

COMPARATIVE ANALYSIS OF THE SOCIOECONOMIC CHARACTERISTICS OF RICE FARMERS AND OIL PALM FARMERS IN KUTAI KARTANEGARA REGENCY

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Abstract

This study aimed to compare the socioeconomic characteristics of rice farmers and oil palm farmers in Kutai Kartanegara Regency. The study used a descriptive-comparative approach based on tabulated survey data of 127 farmers, consisting of 85 rice farmers and 42 oil palm farmers. The observed variables included age, education level, landholding size, and farming pattern. Data were analyzed using descriptive statistics in the form of frequencies and percentages, while differences in distribution between farmer groups were examined using the chi-square test. The results showed that both groups were dominated by farmers of productive age, although rice farmers had a higher proportion in the 30-49 year age category (69.41%) than oil palm farmers (54.76%). Educational distribution differed significantly between groups ($p=0.035$), where rice farmers were concentrated at the junior high school level, while oil palm farmers were dominated by senior high school graduates. Landholding size also differed significantly ($p<0.001$): rice farmers were mostly found on 1-2 hectare holdings, whereas oil palm farmers had a larger proportion of holdings above 2 hectares. In the overall farming pattern, monokulture oil palm and rice-horticulture intercropping were the most common forms. These findings indicate that the structure of farmer resources and production orientation differs between rice and oil palm farming, thus requiring commodity-specific agricultural development policies.

Keywords:

Socioeconomic characteristics; rice farmers; oil palm farmers; landholding size; farming pattern.

1. Introduction

Agriculture in regions based on food crops and plantation commodities requires a solid understanding of farmers' socio-economic characteristics, as these traits influence farming choices, the capacity to adopt innovations, access to resources, and the direction of household-level business development. In socio-economic agricultural studies, variables such as age, education, and land size are frequently used as initial indicators to assess a farmer's capacity to manage their farm and respond to changes in the business environment.

A farmer's age is linked to experience, physical stamina, and the propensity to accept innovations, while education influences the ability to comprehend technical information, utilize extension services, and make economic decisions. Land size is also a crucial variable, as it reflects the scale of operations, opportunities for diversification, and the farmer's ability to develop more adaptive livelihood strategies. Research indicates that education and land size are among the individual characteristics that shape farmers' behavior and capacity within agricultural activities.

In Kutai Kartanegara Regency, the agricultural sector plays a vital role in the local economy, with both food crops and plantation commodities holding strategic positions. Regional statistical data show that Kutai Kartanegara consistently tracks socio-economic and agricultural indicators, while oil palm

remains a key smallholder plantation commodity. Meanwhile, at the national level, rice remains the primary food commodity with substantial harvested areas and production volumes making it a relevant subject for analysis at the regional level.

Examining the differences in characteristics between rice farmers and oil palm farmers is important because the two groups operate under distinct production logics. Rice farming is typically associated with household food security and cultivation systems that are more intensive within a specific planting cycle, whereas oil palm is a plantation commodity characterized by a longer business horizon and a requirement for relatively large tracts of land. These differing conditions can lead to variations in age composition, education levels, land tenure, and farming patterns.

This study aims to analyze and compare the socio-economic characteristics of rice farmers and oil palm farmers in Kutai Kartanegara Regency. The analysis focuses on four key aspects: age, education level, land area, and cropping or farming patterns. The research findings are expected to serve as a preliminary basis for formulating agricultural development strategies that are specifically tailored to the characteristics of the farmer groups.

2. Materials and Methods

This study employs a descriptive-comparative quantitative approach, utilizing tabulated survey data from farmers in Kutai Kartanegara Regency. The data analyzed were ready-to-process figures presented as frequency distributions and percentages; consequently, the research focused on identifying respondent characteristic patterns and comparing different commodity groups.

