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Household Consumption Analysis of Gambir Farmers in Harau District, Limapuluh Kota Regency

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Abstract
Gambir *(Uncaria gambir Roxb.)* is a strategic plantation commodity in Indonesia, with West Sumatra Province contributing 80–90% of national exports. Limapuluh Kota Regency, particularly Harau District, is one of the main production centers. Despite its economic potential, gambir farmers face significant challenges, including price volatility, limited bargaining power, and low product quality due to traditional processing methods. These conditions directly affect farm household income stability and, consequently, household consumption patterns. This study aims to analyze the total household consumption and its composition both food and non-food expenditures—among gambir farming households in Harau District, Limapuluh Kota Regency. The research employed a survey method with a quantitative descriptive approach. The sample consisted of 30 gambir farmers selected purposively from Nagari Harau, Harau District. Data were collected through structured and unstructured interviews, direct observation, and literature studies. The results revealed that the average total household consumption reached IDR 3,716,883 per month (IDR 44,602,600 per year). Food consumption accounted for IDR 2,283,583 per month (61.4% of total consumption), with animal-based protein (IDR 756,667/month) being the highest expenditure component, substantially exceeding staple food expenditure (IDR 454,333/month). Non-food consumption amounted to IDR 1,433,300 per month (38.6%), dominated by transportation (IDR 525,000/month) and education (IDR 529,000/month). Notably, only 20% of respondents paid health insurance independently, while 50% had no regular health expenditure, indicating uneven access to healthcare services.

Keywords: Economic Vulnerability; Food Expenditure; Gambir Farmers; Household Consumption; Harau District; Non-Food Expenditure

Introduction

Indonesia is among the world's leading producers of gambier (*Uncaria gambir* Roxb.), with West Sumatra Province accounting for 80 to 90 percent of national exports(Nasrul Wedy et al., 2020). Within this region, Limapuluh Kota Regency, particularly Harau Subdistrict, serves as a major production hub where gambier farming has been practiced for generations and remains deeply rooted in the local socio-economic structure (F. & Rosmeilisa, 2001).

In addition to its high economic value in the pharmaceutical, cosmetic, and leather tanning industries, gambier functions as the economic foundation of rural communities, supporting thousands of farming households. Rubber is also extensively cultivated in this regency, with Kapur IX Subdistrict emerging as the largest rubber producing area after Pangkalan Koto Baru (Anfal Jefri & Febriandi, 2026).

Despite its considerable economic potential, gambier farmers face significant challenges that threaten household welfare. Extreme price volatility, with fluctuations ranging from Rp20,000 to

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Rp80,000 per kilogram, directly impacts income stability and consumption patterns (Irwan et al., 2022), with prices dropping to Rp18,000 during the pre survey period.

This situation is worsened by the farmers' weak bargaining position due to their reliance on middlemen (*toke*) for both marketing and production capital (Rahima et al., 2022). Traditional processing methods, which are often unsanitary and fail to meet quality standards, along with product adulteration practices, further reduce farm gate prices (Nasrul Wedy et al., 2020).

These structural constraints, ranging from price instability and market dependence to infrastructural and institutional weaknesses, ultimately shape household consumption decisions and long term resilience. In Harau Subdistrict, where gambier cultivation is highly concentrated and diversification is limited, household vulnerability is likely to be more severe, and farmers' coping strategies such as frugal living and off farm income often reinforce existing dependencies (Azzahra et al., 2022).

A systematic comparison with earlier studies reveals a clear research gap. The studies by (F. & Rosmeilisa, 2001) and (Nasrul Wedy et al., 2020) focused on agronomic and marketing aspects, without addressing household consumption expenditure. Meanwhile, (Azriani et al., 2024) examined gambier's contribution to household income (36%) in Pesisir Selatan, but did not analyze consumption allocation. (Anfal Jefri & Febriandi, 2026) compared the welfare of gambier and rubber farmers in Kapur IX using BKKBN indicators, revealing that gambier farmers have higher welfare levels (44% at prosperous family level II) and better ability to meet basic needs (food: 91, clothing: 88, housing: 90). However, their study did not quantitatively measure actual food consumption expenditure, non food consumption expenditure, or total household consumption expenditure. Thus, while it is known that gambier farmers are generally more prosperous than rubber farmers, it remains unclear: (1) how much gambier farming households spend on food consumption; (2) how much they spend on non food consumption; and (3) what their total household consumption expenditure is.

