National Food Authority (NFA) buffer stock management on farmers income

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Abstract

This study refers to National Food Authority (NFA) buffer stock management on farmers income. The National Food Authority (NFA) holds a critical mandate: to ensure food security by maintaining a strategic rice buffer stock. This involves dual responsibilities stabilizing consumer prices through market intervention and supporting local producers through guaranteed procurement. The main purpose of this study is to determine the level of National Food Authority (NFA) buffer stock management in terms of procurement of palay, storage of palay, milling, rice storage, rice distribution, auction of stocks, inventory control, forecasting, demand planning and contingency planning; and the level of farmer income in terms of gross income, net income, income stability and price satisfaction. Furthermore, the study also determines the significant relationship between NFA Buffer Stock Management and farmer income. Also, action plan may also be proposed based on the findings of the study. The study employed descriptive research to determine the level of National Food Authority (NFA) buffer stock management to farmer income. Stratified random sampling technique was used to determine a sample size of three hundred forty-four (343) from a two thousand three hundred forty-five (2,345) total population of farmers as respondents in Victoria, Bay, Siniloan, and Famy in Laguna as these four municipalities has biggest and recent volume of palay sold to NFA. Descriptive and inferential statistics, including weighted mean, standard deviation and Pearson *r* Coefficient is used in this study. A self-made questionnaire was used as a research instrument in data gathering. It aimed for the researcher to gather information on the significant relationship between the responses of students. The level of National Food Authority (NFA) buffer stock management and the level of farmer income is highly managed. Furthermore, significant relationship between NFA Buffer Stock Management and farmer income is not observed. After completing the research, no significant relationship between NFA Buffer Stock Management and farmer income was noted. Thus, the hypothesis is accepted. This implies that the level of buffer stocks is often a tool for national food security rather than a direct mechanism for increasing individual farmer wealth. Based on the findings and conclusions, the following recommendations were set forth. The researcher recommended that the National Food Authority may continuously institutionalize its seamless collaboration with local government and may continuously institutionalize the procurement strategy by maintaining competitive floor prices and consistent cash subsidies. The researcher also recommended that the National Food Authority may transition from traditional historical forecasting to a data-driven localized vulnerability mapping system and may implement a supplemental income diversification program and a localized price-guarantee mechanism that protects Laguna farmers from seasonal market volatility.

Keywords: National Food Authority, Buffer Stock Management, Farmer Income

1. Introduction

The rice industry stands as the cornerstone of Philippine agriculture and food security; a distinction earned through its profound socioeconomic and cultural impact. Far from being merely a commodity, rice is the primary staple food, consuming over 35% of the average Filipino family's total food expenditure and constituting the single most important energy source for the entire populace. This dependency translates into a direct and critical influence on the dietary stability of the nation. Economically, the sector is massive: it

directly employs millions of Filipino farmers and accounts for a significant portion of the country's agricultural Gross Value Added (GVA).

Consequently, fluctuations in production, price, or policy such as those dictated by the National Food Authority's (NFA) buffer stock management directly impact the economic well-being of farming households, often serving as the primary determinant of their income satisfaction and market engagement. Therefore, the management of the rice supply chain is not just an economic or agricultural concern; it is a fundamental issue of national stability, poverty alleviation, and public welfare.

Against this backdrop, the National Food Authority (NFA) holds a critical mandate: to ensure food security by maintaining a strategic rice buffer stock. This involves dual responsibilities stabilizing consumer prices through market intervention and supporting local producers through guaranteed procurement. However, the implementation of Republic Act No. 11203, or the Rice Tariffication Law (RTL), in March 2019 has introduced new market dynamics and complexities. The NFA's ability to effectively manage its buffer stock setting appropriate procurement prices and volumes is now viewed as a direct lever influencing farmer behavior. When procurement prices are not competitive, it threatens the farmers' income and compels them toward reliance on private traders. Conversely, the strategic predictability of NFA intervention can enhance a farmer's confidence in their market participation, encouraging investments in productivity.

For these, the researcher would like to investigate the actual experiences of Laguna farmers on buffer stock management especially with regard to farmer income and market participation. A suggested input may also be initiative based on the results that can provide an empirical foundation for future policy adjustments.

1.1. Background of the Study

The Philippines, being one of the world's largest consumers and importers of rice, grounds its national food policy in the stability of this staple commodity. The rice industry is not merely an economic sector; it is a profound matter of food security, contributing directly to the daily caloric intake and nutritional stability of the entire population. Historically, the burden of ensuring both consumer affordability and producer viability has been placed upon the National Food Authority (NFA). Since its inception, the NFA has operated primarily through buffer stock management: a two-pronged strategy involving the procurement of palay from local farmers to support farm-gate prices, and the strategic release of rice into the market to stabilize consumer prices, particularly during lean seasons or calamities. The NFA's procurement price, therefore, functions as a de facto price floor, designed to protect farmers from market price volatility.

The operational landscape of the NFA underwent a fundamental transformation with the enactment of the Republic Act No. 11203, or the Rice Tariffication Law (RTL), in March 2019. The RTL liberalized the importation of rice, replacing quantitative restrictions with tariffs, which theoretically increased market competition and lowered consumer prices.

Crucially, the RTL significantly narrowed the NFA's mandate, limiting its operations strictly to maintaining the country's national rice buffer stock sourced only from local farmers. While this shift was intended to make the local procurement function clearer, the influx of cheaper imported rice has intensified competition, making the NFA's buffer stock price-setting and volume commitment more critical than ever to local farmer survival. The effectiveness of the NFA's procurement mechanism under this new environment directly determines whether farmers can attain a sustainable level of income satisfaction.

The relationship between NFA policy and farmer welfare is direct and measurable through two key dependent variables: Farmer Income and Market Participation.

This study provided light on the Farmer Income Laguna farmers by offering insightful observations on their experiences. The suggested input will aim to improve Laguna farmers overall quality of life by providing focused and useful support and the findings will serve as a crucial input for policy evaluation, aiming to inform necessary adjustments that reconcile the national goal of food security with the equally vital objective of sustainable agricultural livelihood.

1.2. Theoretical Framework

The theories that can be anchored in this study were the Price Stabilization and Income Floor Theory posits by Glauber and Laborde (2021), Market Distortion and Inefficiency Theory by Anderson and Valenzuela (2022), and the Rice Tariffication Law or also known as RA 11203 by National Food Authority

The National Food Authority's (NFA) buffer stock management, particularly its mandate to procure palay solely from local farmers at a government support price, is a key area of study in Philippine agricultural economics. The following three theories, derived from analyses of public stockholding and price support policies, describe the presumed or actual impact of NFA's buffer stock operations on farmer income and market participation.

Price Stabilization and Income Floor Theory by Glauber and Laborde (2021), is a direct procurement program that serves as a critical price-support mechanism, establishing an effective price floor for palay. The core idea is that the NFA's Government Support Price (GSP) acts as a guaranteed minimum price, systematically reducing the downside market risk for farmers and, consequently, stabilizing their income. This intervention provides farmers with a crucial guaranteed minimum revenue, insulating them from potentially predatory pricing practices by private traders during peak harvest. In the context of the Philippines post-Rice Tariffication Law, this theory is paramount, as the NFA's effectiveness in maintaining this price floor against the tidal wave of cheaper imported rice is the key determinant of local farmer viability.

Conversely, Market Distortion and Inefficiency Theory by Anderson and Valenzuela (2022), argues that while the NFA's buffer stock intervention aims to support farmers, the method of non-market-based pricing and state-controlled trade ultimately leads to market distortion and economic inefficiency. The law explicitly narrowed the NFA's role, stripping it of its commercial import and market retailing functions to allow private trade to flourish. The premise of the RTL was that tariffication, coupled with the dismantling of most NFA controls, would subject the local rice sector to international competition, forcing local actors to become more efficient and ultimately benefiting consumers through lower prices.

Following the implementation of the Rice Tariffication Law (RTL or RA 11203) by National Food Authority. The operational environment of the NFA underwent a critical, legislative restructuring. The NFA's mandate was deliberately narrowed, shifting its focus from broad market management including commercial importation and public market retail to strictly buffer stocking solely for emergency and disaster relief. Crucially, the law stipulated that all NFA rice procurement must be sourced exclusively from local farmers.

This theory has been foundational to a prominent theory in agricultural policy circles: that the NFA's impact on farmer income and market participation has become highly constrained and localized. Under a fully liberalized market the sheer volume of cheaper imported rice dictates the national price ceiling. The NFA, limited to buying only a fixed percentage of local production for its buffer, may struggle to exert sufficient purchasing power to effectively stabilize prices across the entire market, especially in major rice-producing regions.

1.3. Conceptual Framework

The conceptual framework is presented in the form of the paradigm below. The paradigm is an application of system analysis from descriptive research where it provides the independent variable and the dependent variable of the study.

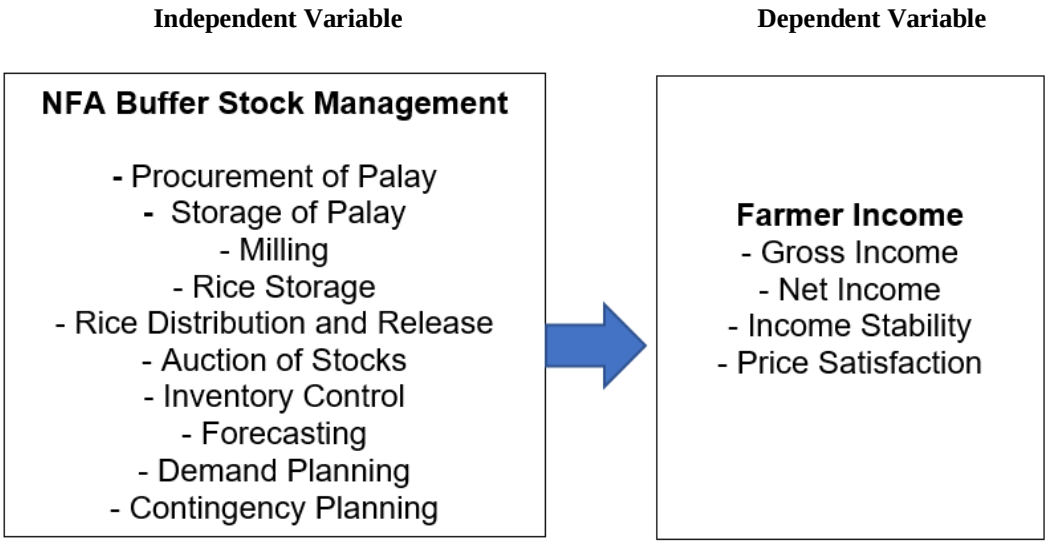


Figure 1. Research Paradigm of the Study

The research paradigm shows the independent variable which is NFA buffer stock management. It includes procurement of palay, storage of palay, milling, rice storage, rice distribution, auction of stocks inventory control, forecasting, demand planning, and contingency planning. It also shows the dependent variable which includes farmer income. The farmer market participation includes the gross income, net income, income stability and price satisfaction. While the farmer market participation included selling of palay to NFA.

1.4. Statement of the Problem

This study aimed to determine level of buffer stock management on farmer income and market participation.

Specifically, it sought answer to the following questions:

1. What is the level of National Food Authority (NFA) buffer stock management in terms of:
    1.1. Procurement of Palay;
    1.2. Storage of Palay;
    1.3. Milling;
    1.4. Rice Storage;
    1.5. Rice Distribution;
    1.6. Auction of Stocks;
    1.7. Inventory Control;
    1.8. Forecasting;
    1.9. Demand Planning; and
    1.10. Contingency Planning?
2. What is the level of farmer income in terms of:
    2.1. Gross Income;
    2.2. Net Income;
    2.3. Income Stability; and
    2.4. Price Satisfaction?
3. Is there a significant relationship between NFA Buffer Stock Management and farmer income?

4. What action plan may be proposed based on the findings of the study.

1.5. Research Hypothesis

There is no significant relationship between NFA Buffer Stock Management and farmer income.

Significance of the Study

The researcher believes that the findings of this study is of great help to the following:

National Food Authority (NFA) and Policymakers

This study can provide empirical evidence on how specific buffer stock management strategies directly translate into farmer-level economic satisfaction and behavior. This serves as a critical Input for re-calibrating NFA's pricing and inventory policies to achieve its twin goals of price stabilization for consumers and fair returns for producers.

Rice Farmers and Cooperatives

By highlighting the variables in NFA management that most affect their income and market decisions, farmers can better strategize their selling points and times, empowering them in price negotiations and improving their overall income satisfaction.

Department of Agriculture (DA) and Economic Planners

The research may offer a clearer picture of market dynamics in the rice sector, informing broader agricultural policies, subsidy programs, and interventions aimed at boosting national rice productivity and ensuring food security.

Future Researchers

The findings of the study may help other researchers pursue the same nature of study because this can give them the framework and initial study on what important aspects. They may also examine other variables, other research design, and other factors that may consider of future researchers in achieving the goal of implementation of an input.

Scope and Limitation of the Study

This research provides input suited to the needs of selected farmers of Laguna. The respondents of the study were two thousand three hundred forty-five (2,345) Laguna farmers.

The data gathered was the basis of the input suited to the needs of Laguna farmers.

1.6. Review of Related Literature and Studies

The research review based on a variety of sources, such as books, journals, unpublished materials, and online sources, is presented in this section.

1.6.1. Related Literature

One of the indicators in this study is gross income.

According to Greenstein (2022), gross income serves as a foundational pillar of long-term economic theory, functioning as an all-encompassing metric for a taxpayer's total financial progress. In its purest sense, it captures every significant accession to wealth that an individual experiences before the application of business expenses or personal deductions. This expansive view dictates that income must account for both realized and unrealized gains, as even the mere appreciation of an asset represents a tangible increase in a taxpayer's overall economic wellbeing. To quantify this growth, economists often rely on the Haig Simons definition, which frames income as the algebraic sum of the market value of rights exercised in consumption and the net change in one's store of property rights. This approach ensures that income is treated as the total capacity of an individual to either utilize resources in the present or fortify their wealth for the future.

In line with Auerbach (2020), gross income is formally defined as undeniable accessions to wealth,

clearly realized, and over which the taxpayers exercise complete dominion. This specific judicial standard, rooted in landmark case law, aligns with the Internal Revenue Code's own assertion that gross income encompasses all income from whatever source derived. The statutory language provides a remarkably broad and all-inclusive definition that serves as the necessary starting point for the complex process of calculating taxable income. While this legal definition shares some DNA with economic models, it diverges significantly by imposing the strict requirements of clear realization and the taxpayer's complete dominion over the funds. Unlike a purely economic approach that might count paper gains, the legal standard typically demands a specific event such as a sale or exchange that fixes the gain in a tangible form. These administrative constraints ensure that tax liability is triggered only when wealth is truly accessible and solidified, rather than merely reflecting a theoretical increase in net worth.

