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POLICY ANALYSIS OF AGRICULTURAL DEVELOPMENT AS A CATALYST FOR INCREASING REGIONAL INCOME: SOCIO-ECONOMIC TRANSFORMATION IN CENTRAL KALIMANTAN

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Abstract: This study aims to analyze the effectiveness of agricultural development policies as a catalyst for increasing regional income and promoting sustainable socio-economic transformation in Central Kalimantan. The province possesses abundant natural resources; however, their potential has not been optimally utilized due to the low adoption of technology, weak infrastructure, and limited quality of human resources (HR) among farmers. Regional disparities and uneven distribution of agricultural programs have further widened the welfare gap among local farmers.

The main issue lies in the low agricultural productivity caused by the dominance of traditional farming methods and limited access to technology and modern training. This condition creates a research problem gap between agrarian potential and its actual utilization. To bridge this gap, the study emphasizes the importance of innovation-based agricultural policies, the development of agricultural infrastructure, and the strengthening of farmers' capacities through training and integrated farming systems (agroforestry).

The research employs a Mixed Methods approach with an Explanatory Sequential Design, beginning with quantitative analysis involving 174 respondents from a total population of 580, followed by a qualitative stage that includes 50 key informants from government officials, academics, and community representatives. The research locations cover nine regencies and cities selected purposively based on agrarian characteristics and policy relevance, including Kapuas, Pulang Pisau, North Barito, and Palangka Raya.

The legal foundation of the study refers to Law No. 23 of 2014, Law No. 19 of 2013, and Presidential Regulation No. 59 of 2017, along with several regional regulations and gubernatorial decrees of Central Kalimantan concerning sustainable agricultural development.

The novelty of this research lies in the development of the MUANZAR MODEL (Integrated Farming System)—a sustainable agricultural management framework focused on resource efficiency, business diversification, and value-added enhancement. The findings indicate that digital innovation, institutional strengthening, and the improvement of farmers' human resources are key factors driving inclusive and competitive agricultural development in Central Kalimantan.

Keywords (English): agriculturural, transformation, kalimantan

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INTRODUCTION:

This study analyzes agricultural development policies in Central Kalimantan as a catalyst for increasing regional income and as an agent of socio-economic transformation. Public policy analysis provides a framework for assessing policy formulation and implementation processes that are evidence-based, participatory, and responsive to farmers' needs. Meanwhile, the agricultural development approach emphasizes the interaction of technology, institutions, markets, financing, and human resources. Socio-economic transformation theory shifts the focus toward the qualitative impacts of policy on employment structures, social mobility, access to basic services, and power relations within rural communities. State-of-the-art studies indicate the need to integrate these four analytical lenses to understand the causal mechanisms linking policy interventions to economic and social change in autonomous regions.

The research underscores the relevance of this focus. Central Kalimantan occupies a strategic position in the regional agricultural economy, contributing 22.89 percent of Gross Regional Domestic Product (GRDP) in the third quarter of 2024, with key commodities including oil palm, rubber, rice, and horticulture. The Provincial Government of Central Kalimantan has prioritized this sector in the Regional Medium-Term Development Plan (RPJMD) and the Provincial Revenue and Expenditure Budget (APBD), targeting total revenue of IDR 9.3 trillion and Regional Original Revenue (PAD) of IDR 4.67 trillion by 2025.

This commitment is reflected in a series of regulations and programs, including Central Kalimantan Regional Regulation (Perda) No. 5 of 2011 on the Regional Long-Term Development Plan (RPJPD) of Central Kalimantan for 2005–2025. This regulation serves as the foundation for the province's long-term development direction, including the agricultural sector. It establishes a development vision based on sustainable and equitable natural resource utilization, positioning agriculture as a core pillar of the regional economy to be advanced through production system modernization, value-added enhancement, and expanded market access. In this sense, the regulation functions as a "strategic compass" guiding all sectoral policies—including agriculture—to align with the regional development vision.

These efforts are reinforced by the Governor Regulation (Pergub) of Central Kalimantan No. 16 of 2022 on the Regional Food and Nutrition Action Plan, and the Governor's Decree No. 188.44/360 of 2023 concerning the Establishment of the Integrated Agricultural Development Acceleration Team. This decree mandates the formation of a cross-sectoral team coordinating provincial and district/municipal agencies in planning, implementation, and supervision of strategic agricultural programs. The team's primary focus is to ensure the execution of priority programs, including the Food Estate projects in Pulang Pisau and Kapuas Regencies, as well as the distribution of agricultural machinery and equipment (ALSINTAN) to farmers. The decree aims to accelerate productivity targets, improve efficiency in the use of agricultural resources, and support rural socio-economic transformation through integrated policy interventions.