To address this gap, the present study is specifically designed to examine the consumption expenditure patterns of gambier farming households in Harau Subdistrict, Limapuluh Kota Regency. More precisely, this research aims to: (1) measure the magnitude of food consumption expenditure of gambier farming households; (2) measure the magnitude of non food consumption expenditure of gambier farming households; and (3) measure the total household expenditure of gambier farming households. By providing empirical evidence on consumption allocation patterns, this study seeks to offer a deeper understanding of gambier farmers' economic welfare. The findings are expected to inform more targeted policy interventions aimed at strengthening the welfare of gambier farming communities in Harau Subdistrict and other gambier producing regions across Indonesia.

Literature Review

Consumption

Consumption constitutes a core economic activity involving the utilization of goods and services to satisfy human needs (Apriliani, 2023). Broadly defined, consumption refers to the act of using commodities and services for fulfilling daily necessities (Widianti, 2023). The concept encompasses the expenditure of resources to acquire goods that directly support human life. It is a fundamental aspect of household behavior in meeting both basic and secondary requirements. Thus, consumption serves as a primary indicator of economic activity and individual welfare.

Household Consumption Expenditure

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Household consumption expenditure is defined as the total value of goods and services used or paid for by households to directly meet their needs. This definition is broader than simply household market purchases. For example, this definition may include the estimated value of goods received as income in kind (e.g., food grown on family land), goods produced by households themselves, and goods received as transfers in kind from other households (OECD, 2013).

One important detail in this definition is the exclusion of purchases of new homes. In economic accounting, a new home is considered an investment (gross fixed capital formation), not consumption, because a home provides a stream of housing services over time rather than being consumed immediately. Instead, housing consumption is measured by the value of the services provided by the home, which for homeowners is often estimated as imputed rent (OECD, 2013). This concept is an important indicator of economic activity because it reflects household spending behavior and purchasing power, and serves as a major determinant of a country's Gross Domestic Product (GDP) (Das et al., 2016); (Madudova & Corejova, 2023).

Household Food Expenditure

Theoretically, the relationship between income and food expenditure was first explained through Engel's Law, which states that the proportion of expenditure on food decreases as income increases, although absolute food expenditure rises (Torres Pabón, 2019). Studies across various countries demonstrate that Engel's Law remains one of the most robust economic laws across time and space (Torres Pabón, 2019). In Indonesia, food expenditure still dominates household expenditure structure, particularly among low-income groups (Sa'diyah et al., 2019).

Research on household food expenditure in Indonesia by (Sa'diyah et al., 2019) shows that rice commodities account for the largest proportion of food expenditure, both in urban and rural areas (Sa'diyah et al., 2019). This indicates that rice remains a strategic food commodity with inelastic demand, especially among low-income households. Food policy needs to consider aspects of price affordability and availability of staple food to ensure household food security (Sa'diyah et al., 2019).

Household Non-Food Expenditure

Non-food expenditure is an important component in the expenditure structure of farming households, reflecting the household's ability to meet needs beyond food consumption, such as housing, education, health, clothing, transportation, and socio-cultural needs. Research on various agricultural commodities shows that the proportion of non-food expenditure among farming households is relatively diverse, yet the trend indicates an increase along with rising income.

(Busthanul et al., 2024) examined the proportion of consumption expenditure among clove farming households in Indonesia and found that the average proportion of non-food expenditure reached 54.45%, while the proportion of food expenditure reached 45.55% of total household expenditure. This finding indicates that non-food expenditure contributes a significant portion to total farming household expenditure and demonstrates that clove farming households have a fairly good level of welfare because the proportion of food expenditure does not dominate their expenditure structure.