Pursuant to Graham (2025), gross income traditionally characterizes it as the gain derived from capital, from labor, or from a strategic combination of both, provided this encompasses profits gained through the sale or conversion of capital assets. A foundational element of this specific definition is the severance doctrine, which posits that income must be physically or legally detached from its capital source to be considered truly realized. By establishing this requirement, the definition effectively limits the scope of gross income to instances where a definitive realization event has occurred, rather than applying to the static holding of an asset. This approach intentionally excludes mere appreciation in value often referred to as paper gains which would otherwise be included under more expansive economic theories. The focus shifts away from a taxpayer's total fluctuating net worth and toward the specific source and timing of the wealth's acquisition. This creates a legal boundary that ensures tax liability is only triggered when a gain is pulled apart from the underlying investment and made available for use.

As stated by Gautam et al. (2023), gross income of farmers represents the total market value of all agricultural commodities produced on a farm before any expenses are subtracted. This metric encompasses the revenue generated from crops, livestock, and any government subsidies received during the production cycle. It serves as a primary indicator of a farm's total productive capacity and market reach within the agricultural sector. Economists use this figure to analyze the gross domestic product contribution of the rural agricultural economy. However, it does not reflect the actual profitability of the farm since it ignores the rising costs of seeds and fertilizers. It is viewed as a volume-based measure rather than a financial health indicator.

In accordance with USDA (2024), gross farm income is the sum of cash receipts from sales, the value of home consumption, and the rental value of farm dwellings. This definition includes both the commercial transactions and the non-cash benefits derived from operating an agricultural landholding. For many small-scale producers, the non-monetary components constitute a significant portion of their total economic gain. Federal agencies utilize these figures to determine the eligibility of farmers for various disaster relief and insurance programs. It provides a standardized baseline for comparing the output of different agricultural regions across the country. Understanding this total value is crucial for assessing the economic footprint of the farming industry.

Gross income is viewed in economic theory as a foundational pillar that captures every significant accession to wealth, encompassing both realized and unrealized gains. This expansive approach, often linked to the Haig Simons definition, calculates income as the total change in a taxpayer's economic power, including the appreciation of assets even if they have not been sold. Legal and judicial standards define gross income as undeniable accessions to wealth that are clearly realized and over which a person exercises complete dominion. This perspective requires a specific event, such as a sale or exchange, to trigger a tax liability, ensuring that the wealth is solidified rather than merely theoretical. The severance doctrine suggests that gain must be physically or legally detached from its capital source to be considered truly realized. By requiring this separation, the definition excludes paper gains, focusing instead on the specific timing and source of the acquisition. These frameworks balance the broad goal of measuring financial progress against the administrative need for tangible, accessible wealth.

One of the indicators in this study is net income.

According to Tipalt (2021), net income represents the residual amount of revenue that remains after systematically subtracting all associated expenses and losses incurred during a specific accounting period. Commonly situated on the final line of a formal income statement, this figure is colloquially referred to as the bottom line because it signifies the ultimate profit or loss of the entity. To ensure accuracy, this calculation is performed using the accrual method of accounting, which prioritizes the economic reality of transactions over simple cash flow. By matching revenues with their related costs in the same period, the figure accounts for both tangible expenditures and noncash items such as depreciation or amortization. The resulting net income provides a vital, holistic snapshot of a company's true profitability and operational efficiency. This metric serves as the core indicator of a company's financial performance, guiding investors and management in their assessment of the firm's long-term viability.

In line with Dice (2023), net income can be viewed through a broader structural lens, representing the total net increase in shareholders' equity that results directly from a company's core operations. This theoretical perspective is essential because it highlights the critical, symbiotic link between the income statement and the balance sheet, illustrating how profit is not just a temporary figure but a permanent addition to the firm's value. Specifically, once the accounting period concludes, positive net income flows directly into the Retained Earnings account, which serves as a primary component of the total owners' equity section. By funneling these profits back into the company's internal reserves, the business effectively converts its operational success into a fortified financial position. This mechanism demonstrates how consistently profitable operations serve to enhance the firm's overall net worth and capital base over time. This connection underscores the fact that every dollar earned at the bottom line contributes to the long-term wealth and security of the company's shareholders.

Pursuant to Nishikawa (2021), net income is often interpreted as a measure that should represent the irreversible outcomes and solidified economic results of an entity's core business activities. This conceptual framework seeks to isolate and separate stable, reliable earnings derived from recurring operations from the noise of volatile, temporary gains or superficial losses. To achieve this clarity, proponents suggest a strict delineation within financial reporting that partitions these transient, onetime items into a separate category. By filtering out nonrecurring fluctuations, this specific definition emphasizes the utility of net income as a more accurate and reliable predictor of an entity's future comprehensive income. This refined metric provides stakeholders with a clearer view of the firm's sustained profitability and long-term earning power. This approach ensures that the bottom line reflects the enduring health of the business rather than the unpredictable movements of the broader market.

As stated by Kumar et al. (2022), net farm income is the residual earnings available to farm operators after all production expenses and capital consumption are deducted. It represents the actual return to the farmer for their labor, management, and equity in the business. This figure is critical for determining whether a farming household can sustain its standard of living without outside employment. The calculation accounts for both cash expenses like fuel and non-cash expenses such as equipment depreciation. Financial analysts prioritize this metric when evaluating the creditworthiness of agricultural loan applicants. It remains the ultimate measure of the economic viability of agricultural enterprises.

In accordance with Savastano (2020), net income for farmers is defined as the profit margin remaining once the cost of inputs is subtracted from the total harvest value. This value is often volatile due to the unpredictable nature of agricultural yields and market demand shifts. In many developing regions, net income is the primary driver of food security and educational investments for rural families. Policy interventions often aim to increase this figure by reducing the price of fertilizers or providing better irrigation. Without a positive net income, farmers are often forced into a cycle of debt and land alienation. It serves as a vital barometer for the socio-economic status of rural populations.

Net income is defined as the residual revenue remaining after all expenses, losses, and noncash items have been subtracted within a specific accounting period. Commonly known as the bottom line, this figure

utilizes accrual accounting to match revenues with costs, providing a holistic view of a company's true operational efficiency. Beyond a simple performance metric, this value represents a permanent increase in shareholders' equity by flowing directly into a firm's retained earnings. This internal transfer effectively converts short-term operational success into long-term net worth, reinforcing the organization's total capital base and financial security. To enhance the reliability of this figure, it is often framed to isolate recurring earnings from volatile, onetime gains or superficial losses. By filtering out these nonrecurring fluctuations, the resulting metric serves as a more accurate predictor of sustained profitability and the enduring economic health of the business.

One of the indicators in this study is income stability.

According to Wisdomlib (2020), income stability is widely viewed as a crucial and indispensable livelihood asset that forms the bedrock of an individual's financial existence. Beyond a mere stream of revenue, a stable income provides the foundation for secure employment, ensuring that a person can consistently meet their basic biological and social needs. This financial consistency serves a dual purpose, acting as a vital buffer that enables people to effectively adapt to and survive sudden environmental disruptions or volatile economic shocks. As a result, it stands as an essential component of overall financial security, granting individuals the peace of mind to sustain their lives and formulate long-term plans without the paralyzing fear of impending financial distress. This interpretation directly connects the idea of stable earnings to the broader pillars of social welfare and the development of robust personal coping mechanisms. Income stability is not just about the quantity of money earned, but about the reliability of that wealth in fostering a resilient and dignified life.

In line with Hill (2022), income stability is frequently analyzed through the lens of repeated changes in employment, earnings, or general financial wellbeing over time, with a specific focus on fluctuations that are unintentional or unpredictable. Under this framework, true stability is not defined by a perfectly static income, but rather as a condition where any financial fluctuations are meticulously planned, anticipated, or represent a clear trajectory of upward growth. This academic distinction is vital because it separates negative instability such as a sudden loss of hours from positive volatility, such as the receipt of a predictable, scheduled performance bonus or a planned cost of living adjustment. By shifting the focus away from sheer consistency, this definition emphasizes that the predictability and purposefulness of income changes are the definitive factors in determining a taxpayer's security. A variable income can still be considered stable if the individual maintains the agency to forecast and manage those shifts effectively. This perspective suggests that financial distress arises not from change itself, but from a lack of control over the timing and nature of those economic shifts.

Pursuant to Gottschalk (2020), income stability is often analyzed by decomposing the total variance of an individual's earnings into distinct permanent and transitory components. Within this framework, stability is strictly defined as the minimization of temporary, unpredictable fluctuations frequently referred to as shocks that disrupt a person's earnings from one fiscal period to the next. By isolating the permanent income path from these volatile deviations, researchers can better identify the underlying trends in a taxpayer's earning capacity versus the noise of short-term economic instability. This rigorous academic approach has become increasingly central to long-term labor economics, as it provides a precise methodology for understanding how structural market shifts, such as the proliferation of contingent work and the gig economy, impact household financial health. This model allows for a more granular assessment of risk, distinguishing between a steady career trajectory and the precariousness of irregular paychecks. By focusing on the variance of these transitory shocks, economists can develop a clearer picture of how economic uncertainty influences long-term consumption and saving behaviors.

As stated by Meuwissen et al. (2019), income stability for farmers refers to the consistency of earnings and the capacity to withstand extreme downward shocks. It is characterized by the absence of high variance in year-to-year returns from agricultural activities. This stability is often achieved through a combination of crop insurance, government price supports, and diversified income streams. Stable earnings

allow farmers to make long-term investments in their land and infrastructure with lower risk. High income volatility can lead to mental health stress and the abandonment of farming as a profession. Stability is as important as the absolute level of income for rural development.

In accordance with Birthal (2021), income stability is the resilience of a farm's financial returns against environmental and market disturbances. It represents the farmer's ability to maintain a steady consumption level despite fluctuations in harvest volume. The author argues that irrigation and climate-smart technologies are the primary drivers of stability in agriculture. Without stability, farmers cannot access formal credit markets which require predictable repayment schedules. Institutional support plays a critical role in smoothing out the boom-and-bust cycles inherent in food production. Achieving stability is a key goal of national agricultural risk management frameworks.

Income stability is a foundational livelihood asset that ensures individuals can consistently meet their basic needs while maintaining secure employment. More than just a steady revenue stream, it acts as a critical buffer that allows people to survive sudden economic shocks and plan for the long term with confidence. Interpretations emphasize that true stability is defined by the predictability of earnings rather than a perfectly static dollar amount. Financial fluctuations are not considered destabilizing if they are planned, anticipated, or part of a clear upward growth trajectory. From an economic perspective, this involves isolating permanent earning trends from temporary, unpredictable shocks that cause short-term variance. Reducing these transitory fluctuations is essential for understanding household financial health and how economic uncertainty shapes long-term saving behaviors.

One of the indicators in this study is price satisfaction.

According to Culong (2021), price satisfaction is conceptualized as a complex emotional and cognitive post consumption response, occurring when a customer's actual price perception is systematically compared against their prepurchase price expectations. Building upon foundational psychological frameworks such as Oliver's Expectation Confirmation Theory, researchers like Culong et al. (2021) view this satisfaction not as a singular event, but as a dynamic response pattern that involves specific evaluative foci, including the original anticipation and the subsequent consumption experience. Specifically, price satisfaction is achieved now the actual price paid is perceived as being equal to, or ideally better than, the baseline price the customer had initially expected to encounter. By aligning the cost with these internal standards, the firm successfully delivers the intended target customer satisfaction value, reinforcing the perceived fairness of the transaction.

In line with Xia (2024), price satisfaction is critically influenced by the nuanced perception of price fairness, which serves as a subjective assessment of whether a transaction is ethically and economically sound. This concept is defined as a consumer's internal evaluation and the accompanying emotions regarding whether the discrepancy between a seller's offering and the price of a comparative party is reasonable, acceptable, or logically justifiable. This perspective underscores the reality that long-term customers do not simply evaluate an absolute numerical value; instead, they weigh the relative justice of a price against various internal and external reference points. These benchmarks often include a competitor's current pricing strategy, the historical prices the customer has paid in the past, or the perceived profit margins of the firm. Empirical evidence consistently demonstrates that high levels of perceived price fairness act as a powerful catalyst for enhancing overall customer satisfaction and long-term brand loyalty. When a consumer feels that the pricing structure is transparent and equitable, it fosters a sense of relational trust that extends far beyond the immediate transaction.

Pursuant to Herrmann (2022), in the study of consumer behavior, price satisfaction represents a critical cognitive judgment regarding the value for money received during a transaction, functioning essentially as a weighted tradeoff between the monetary cost incurred and the perceived quality of the benefits obtained. This perspective posits that price serves as the primary monetary expenditure a consumer must sacrifice, and the specific relationship between this sacrifice and the acquired utility directly dictates the final satisfaction judgment. When the perceived benefits encompassing both functional performance and emotional gratification significantly outweigh the numerical price point, the result is a high level of price satisfaction.

This dynamic link effectively integrates the concept of satisfaction into the broader academic framework of perceived value, where the consumer acts as a rational evaluator of their own purchasing power. This value-based interpretation suggests that price satisfaction is the byproduct of a successful equity exchange where the consumer feels their financial output has been more than compensated for by the product's input.

As stated by Nguyen et al. (2022), price satisfaction for farmers is the cognitive and emotional fulfillment derived from the farm-gate prices received for their produce. It occurs when the market price covers the cost of production and provides a fair return for effort. This satisfaction is heavily influenced by the farmer's perception of market fairness and price transparency. When farmers feel exploited by middle-men, their satisfaction levels drop regardless of the actual numerical value. High levels of price satisfaction are correlated with increased motivation to adopt better farming techniques. It is a subjective measure that reflects the perceived equity of the agricultural trade system.

In accordance with Adenegan (2018), price satisfaction is the degree to which an agricultural producer finds the prevailing market price acceptable for their livelihood. It acts as a psychological incentive that determines whether a farmer will expand or contract their production in the next season. The author notes that farmers often compare current prices to historical averages to gauge their level of satisfaction. Market information systems are essential for improving satisfaction by reducing the uncertainty associated with selling. It is closely linked to the concepts of fair trade and remunerative pricing in the development literature. Satisfying the price expectations of producers is vital for maintaining a consistent food supply.

Price satisfaction is a complex cognitive and emotional response triggered when a consumer compares the actual price paid against their prepurchase expectations. This evaluation is grounded in the psychological framework of expectation confirmation, where satisfaction occurs if the cost aligns with or improves upon the consumer's initial baseline. Beyond numerical value, this judgment is heavily influenced by price fairness, which assesses whether a transaction is ethically reasonable compared to competitor benchmarks or historical costs. When a price is perceived as transparent and equitable, it builds a sense of relative justice and trust that fosters long-term brand loyalty. The concept functions as a value for money tradeoff where consumers weigh their monetary sacrifice against the perceived quality and benefits received. Price satisfaction is the byproduct of a successful equity exchange where the product's utility is felt to have adequately compensated for the financial output.

One of the indicators in this study is procurement of palay.