At the district level, several regulations further strengthen the agricultural sector in Central Kalimantan. First, Regional Regulation (Perda) No. 11 of 2011 in Kapuas Regency governs plantation business licensing mechanisms. Its primary objective is to establish orderly, transparent, and sustainable plantation governance. This regulation also provides the legal basis for local governments to supervise plantation activities in compliance with prevailing laws while supporting regional economic development. Through this regulation, the government can encourage plantation investment while safeguarding environmental sustainability and community welfare.

Second, Regional Regulation No. 4 of 2023 in East Kotawaringin Regency broadly regulates community development, empowerment, and supervision. Although it does not specifically address agriculture, its substance is relevant to agricultural development as it supports capacity building among communities, including farmers and fishers. This regulation offers a framework for strengthening community institutions and promoting active participation in sustainable local economic development, thereby enabling more optimal utilization of agricultural potential.

Third, Regent Regulation (Perbup) No. 15 of 2021 governs cross-agency and cross-sector coordination in implementing the Food Estate program in Pulang Pisau Regency. This regulation emphasizes synergy between the central government, local governments, and other stakeholders in managing integrated agricultural areas effectively. Policy priorities include infrastructure development, technology adoption, and farmer assistance, ensuring that the program not only enhances agricultural productivity but also promotes food self-sufficiency and farmer welfare. This regulation serves as a key instrument in implementing sustainable agricultural development strategies at the local level.

Despite the proliferation of regulations aimed at strengthening the agricultural sector, a significant gap persists between natural resource potential and the realization of socio-economic benefits. The area of irrigated rice fields has declined sharply—from 219,000 hectares to 100,963 hectares in 2024. Productivity remains relatively low, market access and infrastructure are limited, and the capacity of human resources and farmer institutions is inadequate. In short, while numerous policies exist on paper, their transformative effects are not consistently felt at the household level among farmers. This is not a trivial issue, but a serious problem requiring context-specific solutions.

The central research problem is substantively formulated as follows: to what extent can agricultural development policies, as designed and implemented, function as catalysts for increasing regional income and triggering inclusive and sustainable socio-economic transformation in Central Kalimantan? To address this overarching question, the study identifies several specific issues: policy designs that are insufficiently aligned with local agro-ecosystem characteristics and cultural contexts; low levels of farmer participation in policy formulation; overlapping mandates and weak inter-agency coordination; challenges in subsidy program effectiveness; limited access to technology and financing; inadequate irrigation and transportation infrastructure; commodity price volatility; supply chain domination by intermediaries; land-use conversion; weak integration across sectoral policies (spatial planning and environmental management); and fragile evidence-based, participatory monitoring and evaluation systems. Environmental concerns, gender issues (particularly women farmers' access), and the potential for agrarian conflict are also identified as critical considerations.

The research gap lies in the limited number of studies that simultaneously examine the causal relationships between agricultural policy, regional income, and socio-economic transformation in Central Kalimantan, including dimensions of social mobility, service access, and social capital. Longitudinal empirical evidence on the effectiveness of provincial and district-level policies remains scarce, as does the integration of environmental sustainability, digital innovation, and farmer institutions within a single analytical framework. Moreover, no contextual policy model currently links policy design, implementation capacity, and socio-economic outcomes in both quantitative and qualitative terms, underscoring the importance of a mixed-methods approach.

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The novelty of this research resides in the development of an agricultural development policy analysis framework that simultaneously connects policy design, implementation capacity, and socio-economic outcomes in Central Kalimantan. The study integrates quantitative and qualitative data to evaluate agriculture's contribution to Regional Original Revenue (PAD) while identifying enabling and constraining factors, including environmental, gender, and agrarian conflict dimensions. Furthermore, it proposes a contextual, integrative Farming System model grounded in local agro-ecosystems and cultural practices as an innovative strategy to promote inclusive and sustainable socio-economic transformation.