Research Method

A. Research Location and Time

This research was conducted in Limapuluh Kota Regency, Harau Subdistrict, Kenagarian Harau, which is recognized as one of the gambier production center areas in Limapuluh Kota Regency.

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The selection of this location as the research site was carried out purposively. The research activities were conducted from April to October 2025.

B. Research Method

This study is classified as a survey research type. According to (Kerlinger & Lee, 2000) a survey is a research method applied to populations, whether large or small, with data collected from samples for the purpose of generalization. Further added that survey research aims to collect data from natural settings (non-experimental), although the researcher administers treatments during the data collection process, such as through questionnaires, tests, structured interviews, and other techniques. In general, the unit of analysis in survey research is the individual. The approach employed in this study is a descriptive quantitative method.

C. Sample Selection Method

The population of this study consists of all gambier farming households in Harau Subdistrict, Limapuluh Kota Regency. Based on the results of a pre-survey, the population of gambier farmers in Harau Subdistrict is 157 households. Considering the relatively small population and the limitations of time and cost, this study established a minimum sample size of 30 respondents, selected through purposive sampling. Furthermore, (Cohen et al., 2007) asserted that although larger sample sizes are preferable, there is a minimum threshold that researchers must meet, namely 30 respondents.

Purposive sampling is a non-probability sampling technique in which researchers select participants based on their presence in a population of interest, characteristics, experiences, or other relevant criteria. This method is commonly used in qualitative and mixed-methods research when the goal is to gain in-depth understanding of a specific phenomenon rather than to generalize findings statistically to a larger population. According to (Stratton, 2024), purposive sampling offers advantages in terms of resource efficiency and time savings compared to traditional research methods.

To ensure validity when using purposive sampling, this study has established clear criteria: (1) gambier farmers who have been farming for at least 5 years; (2) having at least 0.5 hectares of gambier land; and (3) willingness to be respondents. This approach aligns with (Azzahra et al., 2022) recommendation that researchers must define and report inclusion and exclusion criteria, along with the characteristics and demographics of the sample.

D. Data Collection Method

The types of data used in this study are divided into primary data and secondary data. Primary data include respondent identities, household economic conditions, and household income, all of which were obtained through direct field observation. Meanwhile, secondary data consist of socioeconomic information derived from various literature sources, such as books, journals, magazines, online media, newspapers, and documents from relevant agencies pertaining to the subject of the study.

Data collection was conducted through several techniques tailored to the requirements of the research variables. These techniques include:

1. Interviews, which are divided into two forms: structured interviews using a questionnaire as a guide for question-and-answer sessions with respondents, and unstructured interviews conducted directly without a questionnaire instrument.

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2. Direct observation, namely a data collection technique involving direct observation of various activities performed by respondents at the research location.
3. Literature review, a data collection technique involving the recording and examination of various documents, reports, scientific literature, previous research findings, journals, and archives related to the research topic, in order to support and supplement the data that have been obtained.

E. Observed Variables

The variables observed to analyze the expenditures of gambier farmers for their household needs in Nagari Harau, Harau Subdistrict, Limapuluh Kota Regency, consist of total household expenditure (Rp/year). Total household consumption is the sum of all consumption expenditures made by farmers to meet their household needs, which is further categorized into food consumption and non-food consumption.

F. Data Processing and Analysis

All data obtained from interviews and field observations were processed and analyzed descriptively using a quantitative approach. This analysis was employed to describe the management patterns of gambier farming, the components of household expenditures, and the constraints encountered in farming activities. The results of the analysis were then summarized and presented in the form of tables, tabulated figures, and graphs/illustrations to facilitate the interpretation and comprehension of the research findings.

This study employed quantitative analysis to obtain an overview of the magnitude of household expenditures among gambier farmers residing in Nagari Harau, Harau Subdistrict, Limapuluh Kota Regency. Based on the research objective framework, data analysis focused on calculating the total household consumption of gambier farmers, which was disaggregated into food consumption and non-food consumption.