The unit of analysis comprised 127 farmers, consisting of 85 rice farmers and 42 oil palm farmers. The variables analyzed included: (1) farmer age, categorized into young, productive, and elderly age groups; (2) level of formal education; (3) farm size; and (4) cropping or farming patterns. These variables were selected as they represent fundamental indicators commonly used in agricultural socio-economic analysis.

Data analysis was conducted in two stages. The first stage involved descriptive analysis using frequencies and percentages to illustrate the distribution of each variable across the rice and oil palm farmer groups. The second stage involved comparative analysis using the chi-square test to determine whether the categorical distributions of age, education, and farm size differed statistically between the two groups. Significance was interpreted at a 5 percent error level. The analysis results are presented in tabular form and interpreted substantively within the framework of agricultural socio-economics.

3. Results

The composition of respondents shows that there were more rice farmers than oil palm farmers—85 and 42, respectively. While this numerical disparity reflects the available data structure, it does not diminish the relevance of the comparison, as each group can still be analyzed through percentage distributions across categories.

In general, the socio-economic characteristics of the farmers in this study reveal that the cultivated commodity is associated with differences in farmer profiles, particularly regarding education and land tenure. Furthermore, the age structure of both groups is dominated by the productive age demographic, indicating the continued availability of a primary agricultural workforce for both types of farming operations.

Table 1. Age distribution of rice farmers and oil palm farmers in Kutai Kartanegara Regency.

Age category	Rice (persons)	Rice (%)	Oil palm (persons)	Oil palm (%)
<30 years (young age)	7	8.24	5	11.90
30–49 years (productive age)	59	69.41	23	54.76
≥50 years (older age)	19	22.35	14	33.33

Based on Table 1, both rice and oil palm farmers are predominantly within the 30–49 age group, which is classified as the productive age range. This group accounts for 69.41% of rice farmers and 54.76% of oil palm farmers. Oil palm farmers show a higher proportion of older individuals (33.33%) compared to rice farmers (22.35%). However, chi-square test results indicate that the difference in age distribution between the two groups is not statistically significant ($\chi^2 = 2.639$; $p = 0.267$). These findings suggest that the age structures of rice and oil palm farmers in Kutai Kartanegara Regency are relatively similar, with the primary labor force falling within the productive age group. From a socio-economic perspective, this is a positive condition, as the productive age group is generally better prepared to carry out cultivation activities, manage family labor, and make business decisions.

Table 2. Distribution of education levels among rice and oil palm farmers in Kutai Kartanegara Regency.

Education level	Rice (persons)	Rice (%)	Oil palm (persons)	Oil palm (%)
No formal education	6	7.06	1	2.38
Elementary school/equivalent	19	22.35	3	7.14
Junior high school/equivalent	34	40.00	15	35.71
Senior high school/equivalent	17	20.00	18	42.86
Higher education	9	10.59	5	11.90

Table 2 reveals a clearer difference regarding education levels. The largest proportion of rice farmers had an education level equivalent to junior high school (40.00%), whereas oil palm farmers were predominantly high school graduates (42.86%). This difference in distribution is statistically significant ($\chi^2=10.377$; $p=0.035$). Substantively, these findings suggest that the oil palm farmers in this dataset tend to possess higher levels of formal education. Better education can broaden access to technical information, simple bookkeeping, marketing networks, and the ability to assess the viability of business decisions. Meanwhile, the prevalence of junior high school-level education among rice farmers highlights the importance of strengthening extension services, technical assistance, and practical communication media to ensure that cultivation innovations are effectively accepted and implemented.

Table 3. Distribution of land area among rice farmers and oil palm farmers in Kutai Kartanegara Regency.