METHODOLOGY:

Research Methodology

This study employs a mixed-methods approac**h** to analyze agricultural development policies as a catalyst for increasing Regional Original Revenue (PAD) and driving socio-economic transformation in Central Kalimantan. This approach is selected because it allows for the integration of quantitative and qualitative data within a single research framework, thereby providing a more comprehensive understanding of policy dynamics. Quantitative data are used to examine statistically measurable aspects, such as the contribution of the agricultural sector to PAD, productivity levels, and distribution patterns. In contrast, qualitative data are collected through in-depth interviews, participant observation, and Focus Group Discussions (FGDs) to capture the perceptions, experiences, and social interactions of policy-related actors. This combination enables the study to address social, cultural, and local contextual dimensions that cannot be adequately captured by numerical data alone.

The mixed-methods approach is considered strategic because it facilitates exploration of the causal mechanisms underlying observed phenomena. Through qualitative data, the researcher can investigate how farmers, local stakeholders, and government officials interpret policy effectiveness and implementation constraints. Elements such as cultural values, farmer participation, local political dynamics, and perceptions of distributive justice become more visible through qualitative analysis. Subsequently, quantitative findings derived from surveys and official documents are further examined through interviews to provide in-depth explanations, resulting in empirically robust and nuanced findings.

The philosophical foundation of the mixed-methods approach is pragmatism**,** which emphasizes practical solutions based on the real-world consequences of policy interventions. This paradigm allows researchers to flexibly integrate quantitative and qualitative approaches to address complex problems without being confined to a single methodological perspective. The principle of triangulation is central to this approach, as the validity and reliability of findings are strengthened when data from multiple sources converge or mutually reinforce one another.

According to Creswell and Plano Clark, mixed methods offer a systematic framework for integrating quantitative and qualitative strands so that they complement each other. Fetters further emphasizes that this approach not only produces data that are both broad and in-depth, but also generates holistic insights into policy consequences and field-level practices. Accordingly, mixed methods enable a more comprehensive understanding of the relationships among agricultural policy, PAD, and socio-economic transformation.

In this study, an explanatory sequential design is applied, beginning with quantitative surveys of farmers and the collection of agricultural PAD data from government agencies, followed by semi-structured interviews with government officials, community leaders, business actors, and academics. This design ensures data triangulation, enhances the validity of the findings, and supports the development of evidence-based, context-sensitive policy recommendations that take into account the socio-cultural conditions of Central Kalimantan. It also facilitates the identification of constraining and enabling factors, including gender, environmental, and agrarian conflict dimensions, which are critical to inclusive and sustainable socio-economic transformation.

Overall, the mixed-methods approach provides strong analytical leverage to capture the complexity of interactions among agricultural policies, implementation capacity, human resources, and socio-economic impacts. As a result, the study generates not only statistical findings but also in-depth insights into the lived social realities of local communities.

Data Collection Techniques

This study involved a total of 174 respondents distributed across eight regencies and one city in Central Kalimantan Province. The selection of research locations was conducted proportionally based on agricultural characteristics, economic potential, and each area's relevance to regional development policies. This approach aimed to obtain a comprehensive and representative picture of the socio-economic and ecological conditions in each regency. In addition to the quantitative survey approach, the study was enriched with qualitative methods through in-depth interviews with 50 key informants**,** comprising government officials, academics, researchers, community leaders, and farmers. This methodological combination was expected to generate a holistic understanding of the dynamics of agricultural development policies, their contribution to Regional Original Revenue (PAD), and their impacts on socio-economic transformation in Central Kalimantan.

Kapuas Regency recorded the largest number of respondents, totaling 30 individuals. This region has strong agrarian characteristics, marked by extensive tidal lowland areas and technical irrigation systems that support rice and secondary crop production. The agricultural sector's contribution to PAD in Kapuas is relatively significant due to labor-intensive production activities and the added value generated from locally processed agricultural products. Kapuas also serves as a concrete example for other regions in implementing agricultural policies focused on optimizing natural and human resources. Its inclusion in this study is strategic for illustrating the effectiveness of agriculture policies based on intensification and modernization in supporting regional economic self-reliance.

