various adaptation strategies is not uniform. Farmers who possess larger landholdings or family members earning income from non-agricultural sectors generally have a greater capacity to combine several adaptation strategies simultaneously. By contrast, households still heavily dependent on the palm sap business as their income source tend to sit at a higher level of vulnerability and rely on social networks as their primary source of financial support. This finding is consistent with the view of Temesgen et al. (2022), who state that financial vulnerability within a community is not homogeneous but is instead shaped by the combination of assets and capabilities held by each household.

4.4 The Role of Social Capital in Farmers' Informal Financial System

One of the principal findings of this study shows that social capital plays a highly important role within the household financial system of palm sugar farmers in Bonto Salama Village. Social networks built on communal trust and solidarity prove to be a primary support for farming households in meeting and managing their daily financial needs.

The rotating savings group joined by the wife informant (*P2*) functions not only as a means of rotating savings but also plays a role in strengthening social relationships and solidarity among members. The wife (*P2*) explained: "*Here, nobody borrows from the bank when they urgently need money, because the process takes too long, so we ask relatives for help first. We pay it back later when there's a big sugar harvest. That's just how it's always been, we already trust each other.*" This phenomenon shows that trust, which according to Chuong (2023) is a fundamental element of social capital, becomes a critically important resource for the continuity of the farmer household's informal financial system.

This finding also supports Li and Hua (2023) view regarding the capacity of social capital to be converted into economic capital. The bonds of trust formed among family members, relatives, and rotating savings group participants become a tangible social asset that can be drawn upon at any time to meet urgent needs without having to go through the complex administrative procedures that apply within formal financial institutions.

4.5 Discussion of Findings

The findings of this study indicate that household financial management among palm sugar farmers in Bonto Salama Village tends to proceed informally, is reactive to changing economic conditions, and depends heavily on trust built within the community. The absence of systematic financial record-keeping practices indicates that formal financial literacy remains limited among these farmers. Nevertheless, the capacity of farmer households to manage available resources and sustain their livelihood amid income uncertainty demonstrates a degree of adaptive capability and practical financial intelligence developed through everyday experience.

The financial management pattern found in this study aligns with the results of Collins (2008), which show that low-income households across various countries develop complex informal financial systems as a strategy to meet their living needs. Within the context of Bonto Salama Village, palm sugar farmers make use of a combination of in-kind savings in the form of palm sugar, participation in rotating savings groups, and the use of informal loans as part of an adaptive financial portfolio. These various mechanisms enable farmer households to sustain their economic continuity amid income conditions that continue to decline.

When compared with similar research conducted across various regions of Indonesia, the pattern found in Bonto Salama Village shows a structural resemblance to the findings of Bandiera and Rasul (2006) among smallholder tree-crop farming communities. This similarity is evident in the dominance of informal financial practices and the substantial role of social capital as the primary support for the farmer household financial system. Even so, a distinguishing characteristic sets palm sugar farmers apart from rubber farmers, namely the dimension of exhaustibility affecting their primary production source. Aged palm trees require a relatively long time to regenerate, meaning the decline in their productivity cannot quickly be reversed. This condition causes the economic pressure faced by palm sugar farmers to tend toward being more permanent. By contrast, in rubber cultivation, declining plant productivity can still be restored through a replanting process within a comparatively shorter timeframe.

The findings of this study also carry significant theoretical implications for the sustainable livelihood framework (Natarajan et al., 2022; Scoones, 1999). This research reinforces the relevance of that framework within the Indonesian rural context, particularly in showing how farmers combine various types of assets, financial, social, and physical, to sustain their livelihood amid prolonged structural pressure. Interestingly, the absence of formal financial assets appears instead to drive a strengthening of social assets as a compensatory mechanism, indicating that social capital and financial capital can be substitutable for one another under certain conditions.

Read alongside the broader informal-finance literature, this pattern of substitution is not unique to palm sugar farmers. Rotating savings research in other Indonesian settings has repeatedly documented a similar trade-off, in which the absence of accessible formal credit pushes households toward trust-based instruments instead, and those instruments then take on a welfare-generating function of their own rather than functioning merely as a stopgap (Astuti, 2022; Maitra et al., 2023; Pambekti et al., 2022).

From a policy perspective, these findings indicate that programs to improve the welfare of palm sugar farmers cannot focus solely on the production aspect. A holistic approach is required, one that also takes into account the household finance dimension, including the development of savings and microfinance products suited to farmers' daily income pattern. Financial literacy programs integrated with existing community forums, such as farmer groups and rotating savings groups, could also serve as an effective and sustainable intervention strategy (Otoritas, 2022). Without a comprehensive approach responsive to the specific characteristics of palm sugar farmers, the potential to improve the welfare of this group will continue to be constrained by deep-rooted structural limitations.

5. Conclusions

5.1 Conclusion

This study analyzed the household financial management of palm sugar farmers in Bonto Salama Village, West Sinjai Subdistrict, who face income uncertainty caused by a structural decline in sap production. The findings point to three principal conclusions. First, the household financial management pattern of these farmers remains dominated by informal practices without systematic financial record-keeping, characterized by fluctuating daily income and expenditure allocated mostly toward food needs. Second, the financial adaptation strategies applied include reducing consumption spending, diversifying livelihoods through activities such as vegetable gardening and collecting dried clove leaves, and utilizing social networks as a source of economic support. Third, social capital, expressed through communal trust, participation in rotating savings groups, and access to informal loans from relatives and the surrounding community, functions as an important financial buffer when household income declines.

Overall, this study depicts palm sugar farmers in Bonto Salama Village as active and adaptive economic agents rather than passive recipients of unfavorable circumstances. They have succeeded in building a functional informal financial system that is responsive to community needs. Even so, this informal system carries inherent limitations, particularly in terms of scale and its capacity to absorb large shocks, limitations that can only be addressed through meaningful integration with a formal financial system that is inclusive and responsive to the specific income characteristics of these farmers.

5.2 Research Limitations

This study carries several limitations that should be taken into account when interpreting its results. The scope of the research involved only one informant pair from one village, so the findings obtained are contextual in nature and cannot be generalized to the entire population of palm sugar farmers in Sinjai Regency or other regions. This research also applies a cross-sectional approach, so it has not been able to capture the dynamics of change in farmer household adaptation strategies longitudinally or over time. The process of verifying actual income data faced constraints because informants do not maintain a documented written financial record-keeping system. There is also the potential for social desirability bias in the interview process, since informants may, under certain conditions, tend to give answers considered more socially acceptable rather than disclosing their actual financial condition, particularly regarding the amount of debt held. To minimize this potential bias, the researcher conducted repeated interviews with both informants to obtain consistency of information.

5.3 Suggestions and Directions for Future Study

Based on the findings obtained, several directions for future study can be proposed. Local government together with microfinance institutions need to develop savings and financing products designed to match the daily income pattern characteristic of palm sugar farmers, making them more relevant than conventional financial schemes generally based on a monthly cycle. Strengthening savings and loan cooperative institutions at the village level needs to be pursued as an alternative provider of financial services that is more accessible and better suited to the needs of farming communities. Comparative research involving palm sugar farming communities in other regions of South Sulawesi is also needed to broaden understanding of the diversity of adaptation strategies applied by farmer households in facing similar economic challenges.

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Author Contributions

SS contributed to conceptualization, data collection, fieldwork, formal analysis, and writing of the original draft. WOR contributed to methodology supervision, validation, review, and editing.

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