Landholding size	Rice (persons)	Rice (%)	Oil palm (persons)	Oil palm (%)
<1 hectare	30	35.29	3	7.14
1–2 hectares	46	54.12	20	47.62
>2 hectares	9	10.59	19	45.24

The most pronounced difference is observed in land area, as presented in Table 3. The majority of rice farmers cultivate 1–2 hectares (54.12%), with only 10.59% holding land exceeding 2 hectares. Conversely, the largest proportion of oil palm farmers falls into the >2-hectare category (45.24%), followed by the 1–2 hectare category (47.62%). Chi-square test results indicate a highly significant difference in land area distribution between the two groups ($\chi^2 = 24.110$; $p < 0.001$). These findings align with the nature of the oil palm commodity, which is generally more efficient when cultivated on a larger scale and over the long term. From a socio-economic perspective, this disparity in landholding implies differences in income accumulation capacity, working capital requirements, and business risk management strategies.

Table 4. Distribution of respondents' cropping/farming patterns in Kutai Kartanegara Regency

Cropping/farming pattern	Number of respondents (persons)	Percentage (%)
Rice monoculture	11	8.66
Oil palm monoculture	42	33.07
Intercropping (rice + horticultural crops)	39	30.71
Rice–secondary crop rotation	31	24.41
Combination of oil palm plantation and food crops	4	3.15

The distribution of cropping patterns and farming systems shown in Table 4 indicates that oil palm monoculture is the most prevalent pattern (33.07%), followed by rice intercropped with horticultural crops (30.71%) and rice-secondary crop rotation (24.41%). This composition suggests that not all farming households in Kutai Kartanegara Regency operate within a monoculture system. Among rice-based farmers, the use of intercropping and rotation reflects a diversification strategy that helps spread production risks, utilize land more intensively, and maintain household income streams. Meanwhile, the combination of oil palm plantations and food crops remains relatively low (3.15%), indicating that the integration of plantation and food crop activities is not yet a dominant pattern in the data.

Overall, the study results confirm that while rice and oil palm farmers in Kutai Kartanegara Regency share a similar demographic profile regarding the prevalence of the productive age group, they differ in terms of education and landholding. Oil palm farmers tend to have higher levels of formal education and larger landholdings, whereas rice farmers are more concentrated in the medium-scale land category and possess education levels equivalent to junior high school. These differences are

significant for policy formulation. Development programs for rice farmers should focus on enhancing technical cultivation capacity, improving input use efficiency, and supporting farm diversification. Conversely, development initiatives for oil palm farmers need to emphasize strengthening plantation management, maintenance efficiency, market access, and the sustainability of smallholder plantation enterprises. Therefore, regional agricultural policies should not be uniform but rather adaptive to the socioeconomic characteristics of each commodity group.

4. Discussion

The findings of this study indicate that rice farmers and oil palm farmers in Kutai Kartanegara Regency have relatively similar demographic characteristics in terms of age structure, but show differences in socioeconomic capacity, particularly in education level and landholding size. These differences suggest that the type of agricultural commodity cultivated is associated with variations in farmer resource ownership, production orientation, and farm management strategies.

The dominance of productive-age farmers in both groups indicates that agricultural activities in the study area are still supported by an active working-age population. Rice farmers had a higher proportion of productive-age farmers (69.41%) compared with oil palm farmers (54.76%), while oil palm farmers showed a greater proportion of older farmers (33.33%). Although the statistical analysis showed that age distribution differences were not significant ($p=0.267$), the age composition remains an important factor in agricultural development. Productive-age farmers generally have greater physical capacity to conduct cultivation activities and manage farm operations, whereas older farmers may contribute through accumulated farming experience and local knowledge. Therefore, agricultural programs should consider both labor regeneration and knowledge transfer mechanisms to maintain farming sustainability.

Education level was one of the socioeconomic characteristics that showed a significant difference between rice farmers and oil palm farmers. Rice farmers were predominantly concentrated at the junior high school level (40.00%), while oil palm farmers were more dominant at the senior high school level (42.86%), with the difference statistically significant ($p=0.035$). This finding indicates that oil palm farmers in this study tend to have relatively higher formal education backgrounds. Higher education levels may support farmers in accessing agricultural information, adopting improved technologies, conducting financial management, and making production decisions. Conversely, the relatively lower educational profile among rice farmers highlights the importance of strengthening agricultural extension approaches that emphasize practical learning methods, field demonstrations, and easily accessible information channels.