Pulang Pisau Regency occupies a key position in this research with 25 respondents**.** The region is known as one of the main locations for the national food estate program, which integrates crop farming and livestock within a unified production system. This integration offers substantial opportunities for improving resource efficiency and farmers' incomes. Through respondents in this area, the study seeks to understand how integrative policies can enhance agricultural productivity, strengthen community capacity, and generate tangible impacts on PAD growth. Pulang Pisau also represents a policy experiment grounded in innovation and cross-sector coordination, aligning with Dye's (1972) public policy theory on the complexity of interactions among actors in the policy process.

North Barito Regency, with 20 respondents**,** presents a unique case, as it has traditionally been dominated by the mining and forestry sectors. Over the past decade, however, the region has begun

diversifying its economy through the development of dryland agriculture. Respondents from this area provide valuable insights into how natural resource–based economic transformation can be redirected toward sustainable agriculture. This shift in economic orientation also has the potential to trigger social change, as described in Lipset's (1959) socio-economic transformation theory, whereby the emergence of new sectors reshapes social structures toward more adaptive and productive patterns.

Palangka Raya City, represented by 10 respondents**,** plays a distinct role compared to other regions. Although it is not a major agrarian area, it serves as the provincial center for governance and policy coordination. Respondents from Palangka Raya include government officials, policymakers, and stakeholders involved in formulating regional development strategies. Data from this city are essential for understanding how agricultural policies are translated into concrete programs and how cross-sector coordination is conducted. Thus, Palangka Raya functions as a strategic node linking policy design with field-level implementation.

East Kotawaringin Regency was also a focus of the study, with 30 respondents**.** This region benefits from relatively well-developed agricultural infrastructure, adequate transportation networks, and a substantial farming population. These conditions make East Kotawaringin an ideal case for examining the relationship between infrastructure development, market access, and agricultural productivity. Findings from this area help address key questions regarding how infrastructure investment contributes to the effectiveness of agricultural development policies and PAD enhancement. Moreover, the region reflects the principles of human capital investment articulated by Schultz (1964), emphasizing that strengthening farmer capacity and providing supporting facilities are critical to inclusive agricultural development.

Seruyan Regency, with 20 respondents**,** exhibits a distinctive dual structure characterized by the dominance of large-scale oil palm plantations alongside smallholder farming systems. The disparity between these two models constitutes a major issue in the context of local economic equity. Through respondents in this region, the study explores how smallholder agricultural policies can compete and adapt amid corporate dominance. Seruyan thus serves as a social laboratory for examining the interplay between policy, agrarian conflict, and socio-economic change at the grassroots level.

Katingan Regency **(**15 respondents**)** was selected due to its unique status as a peatland conservation area facing significant challenges in balancing economic productivity and environmental sustainability. Respondents from this region provided valuable information on sustainable agricultural practices, environmentally friendly land management, and the role of local policies in supporting green agriculture. Katingan represents the application of sustainability governance–based policies**,** with the potential to serve as a model for sustainable agricultural development in peatland areas of Central Kalimantan.

Sukamara Regency **(**10 respondents**)** represents coastal agriculture and aquaculture systems. The research focus in this area is to understand policy adaptation dynamics in regions with geographical conditions distinct from inland agrarian zones. Coastal agriculture in Sukamara demonstrates strong potential for development through an integrated coastal farming approach, which not only strengthens the local economy but also enhances regional food security. The experiences of farmers in this region also illustrate how communities innovate amid resource constraints through technological adaptation and local institutional arrangements.

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Lamandau Regency **(**14 respondents**)** constitutes an important part of the study as it is undergoing accelerated agricultural development as a strategy for local economic diversification. With a strong agrarian social base and progressive local policy support, Lamandau provides insights into how agriculture can function as a growth engine for remote areas. Respondents from Lamandau described how strengthening farmer institutions, improving basic infrastructure, and fostering public–private collaboration can enhance productivity while reinforcing agriculture's contribution to PAD.

In addition to the 174 survey respondents, the study involved 50 key informants divided into three main groups. The first group comprised 20 government officials holding strategic positions at the provincial and regency levels, including Heads of Agricultural Offices, Heads of Facilities and Infrastructure Divisions, representatives from regional development planning agencies (Bappeda), and staff from the Governor's or Regents' offices. Interviews with this group aimed to explore how agricultural policies are formulated, financed, and implemented within the framework of regional development planning. The second group consisted of 10 academics and researchers from the University of Palangka Raya and regional research institutions, who provided theoretical analysis, policy critique, and research-based recommendations. Their contributions strengthened the conceptual and methodological validity of the study, particularly in assessing policy effectiveness and structural challenges within the agricultural sector.