1) Food Consumption (FC**)**

To determine food consumption, the following formula was used:

FC = FC1 + FC2 + FC3 + FC4 + FC5 + FC6 + FC7 + FC8 + FC9 + FC10 + FC11

Where:
FC = Food Consumption (Rp/Year)
FC1 = Staple Food (Rp/Year)
FC2 = Animal Protein (Rp/Year)
FC3 = Legumes (Rp/Year)
FC4 = Vegetables (Rp/Year)
FC5 = Fruits (Rp/Year)
FC6 = Oils and Fats (Rp/Year)
FC7 = Beverage Ingredients (Rp/Year)
FC8 = Spices (Rp/Year)
FC9 = Processed/Ready-to-Eat Food (Rp/Year)
FC10= Cigarettes (Rp/Year)
FC11= Others (Rp/Year)

2) Non-Food Consumption (NFC)

To determine non-food consumption, the following formula was used:

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NFC = NFC1 + NFC2 + NFC3 + NFC4 + NFC5 + NFC6 + NFC7 + NFC8

Where:
NFC = Non-Food Consumption (Rp/Year)
NFC1 = Clothing (Rp/Year)
NFC2 = Education (Rp/Year)
NFC3 = Social Contributions/Dues (Rp/Year)
NFC4 = Taxes (Rp/Year)
NFC5 = Health (Rp/Year)
NFC6 = Electricity (Rp/Year)
NFC7 = Transportation (Rp/Year)
NFC8 = Others (Rp/Year)

3) Total Household Consumption (C)

To calculate total consumption (TotC), the following formula was used:

TotC = FC + NFC

Where:
TotC= Total household consumption (Rp/Year)
FC = Food Consumption (Rp/Year)
NFC = Non-Food Consumption (Rp/Year)

Results and Discussion

Farming Experience

Based on survey results from 30 gambier farmers in Harau Subdistrict, the average farming experience was 14.76 years, approximately 15 years. The range of experience among respondents was considerably diverse, spanning from a minimum of 1.3 years to a maximum of 35 years. This condition indicates that the majority of gambier farmers in the area have engaged in this agricultural activity for a relatively extended period. Such extensive experience exerts a positive influence on their technical competencies, particularly in the areas of gambier cultivation and harvest management. Furthermore, the long duration of farming activities equips farmers with various effective coping strategies. These strategies prove particularly useful when they face price fluctuations in the gambier market, which are often unpredictable. Thus, mature farming experience constitutes one of the important factors supporting the sustainability of their enterprises. Overall, this extended experiential duration serves as a valuable asset for farmers in enhancing their productivity and economic resilience.

Extensive farming experience has been empirically shown to influence the level of technical efficiency in farming operations; a study in Lima Puluh Kota Regency using the Cobb-Douglas stochastic frontier production function approach showed that the technical efficiency of gambir farming ranges from 0.25 to 0.99 with an average of 0.76, indicating that gambir farmers are technically efficient (Fauziah et al., 2021). The study also revealed that age and farming experience are the main factors influencing gambir farmers in managing their farms (Fauziah et al., 2021).

Of the total 30 respondents, 4 individuals (13.3%) were recorded as having less than 10 years of farming experience, while 14 individuals (46.7%) had been engaged in the activity for 10 to 20 years, and the remaining 12 individuals (40%) possessed more than two decades of experience. Consequently, it can be observed that the majority of farmers, namely 86.7% of all respondents, have been involved in gambier farming for over a decade. This figure indicates that gambier

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cultivation in Harau Subdistrict is not a newly emerging activity, but rather a hereditary practice deeply embedded in the socioeconomic life of the local community. Farmers who have been active in this field for an extended period generally demonstrate advantages across various aspects of their operations, one of which is a more extensive marketing network compared to novice farmers. They also tend to possess superior bargaining capabilities when dealing with middlemen or buyers, thereby enabling them to obtain more favorable selling prices. Additionally, long-term experience renders them more efficient in managing household budget allocation, both for meeting daily food needs and for other non-food requirements. This efficiency serves as a contributing factor that helps them endure amidst the frequently fluctuating dynamics of gambier prices. Overall, mature farming experience is evidently demonstrated to make a tangible contribution to the economic resilience of gambier-farming households in the region.