According to Quigley (2024), procurement of palay is a strategic operation whose core meaning lies in the vital establishment and maintenance of a national rice buffer stock. This initiative is designed to function as a critical safeguard for national food security, ensuring that a consistent supply of rice remains available to the population, particularly during periods of acute emergency or unforeseen calamities. According to the official mandate of the National Food Authority (NFA), the primary objective is to manage an optimal stock level that can be mobilized instantaneously for disaster relief programs, thereby sustaining the nation's nutritional needs during both natural disasters and manmade crises. A central tenet of this procurement strategy is the recognition that storage capacity and robust logistics are the essential infrastructure required to successfully manage, preserve, and rotate this buffer stock. Without adequate facilities to protect the grain from spoilage or pests, the objective of food availability would be compromised; thus, the NFA emphasizes that scientific storage is key to ensuring the rice remains safe for human consumption over time.

In line with Villamar (2022), strategic procurement of palay is fundamentally designed to serve as a socioeconomic safety net, specifically intended to assure farmers' income by shielding them from the detrimental effects of volatile and predatory market pricing. By providing a reliable outlet for their harvest, the government protects small-scale producers from the boom-and-bust cycles inherent in the agricultural sector. The National Food Authority (NFA) operationalizes this protection by establishing a fixed government support price for palay, which is strategically set to remain higher than the prevailing farmgate prices offered by private traders, particularly during glut seasons when oversupply typically drives values down. This market

intervention is often further bolstered by comprehensive incentive schemes, such as the Palay Marketing Assistance Program for Legislators and Local Government Units (PAMPLGU), which provides additional premiums to the base buying price. Such financial mechanisms are critical because they encourage continued domestic production by guaranteeing that farmers receive a fair and dignified return for their intensive labor and capital investment.

Pursuant to Robertson (2025), procurement of palay functions as a precision guided mechanism designed to deliver direct financial assistance to legitimate smallholder farmers, effectively preventing largescale traders from unduly exploiting the government's subsidized support prices. By acting as a discerning buyer, the state ensures that public funds are utilized to empower the actual tillers of the soil rather than being siphoned off by wealthy intermediaries who might otherwise engage in predatory arbitrage. To safeguard this mission, the National Food Authority (NFA) has continuously tightened its operational protocols, now mandating that all participating producers be verified and officially listed in the Registry System for Basic Sectors in Agriculture (RSBSA). The agency imposes strict quantity limits on individual deliveries to ensure that the program's benefits are distributed equitably across the farming community and are not captured by massive commercial entities or middlemen masquerading as producers.

As stated by Beltran et al. (2021), procurement of palay is the systematic process of purchasing raw, unhusked rice from farmers to ensure national food security. This process involves setting a government support price that protects local producers from fluctuations in the open market. Procurement strategies are essential for maintaining a strategic reserve that can be released during periods of high inflation. The literature highlights that effective procurement requires efficient logistics to move grain from farm gates to warehouses. It acts as a mechanism to incentivize local production by providing a guaranteed market. Successfully managing this stage is the first critical step in the entire rice supply chain.

In accordance with Dawe et al. (2020), palay procurement involves the direct acquisition of paddy by state agencies or private wholesalers during the harvest peak. The timing and volume of these purchases are crucial for preventing a collapse in farm-gate prices. This activity serves as a primary intervention tool for governments to support the livelihoods of rural workers. Procurement systems must include rigorous quality checks to ensure the grains meet moisture and purity standards. Without organized procurement, farmers are often forced to sell at a loss to predatory buyers. The efficiency of this process determines the overall success of national rice self-sufficiency programs.

The procurement of palay is a strategic operation centered on establishing and maintaining national rice buffer stocks to safeguard food security. This initiative ensures a consistent supply is available for mobilization during emergencies, natural disasters, or unforeseen calamities. Beyond emergency relief, the process serves as a socioeconomic safety net by providing farmers with a reliable outlet for their harvest at fixed government support prices. These price interventions protect small-scale producers from volatile market fluctuations and predatory pricing by private traders during periods of oversupply. To ensure these benefits reach the intended recipients, long-term protocols mandate that only verified smallholder farmers listed in official registries can participate. These targeted financial mechanisms and strict delivery limits prevent intermediaries from exploiting the system, thereby empowering actual tillers and encouraging sustained domestic production.

One of the indicators in this study is storage of palay.

According to Gummert (2020), storage of palay is a sophisticated technical process centered on the preservation and maintenance of the grain's intrinsic quality, with a primary focus on the rigorous control of its moisture content (MC) to prevent rapid deterioration. Postharvest experts and agricultural scientists emphasize that maintaining rice at an ideal moisture level specifically around 15% on a wet basis for short grain varieties is a critical threshold for long-term viability. By stabilizing the grain at this specific moisture point, warehouse managers can effectively inhibit the proliferation of fungal growth and significantly reduce the risk of devastating insect infestations that thrive in damper environments. Precise moisture control is essential to minimize the grain's metabolic respiration rate, a natural biological process that, if left unchecked,

generates internal heat, and leads to the self-consumption of the grain's nutrient reserves. Proper storage serves as a vital technological defense against a variety of physical quality losses, including premature germination, unappealing discoloration, and the development of chalkiness, which reduces the market value and milling recovery of the rice.

In line with Abokyi (2021), the storage of palay is the essential physical process that enables the creation and long-term maintenance of a national food security buffer stock. This function is a core mandate of the National Food Authority (NFA), transforming the act of simple warehousing into a strategic instrument of national defense. By effectively managing these reserves, the government can fulfill its social responsibility to provide a stable, accessible supply of rice the country's primary staple during predictable lean seasons or unpredictable events like natural calamities and manmade crises. The storage of palay represents the physical manifestation of a government's commitment to food sovereignty. It ensures that the nation is not merely reacting to the whims of the global market but is proactively securing its own sustenance. In this context, a warehouse is not just a building; it is a critical infrastructure for social equity and national resilience.

Pursuant to Bhattacharya (2021), the storage of palay is the primary driver of time utility, a concept where the value of a commodity is increased simply by changing the time at which it is made available to the market. By holding the grain from the peak harvest periods when a surplus of supply naturally depresses prices for release during periods of scarcity, the storage process bridges the gap between seasonal production and year round consumption. The ability to store palay transforms it from a perishable seasonal crop into a flexible financial asset. This function ensures that the economic value of the harvest is preserved and distributed more equitably across the calendar year, rather than being concentrated in a single, low value window. In this sense, storage is the battery of the rice industry, charging up during times of plenty to power the nation through times of need.

In accordance with Kumar (2018), palay storage is the management of unhusked rice in bulk or bags to preserve milling qualities. It is a critical component of the post-harvest chain that prevents physical loss due to rodents. The author emphasizes that traditional wooden granaries are often insufficient for long-term storage needs. technology now allows for controlled atmosphere storage which significantly extends the shelf life. Proper aeration is necessary to prevent the accumulation of heat within the grain mass. Investing in storage infrastructure is essential for improving the profitability of the rice industry.

In line with Mobarak (2022), the storage of palay refers to the containment of raw rice grains in a secure environment after drying. This process is vital for ensuring that the grain remains at a stable moisture level throughout the year. Poor storage conditions are a leading cause of quantitative losses in developing agricultural economies. The author highlights that effective storage allows farmers to wait for better market prices before selling. Community-level storage facilities can empower small-scale producers by providing a safe place for their harvest. Storage is not just a technical requirement but an economic strategy for producers.

The storage of palay is a technical preservation process that prioritizes moisture control to maintain the grain's intrinsic quality and long-term viability. By stabilizing moisture levels, warehouse managers can inhibit fungal growth, prevent insect infestations, and minimize metabolic respiration that depletes nutrient reserves. Beyond physical preservation, this warehousing serves as a strategic instrument for national food security, allowing the government to maintain essential buffer stocks. These reserves ensure a stable rice supply during lean seasons and provide a critical defense against the disruptions caused by natural calamities or market crises. Economically, the storage process creates time utility by bridging the gap between seasonal harvest surpluses and year-round consumption demands. By holding grain for release during periods of scarcity, storage transforms a seasonal crop into a flexible asset that stabilizes prices and protects national sustenance.

One of the indicators in this study is milling.

According to Takai (2021), the primary objective of milling is to maximize the recovery of whole grains, professionally referred to as the Head Rice Yield (HRY). This metric is the most critical benchmark for quality and profitability, as whole grains command the highest market price and are preferred by

consumers for their superior texture and appearance. To achieve this, long-term multistage milling systems are used. These are carefully configured to process the grain in successive steps cleaning, dehulling, and whitening to minimize mechanical stress. milling is the bridge between the raw agricultural commodity and the refined commercial product. By focusing on HRY, processors ensure that the inherent quality established during the growth and storage phases is preserved and translated into maximum financial return.

1.6.2. Related Studies

One of the indicators in this study is gross income.

According to Simons (2023), gross income represents the initial and most comprehensive phase in the process of income determination. Legal scholars suggest that the legislative framework tends toward broad inclusion for all forms of financial gain. Under this principle, nearly any receipt that constitutes an accession to wealth must be included in gross income calculations. The only exceptions to this rule are those specifically carved out by statute or longstanding settled custom. This practical, statutory focused definition ensures that the total intake of cash or property is properly accounted for by tax authorities. Only specific, legislated exclusions can prevent a particular receipt from being classified as taxable wealth.

In line with Benin (2024), gross income is fundamentally defined as the total amount of value received by or accrued to a resident taxpayer. This figure serves as the essential starting point for financial calculations before any deductions are applied. The statutory definition relies on two core mechanisms to determine whether an item should be included. First, the amount must be either physically received or legally accrued to the individual within the specific assessment period. Second, the regulation applies broadly regardless of whether the income is realized in cash or as an in-kind benefit. By capturing all forms of wealth at the outset, the system ensures a comprehensive base for taxation or accounting. Together, these elements form a rigid framework for identifying an individual's total economic gain.

Pursuant to Hanke (2021), gross is fundamentally limited to amounts that arise specifically from the active pursuit of gain. This distinction is crucial because it separates taxable income from the mere realized value of an underlying source. Under this principle, the tax system distinguishes between nontaxable capital returns and actual taxable earnings. A taxpayer's primary intention to pursue profit serves as a key factor in classifying a receipt as gross income. Without this profit seeking motive, many financial inflows may be viewed as a return of capital rather than new wealth. This narrow focus ensures that only genuine economic growth is subjected to assessment. This intentionality framework provides a clear boundary for what the law considers a taxable event.

As indicated by OECD (2023), gross income of farmers is defined as the total value of output from agricultural production plus any direct government payments. This figure represents the raw economic inflow before any production costs or capital consumption are accounted for. In international comparative studies, this metric is used to measure the total size of the agricultural economy relative to other sectors. It includes both the sales of crops and livestock as well as the value of farm products consumed within the household. Because it ignores the rising cost of inputs, it can sometimes provide a skewed view of actual financial well-being. It serves as a vital baseline for calculating the overall productivity of rural landholdings.

Consistent to Lowder et al. (2021), gross income for smallholder farmers encompasses the total revenue from agricultural sales and the imputed value of home-grown food. Their study highlights that for the majority of the world's farmers, this figure is highly dependent on local market access and weather patterns. It is often used by development agencies to categorize farms by their commercial potential rather than their actual profitability. The researchers argue that gross income levels are strongly correlated with the size of the land cultivated by the family. Fluctuations in this figure directly impact a household's ability to engage with the formal economy. It is a measure of total economic output rather than a reflection of disposable wealth.

Gross income represents the initial and most comprehensive phase of determining a taxpayer's total financial gain. Under broad legislative principles, almost any receipt that constitutes an accession to wealth is

included unless specifically excluded by statute. This figure serves as the essential starting point for all financial calculations before any deductions or adjustments are applied. To be included, value must be either physically received or legally accrued as cash or in-kind benefits during the assessment period. However, some frameworks limit this definition to amounts arising specifically from the active and intentional pursuit of profit. By distinguishing between genuine earnings and the mere return of capital, this structure ensures that only actual economic growth is subjected to assessment.

According to Hibob (2018), net income represents the final profit available for either distribution to shareholders or reinvestment back into the company. It is calculated as the total sum remaining after all obligations, including debt interest and taxes, have been fully satisfied. A high and positive net income serves as a clear signal of robust financial health and operational efficiency. This figure demonstrates a company's ability to fund organic growth, pay out dividends, or strategically reduce its debt. Because it reflects the bottom line, this metric guide's crucial corporate finance decisions regarding capital allocation. Net income acts as the primary benchmark for assessing a business's long-term viability and strategic success.

In line with Blackwell (2019), net income serves as the most comprehensive measure of a company's profitability by encompassing all financial activities. Unlike gross profit, which only accounts for the cost of goods sold, this figure includes operating expenses and financing costs. It further incorporates nonoperating gains, losses, and all applicable taxes to provide a complete financial picture. By factoring in every income stream and onetime event, it offers a level of detail that core operational metrics lack. This total transparency is crucial for calculating Earnings Per Share, a metric widely used by investors to judge performance. Net income acts as the single definitive figure that summarizes a firm's overall economic efficiency.

Pursuant to Wellman (2018), net income for an individual is fundamentally defined as their total take-home pay after all obligations are met. This figure is calculated by starting with gross income and subtracting mandatory withholdings and various deductions. These typical deductions include federal and state income taxes, as well as Social Security and Medicare contributions. Unlike the total amount earned, this specific figure represents the actual cash a person has available for their immediate needs. It serves as the most accurate basis for personal budgeting, daily spending, and long-term saving. Within the realms of personal finance and taxation law, net income remains a critical measure of an individual's true economic power.

As indicated by European Commission (2024), farm net income is the remuneration for the farmer's labor, management, and capital after all operating expenses have been paid. This calculation involves subtracting total input costs, depreciation, and taxes from the total output value. It represents the final amount available for the farming family to save or spend on non-farm needs. In the context of the Common Agricultural Policy, this figure is the primary indicator used to evaluate the standard of living in rural areas. The Commission notes that this income is often much lower and more volatile than incomes in other economic sectors. It is the definitive measure of the economic viability of a farm over several seasons.

Consistent to Mapila et al. (2022), net income for rural farmers is the surplus remaining after accounting for both the cash and opportunity costs of production. Their research shows that when labor costs are properly imputed, the net income of many small farms is surprisingly low. This figure is critical for determining whether a household will fall above or below the national poverty line. Farmers with a positive net income are significantly more likely to adopt sustainable land management practices. A consistently negative net income leads to land abandonment and rapid rural-to-urban migration. It serves as the most accurate financial pulse of a farming community's health.

Net income represents the final profit available for distribution to shareholders or reinvestment after all financial obligations, including debt and taxes, are satisfied. As a primary indicator of financial health, this figure demonstrates a company's capacity to fund growth, pay dividends, or reduce outstanding debt. It provides a comprehensive view of profitability by incorporating all operating expenses, nonoperating gains, and onetime losses that other metrics might overlook. This level of transparency is essential for determining

earnings per share and guiding strategic corporate finance decisions. For individuals, the concept translates to take-home pay, calculated by subtracting mandatory taxes and withholdings from gross earnings. Whether for a corporation or a person, this figure serves as the most accurate measure of true economic power and long-term viability.