Data Analysis Techniques

Quantitative analysis is a scientific approach that focuses on processing numerical data to produce statistically based conclusions that are objective and empirically testable. According to Sugiyono (2017), quantitative analysis employs mathematical and statistical methods to test hypotheses and draw generalizations from sample data to represent a population. In development policy research, this method is used to identify patterns, trends, and relationships among variables—for example, the relationships between education level, access to information, and community participation in regional development. Thus, quantitative analysis is not merely descriptive but also inferential in explaining social and economic phenomena in measurable terms.

Neuman (2014) further explains that quantitative analysis provides a systematic way to link survey-generated numerical data with relevant theory. This process is carried out using statistical tools such as regression analysis, t-tests, and ANOVA to identify causal relationships among variables. Quantitative data are coded into numerical form so they can be processed using statistical software, enabling researchers to derive objective conclusions and minimize interpretive bias. As such, quantitative analysis serves as the backbone for answering research questions that require strong empirical evidence.

Creswell (2012) identifies three main types of quantitative analysis: (1) descriptive analysis, which summarizes data characteristics such as means, medians, and standard deviations; (2) inferential analysis, which tests hypotheses and allows generalization from samples to populations; and (3) multivariate analysis, including multiple regression, factor analysis, and cluster analysis, which are used to examine complex relationships among variables. The choice of analytical technique depends on the research objectives, data characteristics, and the theoretical model employed.

The initial stage of quantitative analysis is data cleaning**,** which ensures that the data are valid, consistent, and free from errors such as missing values, duplication, or illogical responses. For example, respondents who select the same option for all questions require verification, as this may indicate a lack of engagement. This is followed by data coding**,** which involves transforming

qualitative responses into numerical values—for instance, converting Likert scale responses from "strongly agree" to "strongly disagree" into numerical scores ranging from 5 to 1. This step is essential for enabling statistical processing, including frequency analysis, correlation, and regression.

The next step is statistical analysis**,** beginning with descriptive statistics to obtain an overview of the data. Descriptive statistics present measures such as means, percentages, and standard deviations to understand respondent patterns across variables. For example, to assess public perceptions of the importance of local wisdom in development policy, the researcher can calculate mean Likert scores. Frequency distributions illustrate the spread of opinions, while standard deviations indicate the degree of homogeneity or diversity in responses. A smaller standard deviation suggests more uniform perceptions, whereas a larger value reflects greater variation.

A critical subsequent stage is validity and reliability testing of the research instruments. Validity testing ensures that each questionnaire item accurately measures the intended construct, such as satisfaction with development policies. Validity can be assessed through item–total correlations or exploratory factor analysis, and irrelevant or insignificant items are removed to enhance measurement accuracy. Reliability, on the other hand, assesses the consistency of respondents' answers across items within the same construct. Cronbach's Alpha is commonly used as a reliability measure, with values above 0.70 indicating good internal consistency. Valid and reliable instruments ensure that the research findings are credible and replicable in similar contexts.

At an advanced stage, researchers may apply multivariate analysis techniques such as multiple regression or Structural Equation Modeling (SEM). Multiple regression is used to examine the influence of several independent variables on a single dependent variable—for example, how local wisdom, modernization, and public satisfaction affect perceptions of policy inclusivity. SEM, in contrast, is employed to analyze relationships among latent variables that cannot be directly observed but are represented by multiple indicators. SEM allows for the simultaneous examination of direct and indirect relationships, offering deeper insights into the socio-economic dynamics observed in the field.

In addition, Multicriteria Decision Analysis (MCDA) is a relevant quantitative method in development policy research. MCDA is used to evaluate policy alternatives based on multiple interacting criteria, such as social impact, economic benefits, environmental sustainability, and the preservation of local cultural values. The MCDA process involves assigning weights to each criterion, scoring policy alternatives, and constructing a decision matrix. The outcome is a ranked list of policy priorities that best align with inclusive and sustainable development goals. MCDA not only generates quantitative outputs but also enhances transparency in public decision-making processes.

Qualitative analysis, meanwhile, complements the quantitative approach by exploring meanings, perceptions, and lived experiences of participants in depth. The first step in qualitative analysis is data transcription**,** which involves converting interview and FGD recordings into complete written text. This process is conducted meticulously to ensure that conversational context, expressions, and emotional nuances are accurately captured. High-quality transcription forms a critical foundation for subsequent analysis by preserving the complexity of stakeholders' perspectives.