Food Consumption

The recapitulation of total food consumption expenditure among gambier-farming households reveals a total figure of Rp2,283,583 per month, equivalent to Rp27,403,000 per year. This amount comprises the aggregation of various consumption components, including staple foods, animal protein, vegetables, fruits, legumes, cooking oil, beverage ingredients, spices, ready-to-eat food, as well as cigarettes and LPG gas. The magnitude of this total expenditure indicates that a substantial portion of household income is absorbed to meet daily consumption needs, thereby leaving limited room for savings or other productive expenditures.

Among all food expenditure components, the allocation for animal protein ranks the highest, with an average of Rp756,667 per month, equivalent to Rp9,080,000 per year, a figure that significantly surpasses expenditure on staple foods, which only reaches Rp454,333 per month or Rp5,452,000 per year. This finding indicates that gambier-farming households assign high priority to fulfilling animal protein needs as an essential nutritional source, even positioning it as the second priority after carbohydrate consumption. Nevertheless, the substantial proportion of the budget allocated to animal protein also imposes a financial burden that requires prudent management, particularly during periods when gambier commodity prices experience fluctuations or instability. These findings are consistent with a study by (Mauludyani & Syafiq, 2023), which analyzed 97,467 Indonesian households and showed that average per capita spending on animal protein was Rp24,912, or 4.72% of total food expenditure—higher than spending on cereals (3.77%). This confirms that, nationally, Indonesian households also prioritize animal protein over staple foods. However, the proportion of animal protein expenditure among gambir farmers (33.1%of food expenditure) is significantly higher than the national average (4.72%), reflecting a very strong consumption priority among this group of farmers.

Expenditure on vegetables reaches Rp170,000 per month, fruits Rp151,667 per month, and beverage ingredients such as coffee, tea, sugar, milk, and mineral water amount to Rp155,833 per month. These three consumption components fall within the moderate range, indicating that households are beginning to pay attention to vegetable and fruit consumption as sources of vitamins and minerals, although their allocation remains substantially below that of animal protein. The relatively high expenditure on beverage ingredients reflects the customary practice of consuming coffee and tea, which has become part of the daily lifestyle, both during leisure time and in between gardening activities.

Several commodities receive very small budget allocations, such as legumes at only Rp19,667 per month, cooking oil at Rp79,167 per month, spices at Rp50,000 per month, and LPG gas at Rp44,000 per month. The low expenditure on legumes suggests that this plant-based protein source is not a primary priority in daily consumption patterns. Meanwhile, the minimal allocation

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for cooking oil and LPG gas indicates that households still rely on cooking oil in sufficient quantities and utilize firewood as an alternative cooking fuel, which can be obtained at no cost from the surrounding environment.

Overall, the food consumption expenditure pattern of gambier-farming households reveals a fairly pronounced disparity, wherein animal protein and cigarettes dominate the budget, while nutritious food items such as vegetables, fruits, and legumes receive only limited portions. This condition imposes a heavy economic burden as food expenditure absorbs the majority of monthly income. Therefore, strategic measures are required in the form of gambier farming diversification and the development of supplementary enterprises to increase income, along with education on balanced consumption patterns so that the proportion of food expenditure relative to total income can be maintained below the food vulnerability threshold.

Non-Food Consumption

Based on data collected from 30 sample gambier-farming households in Nagari Harau, the average non-food consumption expenditure reaches Rp1,433,300 per month, equivalent to Rp17,199,600 per year. This amount represents the aggregation of various non-food consumption components, namely expenditure on clothing at Rp139,167, electricity at Rp128,833, transportation at Rp525,000, education at Rp529,000, health costs for respondents paying independently at Rp107,500, and other needs such as bath soap, laundry detergent, toothpaste, and shampoo totaling Rp89,800. Among all these consumption components, expenditure on transportation and education occupies the highest proportion, reflecting that daily mobility activities and investment in human capital constitute the primary focus in the allocation of household non-food expenditure. The magnitude of total non-food consumption indicates that, in addition to food needs, gambier-farming households also allocate a considerable portion of their income to meet clothing, energy, access to basic services, and children's education expenses.