According to Johns (2024), income stability is defined statistically by the absence of severe or unpredictable fluctuations in earnings over time. This metric is usually measured annually to identify whether a person or business maintains a consistent financial flow. According to this framework, a truly stable income does not suffer from serious variations that disrupt financial planning. These variations are typically quantified as changes exceeding a specific threshold, such as a 25% shift within a single year. By focusing purely on measurable volatility, this definition highlights the degree to which an income stream remains constant. It serves as a vital quantitative benchmark for determining the long-term financial predictability of an economic entity.

In line with Cabrera (2019), income stability is defined as a measure of minimal fluctuations across key economic indicators. Economists often link this stability to the smooth growth of real GDP and the maintenance of low unemployment rates. These broad factors directly influence the aggregate income of a specific region or population. According to reports from Concordia University, an economically stable region follows a consistent growth path with very little volatility. This environment is further characterized by controlled inflation and steady industrial output. From this perspective, an individual's income stability is viewed as a direct derivative of the broader regional or national economic health.

Pursuant to Banerjee (2023), income stability is conceptualized as a significant factor that enhances job attractiveness by minimizing personal financial risk. Research suggests that this stability is just as crucial for overall job satisfaction as professional qualifications. For the individual worker, a high degree of income predictability signals that their employment is fundamentally secure. This reliability offers a level of financial certainty that effectively removes a major source of daily life stress. Stable earnings allow employees to focus more on their career development and long-term goals. This perspective successfully bridges purely financial metrics with broader psychological and social wellbeing outcomes.

As indicated by World Bank (2022), income stability in agriculture refers to the absence of extreme fluctuations in the earnings of farming households over time. The Bank defines this as a state where farmers can predict their future cash flows with a reasonable degree of accuracy. This stability is vital for allowing households to plan for long-term expenses like education and healthcare. In many developing nations, the lack of this stability is a major driver of chronic rural debt and food insecurity. The report emphasizes that climate-smart agriculture is the primary tool for reducing environmental shocks to income. Stability is treated as a core component of agricultural resilience and sustainable development.

Consistent to Tang and Wang (2023), agricultural income stability is the capacity of a farm to maintain a consistent revenue stream despite market and climate volatility. Their study indicates that crop diversification is the most effective on-farm strategy for achieving this financial consistency. It represents the smoothing of consumption patterns, ensuring that a family has enough food even when one crop fails. Stable income environments are associated with higher rates of children remaining in school within rural districts. The researchers argue that without stability, farmers are trapped in a cycle of short-term survival rather than long-term growth. It is a fundamental requirement for the ization of the agricultural sector.

Income stability is statistically defined by the absence of severe or unpredictable fluctuations in earnings, typically measured through annual variations. By maintaining a constant financial flow, economic entities avoid the disruptions to long-term planning that occur when income shifts exceed specific percentage thresholds. Beyond individual metrics, this stability is often linked to broader economic health, including steady industrial output and consistent growth in real GDP. In regions characterized by low unemployment and controlled inflation, individual income predictability tends to mirror the overall stability of the national economy. This financial reliability serves as a critical driver of job attractiveness, significantly reducing personal risk and daily life stress for workers. The presence of steady earnings allows individuals to move

beyond immediate survival and focus more effectively on career development and long-term psychological wellbeing.

According to Rizov (2023), price satisfaction acts as a primary indicator that a customer does not feel exploited or vulnerable during a transaction. Research on consumer vulnerability suggests that perceived fairness drops significantly when customers feel a seller is exploiting their urgent needs. Therefore, price satisfaction represents the positive outcome of an offering that acknowledges the buyer's unique psychological state. This concept assures the consumer of fair treatment and reinforces a sense of security in the marketplace. At its core, maintaining this satisfaction is about proactively avoiding the negative emotions associated with being taken advantage of. Ethical pricing strategies foster long-term trust by prioritizing the human element over mere transactional gain.

In line with Cisse (2022), price satisfaction serves as one of the primary antecedents for achieving overall customer satisfaction and long-term brand loyalty. Many experts assert that affordable and appropriate price fairness directly drives consumer happiness alongside service and product quality. This perspective suggests that price satisfaction cannot exist in isolation; it is a necessary ingredient for business success. Within the broader equation of market dynamics, fair pricing is essential for expanding market share and retaining customers. When a consumer feels they have received a fair deal, the emotional outcome is often a commitment to continued patronage. The strategic alignment of price and value forms the bedrock of a sustainable and profitable relationship between a brand and its audience.

Pursuant to Coates (2023), a more nuanced view splits price fairness, and thus price satisfaction, into the two distinct dimensions of distributive and procedural fairness. Distributive fairness refers specifically to a customer's satisfaction with the actual price outcome, or the final amount paid. In contrast, procedural fairness focuses on the satisfaction with the transparency and methods used to determine that price. High levels of price satisfaction are only achieved when consumers perceive both the result and the pricing practices as reasonable. If either the process is opaque or the final cost is excessive, the overall sense of fairness is significantly diminished. Businesses must manage both the price point and the surrounding communication to ensure a positive customer experience. This dual dimension framework provides a more comprehensive understanding of how value is perceived in the marketplace.

As indicated by FAO (2021), price satisfaction among farmers is the perception that the monetary reward for their produce is commensurate with the labor and input costs incurred. The FAO defines this as a key social indicator that influences the willingness of farmers to continue producing essential staples. It is often linked to the transparency of the market and the presence of competitive buyers. When satisfaction is low, there is a high risk of crop switching, which can lead to national shortages of key foods. The report suggests that price satisfaction is highest when farmers have direct access to wholesale markets without intermediaries. It is a critical metric for evaluating the success of national food price policies.

Consistent to Ullah et al. (2020), price satisfaction is a psychological state where the farmer finds the farm-gate price to be fair and rewarding. Their study explores how satisfaction levels are often lower among small-scale producers compared to large industrial farms. This is due to the limited bargaining power and high transaction costs faced by those in remote areas. The research suggests that collective marketing through cooperatives significantly boosts price satisfaction by securing better deals. Satisfied farmers are more likely to reinvest their earnings back into soil health and advanced machinery. Price satisfaction acts as an engine for agricultural innovation and productivity.

Price satisfaction serves as a primary indicator that a consumer does not feel exploited or vulnerable during a market transaction. By prioritizing ethical pricing, businesses can acknowledge the buyer's psychological state and foster a sense of security and marketplace trust. This perception of fairness is a critical driver of overall customer happiness, acting as a necessary antecedent to long-term brand loyalty. The strategic alignment of cost and value is essential for expanding market share and encouraging continued consumer patronage. To understand this concept more deeply, satisfaction must be split into distributive fairness regarding the final amount paid and procedural fairness regarding the transparency of the pricing

methods. Achieving high price satisfaction requires managing both the actual price point and the surrounding communication to ensure the entire exchange is perceived as reasonable.

According to Keese (2020), the procurement of palay serves as a critical macroeconomic tool designed to maintain national price stabilization. This process is essential for protecting the financial interests of both agricultural producers and general consumers. By acting as a hedging policy against income losses, the government intervenes to mitigate the risks of extreme price fluctuations. During surplus periods, agencies purchase excess grain to prevent market prices from crashing and harming farmer livelihoods. Conversely, the government releases these stored stocks during shortages to effectively curb sudden price spikes. This intervention is necessary because private markets often understored grain and fail to account for the wider social costs of food insecurity.

In line with Pangrazio (2023), procurement of palay is fundamentally a market access program for smallholder farmers in remote areas, aiming to improve their objective and subjective wellbeing. It ensures that farmers who otherwise might be forced to sell to local middlemen at unfavorable prices have an assured market for their produce at a remunerative price. Studies show that farmers who sell to NFA generally receive a higher net price and higher net farm income compared to those selling solely to private traders.

Pursuant to Singh (2022), the procurement of palay serves as a rigorous exercise in commodity quality control and standardization, enforced by the National Food Authority (NFA). To complete a successful sale, farmers must adhere to strict criteria regarding moisture content and grain purity. These specifications also limit the allowable percentage of damaged or discolored grains within a single batch. A key component of this process is the Equitable Net Weight Factor, which adjusts the final payout based on these quality metrics. Such formal requirements incentivize farmers to invest in better postharvest handling and drying techniques to secure the highest possible price. This system professionalizes the agricultural supply chain by rewarding high-quality production.

As indicated by Briones (2021), procurement of palay is the government-led activity of buying unhusked rice from local farmers to maintain a buffer stock. This process is used as a mechanism to defend a floor price during harvest seasons when supply is high. By removing surplus grain from the market, the government prevents a collapse in farm incomes. The study highlights that the efficiency of this process is often limited by the storage capacity of state warehouses. Effective procurement requires a well-distributed network of buying stations in major rice-producing provinces. It is a central pillar of rice self-sufficiency and food price stabilization programs.

Consistent to Jha and Gupta (2023), palay procurement involves the systematic purchase of paddy by licensed agents to meet national welfare requirements. Their research focuses on how procurement systems have reduced the time farmers wait for payment. This activity is vital for ensuring that the poorest citizens have access to affordable rice through subsidized distribution. The study notes that procurement targets are often set based on the anticipated harvest and existing reserve levels. If the procurement price is too low, farmers will bypass the government and sell to private mills. Setting a competitive procurement price is essential for the success of the program.

The procurement of palay serves as a critical macroeconomic tool designed to maintain national price stabilization for the benefit of both producers and consumers. By acting as a hedge against income loss, government intervention prevents market prices from crashing during surpluses and curbs sudden spikes during shortages. This process also functions as a vital market access program, ensuring smallholder farmers in remote areas have a reliable outlet that offers more remunerative prices than local middlemen. Evidence suggests that farmers participating in these government programs generally achieve higher net incomes compared to those relying solely on private traders. The procurement process enforces rigorous quality control standards, requiring specific moisture content and grain purity for a successful sale. These strict criteria and financial incentives encourage better postharvest handling, effectively professionalizing the agricultural supply chain.

One of the indicators in this study is storage of palay.

According to Dela Cruz et al. (2021), storage of palay is an indispensable prerequisite for achieving optimal milling recovery and maximizing the proportion of high value head rice. Research on postharvest protocols indicated that immediate drying and subsequent storage, particularly under controlled conditions like hermetic sealing, significantly increased milling recovery rates. The stored palay's structural integrity is maintained, ensuring that the grains do not shatter during the milling process, which directly impacts the milled rice's value

In line with PhilRice. (2023), storage of palay is increasingly viewed as a risk mitigation tool against the volatility induced by climate change and extreme weather events. The need for efficient, insulated storage is heightened because rising temperatures and humidity accelerate grain deterioration and pest activity, as discussed in research. This means advanced storage facilities are essential to safeguard harvests from frequent typhoons, droughts, and heat induced losses, ensuring long-term supply resilience.

Pursuant to MDPI (2025), a critical practical meaning of effective storage is minimizing significant postharvest losses, which can be as high as 15–20% in developing countries due to factors like pest infestation and poor infrastructure. They found that adopting improved technologies, such as hermetic storage bags, directly reduces these quantity losses by preventing Pest related damage and maintaining a safer environment for the grain. Storage is, therefore, a key component in improving overall resource use efficiency in the rice sector.

As indicated by Myat et al. (2021), storage of palay refers to the preservation of unhusked rice in a way that minimizes post-harvest losses and maintains seed viability. This study highlights that moisture content must be maintained below 14% to prevent the growth of aflatoxin-producing fungi. Traditional storage methods in many parts of Asia are often inadequate for multi-month preservation. The research advocates for the use of hermetic storage, which creates an oxygen-free environment to naturally control pests. Proper storage is the key to ensuring that palay can be milled into high-quality rice later in the year. It serves as a vital economic buffer for farmers, allowing them to time their sales to the market.

Consistent to Thamkaew et al. (2021), palay storage is the management of unhusked rice grains in bulk to prevent quality degradation during the waiting period for milling. Their research shows that high temperature and humidity during storage are the primary causes of yellowing and grain brittleness. The study evaluates how ventilated silo systems can preserve the head rice yield better than traditional bag storage. Effective storage management includes regular monitoring of grain temperature and the use of integrated pest management. Without proper storage, the economic value of the harvest can drop by as much as 20% in just a few months. It is an essential link in the rice value chain for maintaining national food security.

Proper storage of palay is an indispensable prerequisite for achieving optimal milling recovery and maximizing the output of high value whole grains. By maintaining the structural integrity of the grain, controlled storage environments prevent shattering during processing, which directly preserves the commodity's market value. Beyond quality control, efficient warehousing serves as a vital risk mitigation tool against the volatility and extreme weather patterns induced by climate change. Advanced, insulated facilities are essential to safeguard harvests from heat induced deterioration and pest activity, ensuring long-term supply resilience. Implementing improved technologies, such as hermetic storage, drastically minimizes postharvest losses that often stem from poor infrastructure. These storage practices represent a key strategy for improving resource efficiency and protecting the total volume of food available for consumption.

One of the indicators in this study is milling.

According Alipio (2022), milling encompasses rigorous quality control procedures to ensure the final product is clean and meets established grade standards. Precleaning and destoning stages are integrated into the long-term milling system to remove foreign matter like stones, dust, and unfilled grains before husking. This essential function ensures food safety and guarantees the purity of the milled rice product for domestic and international markets.

2. Methodology

The research methodology that was applied throughout the entire study is presented in this chapter. This includes the research procedure, research instrument, population and sampling techniques, research design, and statistical analysis of the data.

2.1. Research Design

To determine the level of National Food Authority (NFA) buffer stock management with regard to farmer income as evaluated by the farmers in Laguna, the descriptive research design employing correlational methods was used. Descriptive correlational research is a quantitative research design that combines the goal of describing variables with the goal of exploring the relationships between them, all without manipulating any of the variables. It is a non-experimental design used to paint a picture of the current state of a situation or population while simultaneously determining the degree and direction of associations between two or more characteristics.

According to Hancock et. al. (2019), quantitative research design is a strategy that lays the foundation for integrating all elements of quantitative research so that results are reliable, bias-free, and generalized as much as possible. Moreover, Bloomfield and Fisher (2019), define descriptive research design as a method of investigating current phenomena with extreme precision and explaining precisely what researchers have observed.

The purpose of descriptive research is to determine the Laguna farmers NFA buffer stock management such as procurement of palay, storage of palay, milling, rice storage, rice distribution, auction of stocks, inventory control, forecasting, demand planning; and contingency planning; farmer income such as gross income, net income, income stability and price satisfaction.