The difference in education characteristics may also be related to the distinct management requirements of each commodity. Oil palm farming generally involves long-term investment decisions, plantation maintenance planning, and market-oriented production management. These activities may require greater consideration of financial planning and business management. Meanwhile, rice farming is closely associated with seasonal production cycles, where technical assistance related to cultivation efficiency, input management, and risk reduction becomes highly important. Therefore, extension strategies should be adapted to the characteristics and needs of each farmer group rather than applying a uniform approach.

Landholding size showed the strongest difference between the two farmer groups. Rice farmers were mostly categorized as having 1–2 hectares of land (54.12%), whereas oil palm farmers had a higher proportion of land ownership above 2 hectares (45.24%). The chi-square test confirmed that the

difference was statistically significant ($p < 0.001$). This condition reflects the different production characteristics between food crops and plantation commodities. Oil palm farming generally requires relatively larger land areas to achieve economic efficiency because production is based on perennial crops with long productive periods. In contrast, rice farming can still be operated effectively on smaller land areas due to its shorter cultivation cycle and intensive management system.

Differences in landholding size have important implications for farmer economic capacity. Larger land ownership provides greater opportunities for production expansion and income accumulation, although it is also accompanied by higher requirements for capital, labor, and farm management. Meanwhile, farmers with smaller land areas tend to require strategies that improve productivity, optimize input use, and diversify income sources. This explains why diversification practices such as rice-horticulture intercropping and rice-secondary crop rotation were relatively common among rice-based farming systems in this study.

The observed farming patterns further demonstrate differences in production orientation between the two commodities. Oil palm monoculture was the most common farming pattern (33.07%), followed by rice-horticulture intercropping (30.71%) and rice-palawija rotation (24.41%). The dominance of oil palm monoculture reflects the specialization tendency of plantation farmers toward a single commercial commodity. However, the relatively high proportion of diversified rice-based systems indicates that some farming households implement strategies to reduce production risks and maintain household income stability.

The low proportion of integrated oil palm and food crop systems (3.15%) suggests that crop integration between plantation and food production has not yet become a common practice among farmers in Kutai Kartanegara Regency. Developing integrated farming systems could become an alternative strategy to improve land productivity and strengthen household food availability, although its implementation requires consideration of technical compatibility, labor availability, and market opportunities.

Overall, the results demonstrate that rice farmers and oil palm farmers in Kutai Kartanegara Regency require different development approaches. Rice farmer development should emphasize productivity improvement, cultivation technology adoption, diversification, and strengthening extension support. Meanwhile, oil palm farmer development should focus on plantation management efficiency, sustainable production practices, market access, and strengthening smallholder plantation capacity. Understanding these socioeconomic differences is essential for designing agricultural policies that are more targeted, adaptive, and responsive to the characteristics of each commodity group.

5. Conclusion

This study reveals that the socioeconomic characteristics of rice and oil palm farmers in Kutai Kartanegara Regency differ in several key aspects. Both groups are predominantly composed of farmers of productive age, generally providing a promising labor base for agricultural development. However, distinct differences emerge regarding education levels and land size. Rice farmers tend to have education up to the junior high school level (or equivalent) and operate on 1–2 hectares of land, whereas oil palm farmers are more likely to have completed senior high school (or equivalent) and often manage larger landholdings exceeding 2 hectares. Farming patterns are dominated by oil palm monoculture, rice-horticulture intercropping, and rice-secondary crop rotation. These findings underscore the need for agricultural development strategies in Kutai Kartanegara Regency to account

for the specific socioeconomic characteristics associated with each commodity, thereby ensuring that policy interventions, extension services, and institutional strengthening efforts are effectively targeted.

Acknowledgements

The authors would like to express their sincere appreciation to PT Indobara Pratama for its support toward the publication of this proceeding. The authors also acknowledge all parties who provided valuable assistance and support throughout the completion of this work.

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