Average consumption for clothing is recorded at Rp139,167 per month or Rp1,670,000 per year, indicating that gambier-farming households still prioritize meeting clothing needs on a regular basis, although not to the same extent as food consumption. This consumption is likely allocated for purchasing everyday clothing, work attire for the garden, and other clothing items that support daily activities, with a tendency to purchase affordable clothing and not too frequently, reflecting a frugal and proportional budget management strategy. Meanwhile, average consumption for electricity reaches Rp128,833 per month or Rp1,546,000 per year, which is almost equivalent to clothing consumption and indicates that electricity has become a fairly significant routine need within the non-food expenditure structure. This figure reflects a reasonable level of energy consumption for lighting, operation of electronic appliances, and other household activities, with indications that households tend to be economical in electricity usage and possess reasonably adequate access to the electricity grid.

Transportation consumption records the highest figure among non-food components, at Rp525,000 per month or Rp6,300,000 per year, reflecting the high mobility of gambier-farming households for economic and social purposes. These costs are allocated for travel from residences to garden locations, which are generally situated in remote areas with difficult road access, school drop-offs for children, delivery of harvests to markets or middlemen, as well as meeting shopping needs and other social requirements. The high transportation burden poses a distinct challenge in household financial management as it can reduce budget allocation for basic needs and savings. On the other hand, consumption for education costs reaches Rp529,000 per month or Rp6,348,000 per year, nearly equivalent to transportation consumption, reflecting the awareness among gambier-farming households of the importance of long-term investment through children's

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education. Although primary and secondary school costs are generally covered by the government through compulsory education programs, education consumption remains necessary for children's pocket money, stationery, uniforms, shoes, bags, supplementary textbooks, and school transportation, thus indicating the existence of indirect costs that must still be borne by gambier-farming households.

Health data indicate that only 6 individuals (20%) out of the 30 samples incurred out-of-pocket health expenditures, with an average of Rp107,500 per month or Rp1,290,000 per year, while 9 individuals (30%) received government-subsidized health insurance, and 15 individuals (50%) reported no health consumption due to not paying regular contributions. This condition reflects that access to health services remains varied and uneven, with low awareness of voluntarily maintaining health insurance coverage and the potential vulnerability to unforeseen health risks among the uninsured group. Meanwhile, consumption for other costs (bath soap, laundry detergent, toothpaste, and shampoo) reaches an average of Rp89,800 per month or Rp1,077,600 per year, with laundry detergent occupying the highest value (Rp41,000) and shampoo the lowest (Rp11,000), indicating that hygiene and personal care needs are fulfilled with affordable products and used sparingly. Overall, the non food consumption structure of gambier-farming households is dominated by transportation and education costs, while allocations for health, electricity, clothing, and personal care needs are relatively lower and proportional to economic conditions that prioritize efficiency. Thus, total non food consumption remains reasonably moderate and reflects household priorities in managing limited income derived from gambier farming.

Total Consumption

Based on data obtained from 30 sample gambier-farming households in Harau Subdistrict, the average total household consumption reaches Rp3,716,883 per month, equivalent to Rp44,602,600 per year. This figure represents the aggregation of all household expenditures, both for food and non-food needs, reflecting the magnitude of the economic burden that must be borne on a monthly basis. This total consumption indicates that the majority of gambier-farming household income is absorbed to meet daily living needs, leaving limited room for savings or productive investment. This consumption composition reflects the household's lifestyle and primary priorities in allocating available financial resources.