Following transcription, the researcher undertakes coding**,** which entails assigning labels to segments of text that convey specific meanings relevant to the research themes. Coded data are

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https://cgscopus.com/index.php/journals

then organized through categorization and thematic identification. For instance, statements highlighting the importance of customary leaders in development may be grouped under the theme "Role of Local Wisdom," while complaints about cultural value disparities may be categorized as "Challenges of Modernization Integration." Organizing data into themes enables a clearer understanding of community thought patterns and policy dynamics.

The next stage involves developing thematic narratives**,** where empirical findings are linked to theoretical and policy contexts. These narratives do not merely summarize interview results but interpret the underlying meanings of respondents' statements, explain why certain phenomena occur, and relate them to existing literature or conceptual frameworks. For example, findings indicating that communities feel excluded from policy formulation can be interpreted through theories of public participation or social exclusion in development.

To enhance the rigor and credibility of the findings, data triangulation is applied. This process compares information obtained from multiple sources and methods, such as interviews, FGDs, and policy documents, to confirm consistency and reduce single-source bias. When findings converge across sources, they are considered more valid; when discrepancies arise, further investigation is conducted to identify underlying causes, such as differing stakeholder interests or contextual variations.

Through the integration of quantitative and qualitative analyses, this development policy research in Central Kalimantan achieves a comprehensive and balanced understanding. Quantitative data provide a strong empirical foundation through numerical evidence and statistical relationships, while qualitative data enrich interpretation with deeper social meaning and contextual insight. This mixed analytical approach enables the researcher to address not only "how much" a phenomenon occurs, but also "why" and "how" it emerges.

RESULTS AND DISCUSSION:

Results

This research procedure was systematically designed to assess the effectiveness of agricultural development policies as a catalyst for increasing regional income and socio-economic transformation in Central Kalimantan. This study employed a mixed methods approach with an explanatory sequential design, where the quantitative stage was conducted first to obtain statistical data, followed by qualitative exploration to deepen the meaning behind the figures. This approach enabled researchers to understand not only the extent of the policy's influence but also how it was perceived and implemented in the field.

The study population consisted of 580 individuals, including farmers, agricultural business actors, and local government officials. A representative sample of 30%, or 174 respondents, was selected using stratification techniques to ensure regional and socio-economic group representation. Furthermore, the study involved 50 key informants: 20 government officials, 10 academics, and 20 community leaders, selected purposively based on their knowledge and involvement in agricultural policy.

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https://cgscopus.com/index.php/journals

The research locations covered nine regencies/cities in Central Kalimantan: Kapuas, Pulang Pisau, North Barito, Gunung Mas, Palangka Raya, Seruyan, East Kotawaringin, Katingan, and Sukamara. The locations were selected based on diverse agrarian characteristics, different agricultural models such as food estates and tidal farming, and social variations reflecting diverse policy contexts.

Data collection was conducted through a survey using closed-ended and semi-open-ended questionnaires to explore the perceptions, experiences, and obstacles faced by farmers and agricultural business actors. The research instruments were tested for validity and reliability through field trials and expert assessment. Descriptive and inferential statistical analyses were used to identify patterns, relationships, and the impact of policies on the productivity and income of farming communities.

The next stage was qualitative research through in-depth interviews and focus group discussions (FGDs), using a flexible and culturally sensitive approach. Qualitative data was analyzed thematically to identify social dynamics, policy interpretations, and implementation barriers in the field. The integration of quantitative and qualitative results was carried out using triangulation techniques to strengthen validity and enrich understanding of the findings.

To formulate policy recommendations, this study applies Multicriteria Decision Analysis (MCDA) to assess various alternatives based on their economic, social, and environmental impacts, and public acceptance. Drawing on regulations such as the Regional Government Law and the Farmer Protection Law, this study identifies the root causes of low agricultural productivity and tests the feasibility of the MUANZAR Model—an integrated agricultural system based on ecology, economics, and social aspects—as a strategic innovation to increase local revenue (PAD) and farmer welfare.