One kind of research design that seeks to methodically gather data in order to characterize a situation, population, or phenomenon is called descriptive research design. Through observation and data collection on a particular subject, descriptive research offers valuable insights that can guide future investigations and aids in researchers' understanding of a particular problem. When using a descriptive research design, a topic is observed, and data is gathered without an attempt to infer cause-and-effect relationships. Descriptive research aims to characterize the relationships, patterns, and trends found in the data while presenting a thorough and accurate picture of the population or phenomenon under study.

Surveys, observational studies, and case studies are examples of descriptive research methods. Both qualitative and quantitative data can be gathered. Descriptive research yields insightful information that guides future investigations, but it does not prove causation.

2.2. Respondents of the Study

The respondents of this study were rice farmers from selected municipalities in Laguna, namely Victoria, Bay, Siniloan, and Famy. These areas were chosen due to their high and recent volume of palay sold to the National Food Authority (NFA), indicating active participation in rice production and government procurement. The farmers primarily relied on palay cultivation as their main source of livelihood, reflecting the agricultural focus of these municipalities.

The respondents of the study were composed of 343 respondents who are farmers from different District of Laguna primarily from the largest distributor of palay which are Bay, Victoria, Siniloan and Famy also they are chosen because they are the ones who can benefit from the research. They are also the ones who gave the ratings on the research. NFA buffer stock management can be measured using procurement of palay, storage of palay, milling, rice storage, rice distribution, auction of stocks, inventory control, forecasting, demand planning; and contingency planning. Farmer income can be measured using gross income, net income, income stability and price satisfaction. And farmer market participation can be measured using

selling of palay to NFA.

Table 1 shows the frequency distribution of the respondents. Five-hundred fourteen farmers (514) came from Bay, six hundred fifty farmer (650) came from Victoria, seven hundred eight farmers (780) came from Siniloan and four hundred one farmers (401) came from Famy which resulting to the total of two thousand three hundred forty-five (2,345) respondents.

Table 1:
Frequency Distribution of the Respondents

Municipality	***Population Size***	***Sample size***
Bay	514	76
Victoria	650	96
Siniloan	780	115
Famy	401	59
Total	**2,345**	**346**

In the Table 1, the sample size was computer using Yamane's Formula, expressed as:

$$n = \frac{N}{1 + N\,(e)^2}$$

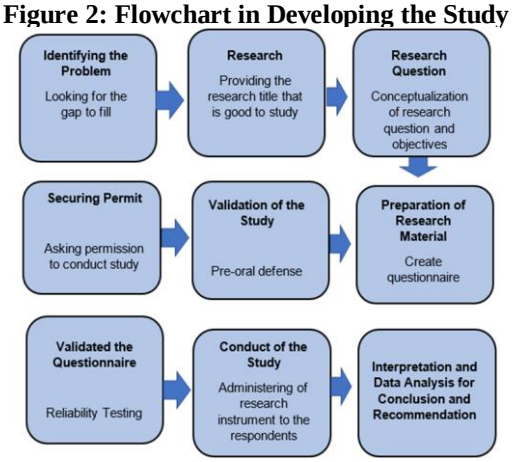
where:
n= sample size,
N= total population of respondents in the identified government agencies
e= margin of error (0.05 for 95% confidence level).

The total population consisted of 2,345 farmers of Laguna across four (4) selected municipalities, and using a margin of error of 0.05 with a 95% level of confidence, this resulted in an overall sample size of 346 respondents. To ensure fair representation, the sample was proportionally allocated to each municipality based on its size. This approach helped ensure that each municipality was adequately represented in the study's findings. Additionally, this method improved the reliability and generalizability of the results by minimizing sampling bias and reflecting the actual distribution of farmers across the selected areas.

2.3. Research Procedure

The chart contains the steps that the researcher did in formulating the study.

Figure 2: Flowchart in Developing the Study



First was Identifying the Problem, which includes looking for the gap to fill and determining the specific area of concern to be addressed by the study. Second was doing Research, which involved reviewing related literature and providing the research title that is good to study. This was followed by Crafting the Research Question, which includes the conceptualization of the research problem, the formulation of objectives, and the development of questions that guided the entire investigation.

The next step was the Preparation of the Research Material, which includes creating the questionnaire as the main data-gathering tool of the study. After this, the Validation of the Study was undertaken through a pre-oral defense, where suggestions and recommendations from experts were considered to refine both the research design and instrument. This was followed by Securing a Permit, which required asking permission to formally conduct the study among the intended respondents.

Once permission was granted, the Validation of the Questionnaire was conducted. This included subjecting the instrument to reliability testing to ensure that it would yield consistent and accurate results. The Conduct of the Study came next, which involved the administering of the validated questionnaire to the respondents. The final stage was the Interpretation and Data Analysis for Conclusion and Recommendation, wherein the gathered data were analyzed using appropriate statistical tools. From this analysis, conclusions were drawn, and recommendations were formulated to provide insights and practical applications based on the study's findings.

2.4. Research Instrument

The self-made questionnaire was used as a research instrument in data gathering. The questionnaire composed of two (2) parts corresponding to the five (5) sets of criteria which are strongly agree, and efficiency, and each variable has questions. To evaluate, the rating scale, description, and interpretation was used in the gathered data. A 5-point Likert-type scale was prepared by the researcher. To evaluate, the rating scale, description, and interpretation was be used as shown below.

Likert Scale for SOP 1 and 2

Scale	Range	Remarks	Verbal Interpretation
5	4.21-5.00	Strongly Agree	Very Highly Managed
4	3.41-4.20	Agree	Highly Managed
3	2.61-3.40	Moderately Agree	Moderately Managed
2	1.81-2.60	Disagree	Lowly Managed
1	1.00-1.80	Strongly Disagree	Very Lowly Manage

The research instruments that the researcher provided was reviewed for validity by their thesis adviser, a subject specialist (content), Language expert (language and grammar), and a Statistician (internal consistency by Cronbach's alpha of the test and survey) before giving it to the respondents.

2.5. Statistical Treatment of Data

Non-probability sampling is defined by the absence of random selection. This approach relies on the subjective judgment of the researcher, convenience, or specific criteria, resulting in a sample where the probability of any given unit being included is unknown. While offering expediency and cost-effectiveness, the non-random nature of this method introduces significant limitations regarding statistical inference and the assessment of potential bias.

Baker et al. (2018), defines it as a method of selecting units from a population using a subjective. This crucial difference leads to its defining features: first, the probability of inclusion is unknowable, making it impossible to calculate a sampling error or statistically generalize results to the wider population with confidence. Second, it often does not require a complete sampling frame a comprehensive list of all units in the population which contributes to its ease and low cost. Finally, it carries a high inherent risk of selection bias due to the researcher's influence or the self-selection of participants.

Weighted mean and standard deviation were used to determine level of National Food Authority (NFA) buffer stock management in terms of procurement of palay, storage of palay, milling, rice storage, rice distribution, auction of stocks, inventory control, forecasting, demand planning and contingency planning. Weighted mean and standard deviation were also used to level of farmer income in terms of gross income, net income, income stability and price satisfaction.

One way to explain the findings of a series of measurements is using the standard deviation statistic, which can offer a thorough grasp of the properties of the data set. The mean, standard deviation, frequency percentage and Pearson R was used. The range indicates the degree of variation in the data, giving the highest and lowest scores without disclosing any information about the data's pattern.

The statistical treatment used in significant relationship between NFA Buffer Stock Management and farmer income was Pearson Product Moment Correlation.

3. Results and Discussion

This chapter discusses the results that were yielded from the treatment of the data that was gathered in this study. The following tabular presentations and discussions further determine the adequacy of instructional materials and its relationship to student engagement and achievement.

3.1. Level of Buffer Stock Management

In this study, the level of buffer stock management in terms of procurement of palay, storage of palay, milling, rice storage, rice distribution, auction of stocks, inventory control, forecasting, demand planning and contingency planning was determined through mean and standard deviation.

The following tables shows the level of National Food Authority (NFA) buffer stock management for the improvement of farmer income.

Table 2 shows the level of Procurement of Palay. As presented, it is manifested that the NFA's procurement system is sufficiently protected against large private traders attempting to sell under the guise of small farmers (M=4.05, SD=0.79). Also, it is perceived that the NFA maintains an adequate rice buffer stock to address national emergencies and calamities (M=4.03, SD=0.87), and that the agency has successfully implemented rules to ensure only legitimate, registered farmers benefit from support prices (M=4.03, SD=0.83). Furthermore, respondents agree that the buffer stock is sourced exclusively from local farmers and that the new Price Range Scheme (PRICERS) is effective in encouraging government's procurement.

Table 2.
Level of Procurement of Palay

Statements	*Mean*	*SD*	*Remarks*
1. The NFA's new Palay Procurement Price Range Scheme (PRICERS) is effective in encouraging local farmers to sell their palay to the government.	3.92	0.86	Agree
2. The NFA maintains an adequate rice buffer stock to address national emergencies and calamities.	4.02	0.87	Agree
3. The NFA buffer stock is sourced exclusively from local farmers as mandated by law.	4.02	0.82	Agree
4. The NFA's procurement system is sufficiently protected against large private traders who attempt to sell palay under the guise of being small farmers.	4.05	0.79	Agree
5. The NFA has successfully implemented new rules to ensure only legitimate, registered farmers benefit from the support price and not large traders.	4.03	0.83	Agree
Weighted Mean	4.01		
SD	0.37		
Verbal Interpretation	Highly Managed		

The level regarding the procurement of palay gained an overall weighted mean of 4.01 with a standard deviation of 0.37, verbally interpreted as Highly Managed. This indicates a strong consensus among the selected farmers that the current procurement protocols are functional and effectively targeted toward the intended beneficiaries. With the implementation of stricter registration rules and the PRICERS scheme, farmers feel a sense of security and fair competition against large-scale commercial entities.

In summary, the results indicate that a transparent and well-guarded procurement system is essential in maintaining the integrity of agricultural support programs. By ensuring that the NFA buffer stock is sourced locally and protected from the interference of large private traders, the government provides a reliable safety net for small-scale producers. This structural oversight effectively bridges the gap between national food security requirements and the economic welfare of local farmers, enabling them to sustain their livelihoods with confidence. These robust procurement practices empower farmers to remain active participants in the formal economy, fostering a more resilient and self-sufficient agricultural sector.

Likewise, the result of the discussion agrees in the study of Quigley (2024), which states that procurement of palay core meaning is establishing a national rice buffer stock to ensure food availability, particularly during emergencies or calamities. The NFA's official mandate, as noted in their program description, is to maintain an optimal stock level to be readily used for disaster-relief programs and to sustain the nation during natural or man-made crises.

In parallel, Keese (2020), states that procurement of palay serves as a macro-economic tool for price stabilization, which is essential for both producers and consumers. As a hedging policy against income losses due to price fluctuations, the government buys during surplus periods to prevent prices from crashing and releases the stored grain during shortages to curb price spikes.

Table 3 shows the level of Storage of Palay. As presented, it is manifested that the NFA is successful in maintaining the quality of its current buffer stock (*M*=4.06, *SD*=0.77). Also, it is perceived that regulatory limitations on rice disposition do not hinder efficient stock cycling and warehouse space management (*M*=4.04, *SD*=0.82), and that the existing physical warehouse capacity is sufficient to hold the mandated 15-day national rice buffer stock (*M*=3.99, *SD*=0.84). The respondents also recognize that the NFA is aggressively undertaking a modernization program and that rehabilitated warehouses are improving operational efficiency, despite noting that limited drying facilities still restrict the ability to buy wet palay during the rainy season.

Table 3.
Level of Storage of Palay

Statements	*Mean*	*SD*	*Remarks*
1. Limited drying facilities severely restrict the NFA's ability to buy palay, especially wet palay during the rainy season.	3.97	0.88	Agree
2. The NFA's existing physical warehouse capacity is sufficient to hold the mandated 15-day national rice buffer stock.	3.99	0.84	Agree
3. Regulatory limitations on rice disposition does not hinder efficient stock cycling and warehouse space management.	4.04	0.82	Agree
4. The NFA is aggressively undertaking a modernization program to fix its facility problems.	3.99	0.87	Agree
5. The NFA is successful in maintaining the quality of its current buffer stock.	4.06	0.77	Agree
6. Rehabilitated warehouses are improving the operational efficiency and resilience of the buffer stock.	3.98	0.88	Agree
Weighted Mean	4.01		
SD	0.36		
Verbal Interpretation	Highly Managed		

The level regarding the storage of palay gained an overall weighted mean of 4.01 with a standard deviation of 0.36, verbally interpreted as Highly Managed. This indicates strong agreement among the selected farmers that the post-harvest and storage infrastructure of the NFA is being managed effectively. While challenges like drying capacity during the wet season remain a concern, the farmers express confidence in the agency's ability to preserve the quality of the grain and manage the physical volume of the national reserves.

In summary, the results indicate that robust storage and maintenance protocols are fundamental to the success of national food security efforts. By ensuring that warehouse facilities are rehabilitated and that stocks are cycled efficiently, the government protects the value of the farmers' produce from spoilage and waste. This operational efficiency effectively bridges the gap between harvest peaks and periods of high demand, enabling a stable supply of rice regardless of seasonal fluctuations. Modern and well-managed storage systems empower the agricultural sector to be more resilient, ensuring that the fruits of the farmers' labor are preserved.

Similarly, Dela Cruz et al. (2021), also agrees that storage of palay is an indispensable pre-requisite for achieving optimal milling recovery and maximizing the proportion of high-value head rice. In addition, Gummert (2020), states that storage of palay is maintaining the quality of the grain, particularly by controlling its moisture content to prevent rapid deterioration.

Table 4 shows the level of Milling. As presented, it is manifested that the NFA relies significantly on contracting private milling services to process procured palay into rice for the buffer stock (*M*=4.07, *SD*=0.68). Also, it is perceived that the NFA's policy ensures only licensed and qualified millers are contracted to maintain the quality of the final stock (*M*=4.04, *SD*=0.76), and that there are sufficient integrated facilities to process wet palay efficiently into high-quality rice (*M*=4.04, *SD*=0.85). The respondents also agree that while internal capacity is currently being utilized, the ongoing modernization program is recognized as a key factor in boosting internal capabilities and reducing long-term dependence on private contractors.

Table 4.
Level of Milling

Statements	*Mean*	*SD*	*Remarks*
1. The NFA rely significantly on contracting private milling services to process the procured palay into rice for the buffer stock.	4.07	0.68	Agree
2. Contracting private millers is a financially transparent and effective way to manage the conversion of palay into rice.	4.03	0.87	Agree
3. The NFA's policy ensures that only licensed, qualified millers are contracted, maintaining the quality of the final buffer stock	4.04	0.76	Agree
4. The NFA's current internal rice milling capacity is sufficient to handle a significant portion of the palay buffer stock.	3.98	0.85	Agree
5. The NFA's ongoing modernization program significantly boost its internal rice milling capacity, reducing reliance on private contractors	3.97	0.88	Agree
6. The NFA has sufficient integrated facilities to process wet palay efficiently into high-quality buffer stock rice.	4.04	0.85	Agree
Weighted Mean	4.02		
SD	0.34		
Verbal Interpretation	Highly Managed		

The level regarding milling practices gained an overall weighted mean of 4.02 with a standard deviation of 0.34, verbally interpreted as Highly Managed. This indicates strong agreement among the selected farmers that the milling phase of the supply chain is being handled with professional oversight and transparency. Farmers express confidence that the transition from raw palay to consumable rice buffer stock is managed through a balanced approach of utilizing private sector expertise while simultaneously building up the government's internal infrastructure.