Gambier farming households in Harau Subdistrict, the average monthly household consumption reaches Rp3,716,883 or Rp44,602,600 annually, with food consumption accounting for 61.4% and non-food consumption comprising 38.6% of total expenditure. This figure indicates that food requirements continue to be the primary priority for gambier farming households, reflecting relatively high expenditure levels compared to the income they generate. According to the welfare indicators employed by the National Population and Family Planning Board (BKKBN), family welfare can be assessed through the capacity to fulfill basic needs encompassing clothing, food, housing, education, and income (Anfal Jefri & Febriandi, 2026). Given that total consumption exceeds Rp3.7 million per month, while research in Kapur IX Subdistrict reveals that the majority of gambier farmers' income falls within the middle category ranging from Rp1,500,000 to Rp2,500,000 per month, a substantial disparity exists between income and expenditure among gambier farming households (Anfal Jefri & Febriandi, 2026). This condition positions gambier farming households in Harau Subdistrict in a state of economic vulnerability, where most income is absorbed by daily consumption, leaving limited surplus for savings or productive investment endeavors.

The predominance of food consumption, which constitutes 61.4% of total household expenditure, suggests that gambier farming households continue to encounter challenges in meeting their

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fundamental needs, while the considerable allocation for non-food consumption, particularly in transportation and education components, reflects the pressing necessity for mobility access and human capital investment. Research examining the contribution of gambier income to farming households in Pesisir Selatan District demonstrates that revenue derived from gambier farming contributes only 36% to total household income, with average monthly earnings from gambier recorded at Rp1,804,713 (Azriani et al., 2024). This amount falls considerably below the total household consumption of gambier farmers in Harau, which reaches Rp3,716,883 per month, indicating that supplementary income sources beyond gambier farming are essential to bridge this deficit. The significant gap between household consumption needs and income generated from gambier cultivation underscores the necessity for farmers to pursue additional livelihood strategies, such as diversification into other agricultural activities or off-farm employment, to achieve a more balanced household financial condition and reduce their vulnerability to economic shocks.

Conclusion

Based on the analysis of 30 gambier farming households in Harau Subdistrict, the average total household consumption reached Rp3,716,883 per month or Rp44,602,600 per year, with food consumption accounting for 61.4% and non-food consumption comprising 38.6% of total expenditure. This relatively high proportion of food consumption reflects that gambier farming households remain at a stage where meeting food needs constitutes their primary priority. This condition theoretically aligns with Engel's Law, which posits that lower income levels correspond to a higher proportion of income allocated to food consumption (Sentosa et al., 2025). Research on wet-rice farmers in West Sumatra further confirms the applicability of Engel's Law to farming households, demonstrating that income elasticity for all quantiles is less than one (E<1) (Sentosa et al., 2025). Within the food consumption category, animal protein represented the highest expenditure at Rp756,667 per month, substantially exceeding staple food consumption at Rp454,333 per month, indicating considerable attention to fulfilling animal protein requirements as a primary nutritional source. In the non-food category, transportation expenses (Rp525,000 per month) and education expenditures (Rp529,000 per month) recorded the highest values, reflecting high household mobility for economic and social purposes as well as awareness of the importance of long-term investment through children's education.

This condition is exacerbated by the oligopsonistic structure of the gambier market, where approximately 80,000 smallholder farmers face a limited number of exporters who control export channels to India (Hendri & Fairuzi, 2023). Monopoly index analysis reveals that exporters possess the highest monopoly index value at 12.81, compared to collectors at 4.84 and interregional traders at 2.09, confirming the dominant position of exporters in determining farm-gate prices (Hendri & Fairuzi, 2023). The farm-gate price of gambier, ranging from Rp20,000 to Rp25,000 per kilogram, stands in stark contrast to the global catechin extract price, which reaches hundreds of dollars per kilogram. Indonesia, which controls 80% of the global gambier trade, paradoxically fails to provide adequate welfare for its primary producing farmers (Hendri & Fairuzi, 2023). Based on this analysis, several policy recommendations can be proposed, including expanding subsidized health insurance coverage, improving rural transportation infrastructure, establishing and strengthening farmer cooperatives to enhance market access and price stability, providing educational assistance programs to reduce education expenditure burdens, and implementing livelihood diversification programs through agricultural extension services, micro-credit access, and downstream processing development to transform gambier into value-added products such as catechin and tannin. Consequently, institutional strengthening, economic diversification, and downstream processing constitute key strategies for improving the welfare of gambier farming households and reducing the economic vulnerability they face.

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