In summary, the results indicate that a well-regulated milling process is crucial for ensuring that the volume of procured palay is successfully converted into a stable food reserve. By maintaining strict qualification standards for millers and investing in integrated facilities, the government protects the quality of the national rice supply. This strategic management effectively bridges the gap between raw agricultural production and final consumer readiness, enabling the NFA to respond quickly to national needs.

Likewise, the result of the discussion agrees in the study of Takai (2021), which states that milling is to maximize the yield of whole grains, known as Head Rice Yield, which commands the highest market price. They also emphasize that modern multi-stage milling is configured to minimize mechanical stress and grain breakage.

In parallel, Alipio (2022), states that milling encompasses rigorous quality control procedures to ensure the final product is clean and meets established grade standards. Pre-cleaning and de-stoning stages are integrated into the modern milling system

Table 5 shows the level of Rice Storage. As presented, it is manifested that the respondents strongly believe the NFA requires the restoration of the power to sell rice regularly to the public to efficiently manage and cycle its aging buffer stock (M=4.09, SD=0.82). Also, it is perceived that the inability to buy wet palay is directly linked to the lack of sufficient storage-adjacent drying facilities (M=4.05, SD=0.75), and that the NFA is highly successful in maintaining the quality of its current rice buffer stock while minimizing spoilage (M=4.03, SD=0.82). Furthermore, the farmers agree that storage capacity remains a challenge for the 15-day mandate and that strategic warehouse locations are vital for emergency response.

Table 5.
Level of Rice Storage

Statements	*Mean*	*SD*	*Remarks*
1. The NFA is highly successful in maintaining the quality of its current rice buffer stock, minimizing spoilage.	4.03	0.82	Agree
2. The NFA warehouses are strategically located to ensure rapid release of rice for emergency and calamity response.	3.99	0.86	Agree
3. The NFA's current storage capacity is insufficient to maintain the newly mandated 15-day national rice buffer stock.	4.01	0.87	Agree
4. The NFA's inability to buy wet palay is directly linked to the lack of sufficient storage-adjacent drying facilities.	4.05	0.75	Agree
5. The NFA's ongoing modernization program (MAFIM) resolve the agency's storage and facility constraints.	3.96	0.83	Agree
6. The NFA requires the restoration of the power to sell rice regularly to the public to efficiently manage and cycle its aging buffer stock.	4.09	0.82	Agree
Weighted Mean	4.02		
SD	0.33		
Verbal Interpretation	Highly Managed		

The level regarding rice storage gained an overall weighted mean of 4.02 with a standard deviation of 0.33, verbally interpreted as Highly Managed. This indicates a high level of consensus among farmers that while the NFA is doing a commendable job at preserving grain quality, there are significant systemic and infrastructural hurdles to overcome. The data suggests that farmers see stock cycling—the process of releasing older rice to make room for fresh harvests—as a critical missing piece in the current regulatory framework.

In summary, the results indicate that effective rice storage is not merely about physical space, but about the strategic flow and renewal of resources. By addressing the lack of drying facilities and advocating for the power to cycle aging stocks through public sales, the government can ensure that national reserves remain fresh and high-quality. This operational flexibility effectively bridges the gap between long-term storage and immediate humanitarian need, enabling the NFA to maintain a living inventory rather than a stagnant one. Resolving these facility and regulatory constraints empowers the agency to better protect the nation's food supply, ensuring that the buffer stock is always ready and reliable during times of crisis.

Similarly, International Rice Research Institute defines rice storage as a protective phase in the post-production chain. The primary goal is to provide a buffer between harvest and consumption. They emphasize that storage is not a passive state but an active management of moisture and temperature to prevent losses

In addition, Martin (2021) states that rice storage is a method of moisture management. They argue that because rice is hygroscopic storage must be viewed as the science of achieving an equilibrium moisture content.

Table 6.
Level of Rice Distribution

Statements	*Mean*	*SD*	*Remarks*
1. The NFA's primary role in rice distribution is limited to addressing emergencies and calamities.	3.99	0.84	Agree
2. The NFA is successfully deploying its rice stock during periods of declared food security emergency	3.97	0.86	Agree
3. NFA rice distribution is strategically positioned to help temper price spikes in the retail market.	4.05	0.76	Agree
4. The NFA should have the authority to sell rice regularly to the public and not just during emergencies to stabilize prices.	3.95	0.93	Agree
5. NFA's restricted distribution mandate hinders efficient buffer stock management by preventing regular stock turnover.	4.07	0.75	Agree
Weighted Mean	4.01		
SD	0.36		
Verbal Interpretation	Highly Managed		

Table 6 shows the level of Rice Distribution. As presented, it is manifested that the respondents strongly agree that the NFA's restricted distribution mandate hinders efficient buffer stock management by preventing regular stock turnover (*M*=4.07, *SD*=0.75). Also, it is perceived that NFA rice distribution is strategically positioned to help temper price spikes in the retail market (*M*=4.05, *SD*=0.76), and that the agency's primary role is currently limited to addressing emergencies and calamities (M=3.99, SD=0.84). Furthermore, the farmers agree that the NFA is successful in deploying its stock during food security emergencies, while recognizing that a broader authority to sell rice regularly could further stabilize market prices.

The level regarding rice distribution gained an overall weighted mean of 4.01 with a standard deviation of 0.36, verbally interpreted as Highly Managed. This indicates a solid consensus among the selected farmers that while the current distribution model works during crises, the limitations placed on regular distribution create a bottleneck for inventory management. The data suggests that farmers view the NFA not just as an emergency responder, but as a necessary market stabilizer whose efficiency is currently dampened by restrictive mandates.

In summary, the results indicate that a flexible and proactive distribution strategy is vital for maintaining a healthy agricultural supply chain. By addressing the restrictions that prevent regular stock turnover, the government can ensure that the national buffer stock remains fresh and that market prices remain predictable for both producers and consumers. This policy shift effectively bridges the gap between passive stockpiling and active market intervention, enabling the NFA to manage its resources with greater fluidity. Empowering the agency with a more robust distribution mandate ensures that the national rice supply serves as a consistent tool for economic stability, protecting the welfare of the farmers and the food security of the public alike.

Similarly, International Rice Research Institute defines rice storage as a protective phase in the post-production chain. The primary goal is to provide a buffer between harvest and consumption. They emphasize that storage is not a passive state but an active management of moisture and temperature to prevent losses.

In addition, Martin (2021) states that rice storage is a method of moisture management. They argue that because rice is hygroscopic storage must be viewed as the science of achieving an equilibrium moisture content.

Table 7.
Level of Auction of Stocks

Statements	*Mean*	*SD*	*Remarks*
1. The auction serves the dual purpose of decongesting NFA warehouses and allowing the agency to resume procurement from local farmers.	4.02	0.83	Agree
2. The NFA employs transparent bidding procedures for the public auction of its rice stocks.	4.01	0.84	Agree
3. The current pricing scheme for the auctioned rice stocks is attractive enough to guarantee a successful bidding process.	4.00	0.86	Agree
4. Relying on auctions is the most efficient method for NFA to manage stock aging and turnover.	4.02	0.81	Agree
5. The NFA's policy on stock disposal is flexible enough to prevent stock from becoming truly "condemned" or unfit for consumption.	4.08	0.73	Agree
6. The process for announcing NFA stock auctions is clear and widely disseminated.	4.01	0.76	Agree
7. The bidding procedures and criteria for winning an auction are transparent and easy to understand.	3.97	0.82	Agree
8. The auction system provides a level playing field for all participants, big or small.	4.01	0.88	Agree
9. The results of the auctions are made publicly available in a timely manner.	4.06	0.73	Agree
10. Auctioning is an efficient method for the NFA to dispose of its aging buffer stocks.	4.08	0.83	Agree
Weighted Mean	4.03		
SD	0.26		
Verbal Interpretation	Highly Managed		

Table 7 shows the level of the Auction of Stocks. As presented, it is manifested that the respondents strongly agree that the NFA's policy on stock disposal is flexible enough to prevent stock from becoming unfit for consumption (M=4.08, SD=0.73) and that auctioning is an efficient method for the agency to dispose of its aging buffer stocks (M=4.08, SD=0.83). Also, it is perceived that auction results are made publicly available in a timely manner (M=4.06, SD=0.73) and that the process serves the dual purpose of decongesting warehouses to allow for the resumption of local procurement. Furthermore, the farmers agree that the bidding procedures are transparent, the pricing is attractive for bidders, and the system provides a level playing field for both large and small participants.

The level regarding the auction of stocks gained an overall weighted mean of 4.03 with a standard deviation of 0.26, verbally interpreted as Highly Managed. This indicates a very consistent and high level of trust among the farmers in the NFA's auctioning system. The remarkably low standard deviation suggests that the respondents are in tight agreement that the auction process is the most viable and transparent solution currently available to ensure that rice stocks do not go to waste and that warehouse space is freed up for the next harvest cycle.

In summary, the results indicate that a transparent and efficient auction system is a cornerstone of effective inventory management within the agricultural sector. By implementing flexible disposal policies and ensuring that bidding processes are widely disseminated and fair, the government protects the economic value of the national buffer stock. This systemic approach effectively bridges the gap between long-term storage

and the necessary turnover of goods, enabling the NFA to remain an active buyer in the local market. A well-managed auction system empowers the agency to maintain a fresh and viable rice reserve, ultimately supporting the continuous cycle of production and procurement that benefits local farmers.

Similarly, Cecinando (2024), also agrees that auction of stocks is fundamentally defined as a mechanism for price discovery where the intersection of aggregated supply and demand determines the equilibrium price of a security.

In addition, Idian (2025), states that auction of stocks is a method used for an Initial Public Offering where a company sells its shares to the public for the first time to raise capital.

Table 8 shows the level of Inventory Control. As presented, it is manifested that the NFA is successfully deploying its rice stock during periods of declared food security emergencies (*M*=4.06, *SD*=0.75). Also, it is perceived that the agency's restricted distribution mandate hinders efficient buffer stock management by preventing regular stock turnover (*M*=4.03, *SD*=0.80), and that NFA rice distribution is strategically positioned to help temper price spikes in the retail market (*M*=4.02, *SD*=0.78). Furthermore, the respondents agree that while the NFA should have the authority to sell rice regularly to stabilize prices, its current role remains primarily limited to addressing emergencies and calamities.

The level regarding inventory control gained an overall weighted mean of 4.01 with a standard deviation of 0.36, verbally interpreted as Highly Managed. This indicates a high level of confidence among the farmers that the NFA can effectively mobilize its inventory when a crisis is officially declared. However, the data also reflects a clear consensus that the current emergency-only mandate creates a restrictive environment for inventory management, suggesting that a more proactive control system would benefit the overall supply chain.

Table 8.
Level of Inventory Control

Statements	*Mean*	*SD*	*Remarks*
1. The NFA's primary role in rice distribution is limited to addressing emergencies and calamities.	3.97	0.76	Agree
2. The NFA is successfully deploying its rice stock during periods of declared food security emergency	4.06	0.75	Agree
3. NFA rice distribution is strategically positioned to help temper price spikes in the retail market.	4.02	0.78	Agree
4. The NFA should have the authority to sell rice regularly to the public and not just during emergencies to stabilize prices.	3.99	0.84	Agree
5. NFA's restricted distribution mandate hinders efficient buffer stock management by preventing regular stock turnover.	4.03	0.80	Agree
Weighted Mean	4.01		
SD	0.36		
Verbal Interpretation	Highly Managed		

The level regarding inventory control gained an overall weighted mean of 4.01 with a standard deviation of 0.36, verbally interpreted as Highly Managed. This indicates a high level of confidence among the farmers that the NFA can effectively mobilize its inventory when a crisis is officially declared. However, the data also reflects a clear consensus that the current emergency-only mandate creates a restrictive environment for inventory management, suggesting that a more proactive control system would benefit the overall supply chain.

In summary, the results indicate that effective inventory control is a balancing act between

emergency readiness and regular market participation. By addressing the barriers to regular stock turnover, the government can transform the national buffer stock from a static reserve into a dynamic tool for economic stability. This strategic oversight effectively bridges the gap between stockpiling for the future and managing current market volatility, enabling a more fluid and responsive agricultural economy. Optimized inventory control empowers the NFA to protect the interests of both the farmers and the consuming public, ensuring that rice stocks are utilized efficiently before their quality diminishes.

Likewise, the result of the discussion agrees in the study of Render (2021) which states that inventory control is an objective system used to determine how much to order and when to order.

In parallel, Muller (2022) defines inventory control as a broader accounting and physical management function. He views it as the supervision of the supply, storage, and accessibility of items to ensure an adequate supply without excessive oversupply.

Table 9 shows the level of Forecasting. As presented, it is manifested that the statistical and economic models used by the NFA are appropriate for predicting national rice supply and demand (*M*=4.10, *SD*=0.77). Also, it is perceived that the NFA successfully incorporates qualitative data and ground-level intelligence into its quantitative models (*M*=4.06, *SD*=0.80), and that the agency effectively utilizes a comprehensive range of data sources such as the PSA, DA, and PAGASA (*M*=4.04, *SD*=0.82). Furthermore, the respondents agree that the data used is timely and accurate, and that the models can forecast the potential impact of global market trends and geopolitical factors.

Table 9.
Level of Forecasting

Statements	*Mean*	*SD*	*Remarks*
1. The NFA effectively utilizes a comprehensive range of data sources (e.g., PSA, DA, PAGASA) for its forecasts.	4.04	0.82	Agree
2. The data used in NFA's forecasting models is timely, accurate, and relevant.	3.95	0.88	Agree
3. The NFA successfully incorporates qualitative data and ground-level intelligence into its quantitative models.	4.06	0.80	Agree
4. The statistical and economic models used by the NFA are appropriate for predicting national rice supply and demand.	4.10	0.77	Agree
5. The NFA's models are capable of forecasting the potential impact of global market trends and geopolitical factors.	3.98	0.89	Agree
Weighted Mean	4.02		
SD	0.36		
Verbal Interpretation	Highly Managed		

The level regarding forecasting gained an overall weighted mean of 4.02 with a standard deviation of 0.36, verbally interpreted as Highly Managed. This indicates a strong consensus among the selected farmers that the NFA's predictive capabilities are scientifically sound and inclusive of local realities. The data suggests that farmers trust the technical expertise of the agency in balancing hard statistical data with actual observations from the agricultural community to prepare for future needs.

In summary, the results indicate that accurate and multi-faceted forecasting is the bedrock of proactive food security management. By integrating diverse data streams from weather patterns to international market shifts the government can anticipate shortages and price fluctuations before they impact the local economy. This analytical approach effectively bridges the gap between current production levels and future consumption requirements, enabling the NFA to make informed decisions on procurement and buffer

stocking.

Similarly, Munson (2020) also agrees that forecasting as the art and science of predicting future events. They argue that while forecasting involves historical data and mathematical models, it also requires managerial judgment to account for variables that numbers cannot capture.

In addition, Makridakis (2021) view forecasting as a statistical discipline aimed at reducing the risk associated with decision-making. They emphasize that while no forecast is accurate, the goal is to minimize the forecast error.

Table 10 shows the level of Demand Planning. As presented, it is manifested that the NFA effectively uses reliable historical data and market trends to forecast national rice demand during lean months (*M*=4.04, *SD*=0.77). Also, it is perceived that the NFA successfully coordinates with Local Government Units (LGUs) to identify areas with the highest demand (*M*=4.01, *SD*=0.83), and that the target buffer stock level is sufficient to meet actual demand during food security emergencies (*M*=4.01, *SD*=0.88). Furthermore, the respondents agree that the forecasting methods used are flexible enough to adjust for sudden shocks and that procurement targets are well-aligned with the projected consumption needs of vulnerable regions.

Table 10.
Level of Demand Planning

Statements	*Mean*	*SD*	*Remarks*
1. The NFA uses reliable historical data and market trends to forecast national rice demand during lean months.	4.04	0.77	Agree
2. The forecasting methods used are flexible enough to adjust for sudden shocks.	3.99	0.84	Agree
3. The target buffer stock level is sufficient to meet the actual demand during food security emergencies.	4.01	0.88	Agree
4. Procurement targets are well-aligned with the projected consumption needs of vulnerable regions.	3.96	0.79	Agree
5. The NFA successfully coordinates with local government units (LGUs) to identify areas with the highest demand.	4.01	0.83	Agree
Weighted Mean	4.00		
SD	0.36		
Verbal Interpretation	Highly Managed		

The level regarding demand planning gained an overall weighted mean of 4.00 with a standard deviation of 0.36, verbally interpreted as Highly Managed. This indicates a solid consensus among the selected farmers that the agency's planning phase is data-driven and collaborative. The farmers recognize that by working closely with LGUs and analyzing historical trends, the NFA is able to create a logistical map that prioritizes the most at-risk populations, ensuring that resources are allocated where they are needed most.

In summary, the results indicate that strategic demand planning is essential for the equitable distribution of national food reserves. By aligning procurement targets with the specific consumption needs of different regions, the government can prevent localized shortages and maintain social stability. This coordinated approach effectively bridges the gap between high-level national statistics and the actual, ground-level needs of vulnerable communities, enabling a more precise response to food insecurity. Robust demand planning empowers the NFA to operate with surgical efficiency, ensuring that the buffer stock is not just a general reserve, but a targeted tool for public welfare.

Likewise, the result of the discussion agrees in the study of Palmatier (2023) which states that demand planning is a collaborative management process. It is not just a statistical exercise, but a management

commitment to a specific volume of sales.

In parallel, Moon (2021) define demand planning through the lens of Sales and Operations Planning. They view it as a coordinated effort to manage and project demand to ensure that the supply chain is aligned with the firm's strategic goals.

Table 11 shows the level of Contingency Planning. As presented, it is manifested that there is a seamless, pre-established communication protocol between the NFA and local government units (LGUs) to ensure emergency stocks reach the most vulnerable populations first (*M*=4.14, *SD*=0.66). Also, it is perceived that the current warehouse network and transport logistics are capable of delivering emergency rice supplies to high-risk or isolated areas within 48–72 hours of a calamity (*M*=4.08, *SD*=0.72), and that the NFA's contingency plan effectively addresses worst-case scenarios, such as significant national harvest failures, without relying on immediate imports (*M*=4.08, *SD*=0.80). Furthermore, the respondents agree that the NFA maintains a sufficient Strategic Rice Reserve and utilizes data-driven triggers to dictate the release of buffer stocks to LGUs and the DSWD.

Table 11.
Level of Contingency Planning

Statements	*Mean*	*SD*	*Remarks*
1. The NFA maintains a sufficient Strategic Rice Reserve that can be immediately deployed during sudden-onset disasters.	4.05	0.75	Agree
2. There are clearly defined, data-driven "triggers" that dictate exactly when and how buffer stocks should be released to LGUs and the DSWD.	3.97	0.84	Agree
3. The current warehouse network and transport logistics can deliver emergency rice supplies to "high-risk" or isolated areas within 48–72 hours of a calamity.	4.08	0.72	Agree
4. The NFA's contingency plan effectively addresses "worst-case scenarios," such as a 10% or greater national harvest failure, without relying on immediate imports.	4.08	0.80	Agree
5. There is a seamless, pre-established communication protocol between the NFA and local government units (LGUs) to ensure emergency stocks reach the most vulnerable populations first.	4.14	0.66	Agree
Weighted Mean	4.06		
SD	0.35		
Verbal Interpretation	Highly Managed		

The level regarding contingency planning gained an overall weighted mean of 4.06 with a standard deviation of 0.35, verbally interpreted as Highly Managed. This indicates a very high level of confidence among the selected farmers in the agency's disaster preparedness and response capabilities. The data suggests that the farmers value the readiness aspect of the NFA, particularly the established communication channels and logistical frameworks that allow for rapid action when natural disasters or harvest failures occur.

In summary, the results indicate that a well-defined contingency plan is the ultimate safeguard for national food security. By establishing clear protocols and maintaining strategic reserves that can be deployed rapidly to isolated regions, the government provides a critical safety net during times of extreme vulnerability. This proactive readiness effectively bridges the gap between the onset of a disaster and the restoration of normal market supply, enabling a stabilized response that prevents hunger and social unrest. Robust contingency planning empowers the NFA to protect the most marginalized sectors of society, ensuring that

even in the face of worst-case scenarios, the nation's food supply remains resilient and accessible.

Similarly, Griffin (2019) also agrees that contingency planning is through the lens of strategic management. He describes it as the determination of alternative courses of action to be taken if an intended plan is unexpectedly disrupted or rendered inappropriate by a change in the environment.

In addition, Jones define contingency planning as a vital part of scenario planning. It is a technique for coping with uncertainty by imagining multiple possible futures and creating responses for each.

Similarly, Greenstein (2022), also agrees that gross income is essentially encompassing all accessions to wealth before any expenses or personal deductions. It includes both realized and unrealized gains, representing the full increase in a taxpayer's wellbeing.

In addition, Simons (2023), define gross income as the initial phase in income determination. He suggests that, due to the legislative tendency toward inclusion, few receipts which constitute accessions to wealth, except those excluded by statute or settled custom, will not be includible in gross income.

3.2. Level of Farmer Income

In this study the Level of Farmer income in terms of gross income, net income, income stability and price satisfaction were determined through mean and standard deviation.

The following tables shows the Level of Farmer Income for the improvement of National Food Authority (NFA) buffer stock

Table 12 shows the level of Gross Income. As presented, it is manifested that the respondents are satisfied with the current level of their gross income from rice farming (*M*=4.09, *SD*=0.74). Also, it is perceived that the gross income is sufficient to cover all production costs while leaving a reasonable profit margin (*M*=4.05, *SD*=0.82), and that the income received is fair compensation for the capital invested in seeds, fertilizer, and other inputs (*M*=4.04, *SD*=0.80). Furthermore, the farmers believe their gross income will increase in the next cropping season based on market trends, and they agree that the farmgate prices secured adequately reflect the quality of their harvest.

Table 12.
Level of Gross Income

Statements	*Mean*	*SD*	*Remarks*
1. The total revenue (Gross Income) from my palay harvest met my financial expectations for the cropping season.	3.99	0.71	Agree
2. The Gross Income I received for my palay production is fair compensation for the capital invested (seeds, fertilizer, etc.).	4.04	0.80	Agree
3. The farmgate price I was able to secure for my palay adequately reflected the quality of my harvest.	3.96	0.90	Agree
4. The Gross Income is sufficient to cover all my production costs, with a reasonable profit margin remaining.	4.05	0.82	Agree
5. I am satisfied with the current level of my Gross Income from rice farming.	4.09	0.74	Agree
6. I believe my Gross Income will increase in the next cropping season based on current market trends.	4.01	0.82	Agree
Weighted Mean	4.02		
SD	0.33		
Verbal Interpretation	Highly Managed		

The level regarding gross income gained an overall weighted mean of 4.02 with a standard deviation of 0.33, verbally interpreted as Highly Managed. This indicates a strong consensus among the selected farmers that rice farming remains a financially viable and manageable endeavor under current conditions. The relatively low standard deviation suggests that across different farm sizes or locations, there is a consistent feeling of financial satisfaction and a positive outlook regarding the return on investment for their agricultural labor.

In summary, the results indicate that maintaining a healthy gross income is the primary driver for the sustainability of local rice production. When farmers perceive their compensation as fair and sufficient to cover both costs and personal profit, it reinforces their commitment to continued cultivation. This economic stability effectively bridges the gap between high production risks and long-term food security, enabling a more predictable and motivated agricultural workforce. A Highly Managed level of gross income empowers farmers to reinvest in better technologies and inputs, ensuring that the local rice industry remains competitive and capable of meeting the nation's dietary needs.

Similarly, Tipalt (2021), also agrees that net income is the residual amount of revenues after subtracting all expenses and losses for an accounting period. It is found on the last line of the income statement

In addition, Dice (2023), states that net income represents the net increase in shareholders' equity resulting from a company's operations. This theoretical view highlights the critical link to the balance sheet

Table 13 shows the level of Net Income. As presented, it is manifested that the respondents are satisfied with the current level of their net income from rice farming (M=4.04, *SD*=0.72). Also, it is perceived that the current net income provides a stable financial foundation for their households (*M*=4.03, *SD*=0.79), and that the profit from the palay harvest fully justifies the significant time and effort invested in farming (*M*=4.01, *SD*=0.78). Furthermore, the farmers agree that their monthly average income derived from this harvest is financially secure and represents a reasonable return on the financial capital they invested during the cropping season.

Table 13.
Level of Net Income

Statements	*Mean*	*SD*	*Remarks*
1. The Net Income (profit) from my palay harvest fully justifies the time and effort I invested in farming	4.01	0.78	Agree
2. The Net Income achieved is a reasonable return on the financial capital I invested in the cropping season.	4.00	0.79	Agree
3. I am satisfied with the current level of my Net Income from rice farming.	4.04	0.72	Agree
4. My monthly average income derived from the Net Income of this harvest is financially secure.	4.01	0.81	Agree
5. I believe my current Net Income provides a stable financial foundation for my household.	4.03	0.79	Agree
Weighted Mean	4.02		
SD	0.35		
Verbal Interpretation	Highly Managed		

The level regarding net income gained an overall weighted mean of 4.02 with a standard deviation of 0.35, verbally interpreted as Highly Managed. This indicates a high level of consensus among the farmers that their agricultural activities are yielding a take-home pay that is both fair and sustainable. Despite the inherent risks of farming such as weather fluctuations and fluctuating input costs the data suggests that the current market conditions and support systems allow farmers to retain enough profit to support their families' daily

needs and long-term stability.

In summary, the results indicate that net income is the ultimate metric for the success of any agricultural policy or management strategy. While gross income represents the scale of production, it is the net profit that determines whether a farmer can afford to stay in the industry. This financial viability effectively bridges the gap between labor-intensive production and household security, enabling a more resilient and dedicated farming community. Achieving a Highly Managed status in net income empowers farmers to move beyond mere subsistence, allowing them to contribute more significantly to the local economy and the nation's overall food self-sufficiency.

Likewise, the result of the discussion agrees in the study of Wisdomlib (2020), which states that income stability is viewed as a crucial livelihood asset for individuals. This is a stable income provides secure employment that meets basic needs and enables people to adapt to environmental and economic shocks.

In parallel, Hill (2022), states that income stability is repeated changes in employment, income, or financial well-being over time, particularly changes that are not intentional, predictable, or part of upward mobility

Table 14 shows the level of Income Stability. As presented, it is manifested that the respondents are satisfied with the current stability of their total income derived from rice farming (*M*=4.08, *SD*=0.74). Also, it is perceived that the farmers feel financially secure relying on their palay farming income to cover year-round living expenses (*M*=4.06, *SD*=0.85), and that they can accurately predict their net income within a 10% margin before the harvest begins (*M*=4.05, *SD*=0.81). Furthermore, the respondents agree that market changes, such as price drops, do not severely affect their expected profits and that the income they receive remains relatively consistent from one cropping season to the next.

The level regarding income stability gained an overall weighted mean of 4.02 with a standard deviation of 0.35, verbally interpreted as Highly Managed. This indicates a high level of confidence among the farmers regarding the predictability and reliability of their earnings. Despite the traditional volatility associated with agriculture, the data suggests that current management practices and market conditions provide a buffer that allows farmers to plan their household finances with minimal fear of sudden economic shocks.

Table 14.
Level of Income Stability

Statements	*Mean*	*SD*	*Remarks*
1. I can accurately predict my Net Income within a 10% margin before the harvest season begins.	4.05	0.81	Agree
2. The income I receive from palay farming is consistent from one cropping season to the next.	3.94	0.81	Agree
3. I am satisfied with the current stability of my total income derived from rice farming.	4.08	0.74	Agree
4. I feel financially secure relying on my palay farming income to cover year-round living expenses.	4.06	0.85	Agree
5. Changes in the market (e.g., price drops) do not severely affect the profit I expect to make.	3.97	0.83	Agree
Weighted Mean	4.02		
SD	0.35		
Verbal Interpretation	Highly Managed		

In summary, the results indicate that income stability is a vital component of sustainable agriculture, as it reduces the risk-anxiety often felt by small-scale producers. When farmers can accurately forecast their earnings and rely on consistent seasonal returns, they are more likely to stay in the industry rather than

seeking alternative livelihoods. This financial predictability effectively bridges the gap between seasonal harvest cycles and the continuous need for household sustenance, enabling a more focused and professionalized farming sector. Maintaining a Highly Managed status in income stability empowers the agricultural community to invest in long-term improvements, ensuring that rice farming remains a dependable cornerstone of the national economy.

Likewise, the result of the discussion agrees in the study of Wisdomlib (2020), which states that income stability is viewed as a crucial livelihood asset for individuals. This is a stable income provides secure employment that meets basic needs and enables people to adapt to environmental and economic shocks. In parallel, Hill (2022), states that income stability is repeated changes in employment, income, or financial well-being over time, particularly changes that are not intentional, predictable, or part of upward mobility.

Table 15 shows the level of Price Satisfaction. As presented, it is manifested that the respondents are satisfied with the current stability of their total income derived from rice farming (*M*=4.04, *SD*=0.78) and feel financially secure relying on their palay farming income to cover year-round living expenses (*M*=4.04, *SD*=0.82). Also, it is perceived that the farmers can accurately predict their net income within a 10% margin before the harvest season begins (*M*=4.04, *SD*=0.83). Furthermore, the respondents agree that the income they receive is consistent from one cropping season to the next and that market changes, such as price drops, do not severely affect their expected profits.

Table 15.
Level of Price Satisfaction

Statements	*Mean*	*SD*	*Remarks*
1. I can accurately predict my Net Income within a 10% margin before the harvest season begins.	4.04	0.83	Agree
2. The income I receive from palay farming is consistent from one cropping season to the next.	4.02	0.86	Agree
3. I am satisfied with the current stability of my total income derived from rice farming.	4.04	0.78	Agree
4. I feel financially secure relying on my palay farming income to cover year-round living expenses.	4.04	0.82	Agree
5. Changes in the market (e.g., price drops) do not severely affect the profit I expect to make.	3.98	0.87	Agree
Weighted Mean	4.03		
SD	0.37		
Verbal Interpretation	Highly Managed		

The level regarding price satisfaction gained an overall weighted mean of 4.03 with a standard deviation of 0.37, verbally interpreted as Highly Managed. This indicates a strong consensus among the selected farmers that the current pricing environment and market mechanisms are favorable enough to sustain their livelihood. The data suggests that the farmers feel a sense of fairness in the value exchange for their produce, which translates into a higher degree of confidence in the market's ability to protect their financial interests.

In summary, the results indicate that price satisfaction is the psychological and economic anchor of the agricultural supply chain. When farmers are satisfied with the price of their commodities, it fosters a positive outlook that encourages long-term investment in farming activities. This satisfaction effectively bridges the gap between the high cost of agricultural inputs and the final market value of the harvest, enabling a balanced economic environment for producers. Maintaining a Highly Managed status in price satisfaction empowers the NFA and other stakeholders. Similarly, Culong (2021), also agrees that price satisfaction is an emotional and cognitive post-consumption response where the price perception is compared

to a pre-purchase price expectation.

In addition, Xia (2024), states that price satisfaction is critically influenced by the perception of price fairness, which is a consumer's assessment and associated emotions of whether the difference between a seller's price and the price of a comparative other party is reasonable, acceptable, or justifiable.

Table 16 presents the correlation between NFA Buffer Stock Management and Farmer Income. The results include Pearson correlation coefficients r-values, p-values, and the analysis of significance for each relationship across multiple dimensions of management and income.

This further means that while most administrative functions of buffer stock management do not directly dictate the financial fluctuations of farmer income, the government's procurement activities specifically have a measurable impact on how satisfied farmers are with market prices (r=0.145). The negligible correlation values across the remaining variables suggest that factors such as gross and net income are likely influenced by a broader array of external market forces, input costs, and environmental conditions.

Table 16.
Significant Relationship between NFA Buffer Stock Management to the Farmer Income

Variables		***r-value***	***Degree of Correlation***	***p-value***	***Analysis***
Procurement of Palay	Gross Income	-0.021	Negligible	0.695	Not Significant
	Net Income	0.076	Negligible	0.162	Not Significant
	Income Stability	0.045	Negligible	0.403	Not Significant
	Price Satisfaction	0.145*	Negligible	0.007	Significant
Storage of Palay	Gross Income	-0.077	Negligible	0.157	Not Significant
	Net Income	0.042	Negligible	0.443	Not Significant
	Income Stability	0.006	Negligible	0.914	Not Significant
	Price Satisfaction	0.077	Negligible	0.154	Not Significant
Milling	Gross Income	0.033	Negligible	0.540	Not Significant
	Net Income	-0.066	Negligible	0.225	Not Significant
	Income Stability	0.036	Negligible	0.507	Not Significant
	Price Satisfaction	-0.079	Negligible	0.143	Not Significant
Rice Storage	Gross Income	0.014	Negligible	0.793	Not Significant
	Net Income	-0.071	Negligible	0.191	Not Significant
	Income Stability	-0.018	Negligible	0.742	Not Significant
	Price Satisfaction	-0.065	Negligible	0.231	Not Significant
Rice Distribution	Gross Income	-0.007	Negligible	0.898	Not Significant
	Net Income	-0.039	Negligible	0.476	Not Significant
	Income Stability	0.053	Negligible	0.331	Not Significant
	Price Satisfaction	0.007	Negligible	0.904	Not Significant
Auction of Stocks	Gross Income	-0.050	Negligible	0.351	Not Significant
	Net Income	0.011	Negligible	0.836	Not Significant
	Income Stability	-0.042	Negligible	0.433	Not Significant
	Price Satisfaction	-0.050	Negligible	0.354	Not Significant
Inventory Control	Gross Income	-0.043	Negligible	0.425	Not Significant
	Net Income	0.048	Negligible	0.375	Not Significant
	Income Stability	0.063	Negligible	0.242	Not Significant
	Price Satisfaction	-0.003	Negligible	0.961	Not Significant
Forecasting	Gross Income	-0.016	Negligible	0.774	Not Significant
	Net Income	0.009	Negligible	0.864	Not Significant

	Income Stability	0.065	Negligible	0.228	Not Significant
	Price Satisfaction	-0.029	Negligible	0.589	Not Significant
Demand Planning	Gross Income	-0.014	Negligible	0.793	Not Significant
	Net Income	-0.027	Negligible	0.616	Not Significant
	Income Stability	-0.085	Negligible	0.114	Not Significant
	Price Satisfaction	-0.078	Negligible	0.149	Not Significant
Contingency Planning	Gross Income	-0.018	Negligible	0.745	Not Significant
	Net Income	0.015	Negligible	0.788	Not Significant
	Income Stability	-0.011	Negligible	0.845	Not Significant
	Price Satisfaction	0.033	Negligible	0.546	Not Significant

**significant at .05 level of significance*

Range	*Degree of Correlation*
±.0.81 – ±.1.00	*Very Strong*
±.0.61 – ±.0.80	*Strong*
±.0.41 – ±.0.60	*Moderate*
±.0.21 – ±.0.40	*Weak*
±0.00 – ±.0.20	*Negligible*

In summary, only price satisfaction in the procurement of palay showed a statistically significant relationship with farmers' income ($p < .05$), indicating its importance in influencing income levels. All other buffer stock management variables were not significantly correlated ($p > .05$), suggesting limited direct impact on farmers' income.

Table 17.
Composite Table

1. Level of National Food Authority (NFA) buffer stock management in terms of:	**MEAN**	**SD**
1.1. procurement of palay;	4.01	**0.37**
1.2. storage of palay;	4.01	**0.36**
1.3. milling;	4.02	**0.34**
1.4. rice storage;	4.02	**0.33**
1.5. rice distribution;	4.01	**0.36**
1.6. auction of stocks;	4.03	**0.26**
1.7. Inventory Control;	4.01	**0.36**
1.8. Forecasting;	4.02	**0.36**
1.9. Demand Planning; and	4.00	**0.36**
1.10. Contingency Planning?	4.06	**0.35**
2. Level of farmer income in terms of:	**MEAN**	**SD**
2.1. gross income;	4.02	0.33
2.2. net income;	4.02	0.35
2.3. income stability; and	4.02	0.35
2.4. price satisfaction?	4.03	0.37

The data in the table offers a comprehensive look at the operational efficiency of the National Food Authority (NFA) and its subsequent impact on the economic well-being of farmers. Across all metrics, the

results indicate a " Highly Managed" level of performance and satisfaction, with mean scores consistently hovering around the 4.00 mark. This uniformity suggests a robust institutional framework where logistical success translates directly into financial stability for agricultural producers.

The management of NFA buffer stocks is characterized by a high degree of precision and reliability. The data identifies Contingency Planning as the strongest pillar of the organization, earning the highest mean score of 4.06. This indicates that the NFA is exceptionally well-prepared for unforeseen market disruptions or natural disasters. Close behind is the Auction of Stocks (4.03), suggesting that the mechanisms for rotating and offloading inventory are transparent and effective.

Other core operational areas including milling, rice storage, and forecasting maintain a steady mean of 4.02, while procurement, storage of palay, and inventory control follow closely at 4.01. Even the lowest-scoring variable, Demand Planning (4.00), remains within the "Highly" bracket. The remarkably low Standard Deviation across these categories particularly in the auction of stocks (0.26) reveals a strong consensus among stakeholders. There is little disagreement: the NFA's internal supply chain, from the initial purchase of raw palay to the final distribution of rice, is functioning with professional consistency.

The assessment of farmer income levels mirrors the success of the NFA's management strategies. There is a striking equilibrium in how farmers perceive their financial status, with gross income, net income, and income stability all returning an identical mean of 4.02. This suggests that the current agricultural environment provides not just a one-time windfall, but a reliable and sustainable livelihood.

Furthermore, Price Satisfaction achieved the highest score in this category at 4.03. This is a critical finding, as it implies that the NFA's procurement prices are well-aligned with farmer expectations, providing them with enough leverage to cover costs and maintain a profit. The consistency of the Standard Deviations (0.33 to 0.37) in this section confirms that these positive experiences are widespread among the farming community rather than being limited to a few outliers.

The NFA's high marks in storage, distribution, and planning appear to create a stable market environment that safeguards farmer interests. By maintaining high standards in buffer stock management specifically through superior contingency planning and price-satisfied procurement the NFA effectively anchors the income stability of the farming sector. The narrow range of scores across all variables highlights a system that is not only performing at a high level but is doing so with a degree of predictability that benefits the entire national food value chain.

3.3. Output of the Study

To address the study's findings specifically the high performance of both sectors but the lack of a significant relationship between them the proposed action plan focuses on synergy. The goal is to ensure that the NFA's National Defense operations (buffer stocking) translate into a direct Economic Engine for individual farmers. The findings reveal that while all components of buffer stock management are "Highly Managed," their direct impact on farmer income is minimal, except for procurement of palay, which significantly influences price satisfaction ($r = 0.145$, $p < 0.05$).

This action plan aims to improve buffer stock management effectiveness by strengthening procurement, addressing system limitations, and introducing complementary strategies to sustainably enhance farmer income and agricultural development.

The plan is expected to improve price satisfaction, increase farmer participation, reduce inefficiencies, enhance stock management, and promote diversified, resilient income sources aligned with farmer needs.

This study highlights procurement as a key factor influencing income-related outcomes and supports evidence-based, farmer-centered policies to improve food security, sustainability, and rural economic development.

Proposed Action Plan Based on the Statistical Findings on NFA Buffer Stock Management and Farmer Income

Table 18. The Laguna Agri-Wealth Integration Project

Activity	Objective	Person/s Involved	Time Frame	Budget (PhP)
1. Enhancement of Palay Procurement Program (PRICERS Expansion)	Strengthen the only statistically significant factor influencing price satisfaction by improving pricing schemes and farmer access	NFA Officials, DA, LGUs,	6–12 months	₱5M–₱10M
2. Establishment of Mobile Procurement Centers	Increase farmer participation and accessibility to NFA procurement services	NFA, LGUs, Field Officers	6 months	₱3M
3. Policy Review for Regular Rice Distribution	Address restricted distribution mandate to improve stock turnover and stabilize market prices	NFA, Congress, DA Policy Makers	1 year	₱1M (policy studies & consultations)
4. Expansion of Drying Facilities (Post-Harvest Support)	Solve storage-related limitation (wet palay issue) affecting procurement efficiency	NFA, DA, Private Sector Partners	1–2 years	₱15M–₱30M
5. Strengthening Farmer Price Information Systems	Improve transparency and farmer awareness of pricing trends to increase satisfaction	NFA, PSA, ICT Experts	6 months	₱2M
6. Capacity Building on Value-Adding Activities	Improve farmer income beyond buffer stock system (since most variables show negligible correlation)	DA, TESDA, NGOs	1 year	₱3M–₱5M
7. Development of Integrated Supply Chain Monitoring System	Improve coordination across procurement, storage, and distribution despite weak income linkage	NFA IT Unit, Data Analysts	1 year	₱8M
8. Incentive Program for High-Quality Palay Production	Align procurement with quality-based pricing to increase farmer income	NFA, DA	1 cropping cycle	₱4M
9. Market Linkage Program (Private Sector Integration)	Diversify farmer income sources beyond NFA (address negligible correlations)	DA, Agribusiness Firms	1 year	₱2M

10. Continuous Monitoring and Impact Evaluation	Ensure that interventions lead to measurable improvements in income and satisfaction	Researchers, NFA, Academe	Ongoing (every 6 months)	₱1M an

4. Summary of Findings, Conclusions, and Recommendations

This chapter presents the summary of findings, conclusion based on the hypothesis, and corresponding recommendations.

4.1. Summary

The following were the significant findings of the study:

The level of National Food Authority (NFA) buffer stock management is Highly Managed. This implies that Laguna farmers have a reliable and competitive government market for their produce, as the NFA actively procures local palay at higher support prices to build national reserves.

The level of farmer income is also Highly Managed. This implies that Laguna farmers are experiencing increased financial stability and higher profit margins due to the government's aggressive procurement strategy, which offers competitive floor prices and provides direct cash subsidies to offset rising production and fuel costs.

There is no significant relationship between NFA Buffer Stock Management and farmer income. This implies that the level of buffer stocks is often a tool for national food security rather than a direct mechanism for increasing individual farmer wealth.

4.2. Conclusion

Based on the findings above, the following conclusion were drawn:

No significant relationship between NFA Buffer Stock Management and farmer income was noted. Thus, the hypothesis is accepted. This implies that the government’s internal operations to secure the nation’s food reserves do not directly dictate the financial prosperity of individual farmers in Laguna.

4.3. Recommendations

Based on the drawn conclusions resulted to the following recommendations were given:

1. The researcher recommended that the National Food Authority may continuously institutionalize its seamless collaboration with local government units through regular joint emergency drills and the continuous refinement of pre-established digital communication channels to ensure that the rapid delivery of life-saving rice reserves remains synchronized and prioritized for Laguna’s most vulnerable populations during times of crisis.

2. The researcher recommended that the National Food Authority and local agricultural units may continuously institutionalize the procurement strategy by maintaining competitive floor prices and consistent cash subsidies, ensuring that Laguna farmers continue to have a reliable, high-value outlet for their produce that shields them from the financial instability typically caused by unpredictable market fluctuations.

3. The researcher recommended that the National Food Authority may transition from traditional historical forecasting to a data-driven, localized vulnerability mapping system that utilizes real-time analytics and strengthened LGU partnerships to ensure that buffer stock procurement precisely aligns with the specific consumption needs of Laguna’s most at-risk communities.

4. The researcher recommended that the government and relevant agricultural agencies may implement a supplemental income diversification program and a localized price-guarantee mechanism that protects Laguna farmers from seasonal market volatility, ensuring that their high level of financial satisfaction translates into year-round economic stability.

5. Future researchers may make use of this study to enhance their readings of corresponding work, which could support the current research initiative's conclusions even more.

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