Data Description

This research procedure was systematically designed to assess the effectiveness of agricultural development policies as a catalyst for increasing regional income and socio-economic transformation in Central Kalimantan. This study employed a mixed methods approach with an explanatory sequential design. The quantitative phase was conducted first to obtain statistical data, followed by qualitative exploration to deepen the meaning behind the numerical results. This approach enabled researchers to understand the relationship between empirical data and the social context underlying agricultural policy implementation.

The study population consisted of 580 individuals, including farmers, agricultural business actors, and local government officials, with a representative sample of 174 respondents (30%) selected through stratification techniques to ensure representation of regions and socio-economic groups. In addition, 50 key informants—consisting of government officials, academics, and community leaders—were purposively selected due to their direct involvement in agricultural policy. The study locations were spread across nine districts/cities: Kapuas, Pulang Pisau, North

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Volume 21, Issue 1, 2026
https://cgscopus.com/index.php/journals

Barito, Gunung Mas, Palangka Raya, Seruyan, East Kotawaringin, Katingan, and Sukamara. These regions were selected based on the diversity of agrarian characteristics and differences in agricultural patterns such as food estates and tidal farming.

Data collection was conducted through a survey using closed-ended and semi-open-ended questionnaires to explore the perceptions, experiences, and obstacles faced by agricultural actors. The instruments were tested for validity and reliability through field trials and expert assessments, while statistical analysis was used to identify patterns and the impact of policies on farmer productivity and income.

The qualitative phase was conducted through in-depth interviews and focus group discussions (FGDs) analyzed thematically to uncover the social, political, and economic contexts influencing policy implementation. The integration of quantitative and qualitative results was carried out using triangulation techniques to strengthen the validity of the findings. Furthermore, the study applied Multicriteria Decision Analysis (MCDA) to evaluate policy alternatives based on their economic, social, and environmental impacts. This approach also tested the feasibility of the MUANZAR Model, an integrated agricultural system based on ecology, economics, and social aspects, as an innovation to increase local revenue (PAD) and farmer welfare.

Table 4.1 Definition and Explanation of Quantitative and Qualitative Data Results

Expert Name	Year	Campus	Country	Data Types	Understanding & Explanation of Data Results	Relevance to Research
John W. Creswell	2014	University of Nebraska–Lincoln	United States of America	Quantitative & Qualitative	Quantitative data is the result of structured measurements of variables through surveys, while qualitative data comes from observations and interviews to understand meaning and perception. It is used in an explanatory sequential design to explain the results in depth.	Explaining the relationship between low agricultural productivity and factors of access to technology, irrigation, and government assistance through a survey; supplemented by an explanation of interviews regarding cultural and social barriers to the adoption of agricultural innovation in

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https://cgscopus.com/index.php/journals

						Central Kalimantan.
Jennifer C. Greene	2007	University of Illinois at Urbana–Champaign	United States of America	Mixed Methods	Quantitative data provides generalization and precision, while qualitative data provides depth and context. Integrating the two enhances validity and a comprehensive understanding of social issues and public policy.	A mixed approach provides a holistic picture: low productivity figures are further understood through farmer interviews that reveal structural barriers, lack of participation in policy, and geographic and social challenges in remote areas of Central Kalimantan.
Alan Bryman	2012	University of Leicester	English	Quantitative & Qualitative	Quantitative data focuses on objectivity and hypothesis testing; qualitative data explores subjective experiences and perceptions. Sequential designs allow researchers to explore the "why" and "how" of initial statistical findings.	Providing contextual understanding of quantitative data: for example, low yields in a particular region are explained by qualitative data highlighting the lack of extension services, land conflicts, or the incompatibility of technology with local conditions in Central Kalimantan.

Source: field research results, 2025

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https://cgscopus.com/index.php/journals

3.2 Discussion

The underlying problem that continues to plague the agricultural sector in this province is low productivity despite its abundant natural resource potential. Central Kalimantan boasts strong agrarian characteristics, with fertile land, a stable tropical climate, and ample water resources. However, this potential remains underutilized. This study aims to analyze the effectiveness of agricultural development policies as a key driver in increasing Regional Original Income (PAD) while simultaneously triggering inclusive and sustainable socio-economic transformation.

Using a mixed methods approach and an Explanatory Sequential Design, this study began with the collection and analysis of quantitative data from 174 respondents—approximately 30 percent of the total population of farmers and interest groups totaling 580 people. This data was strengthened through in-depth interviews with 50 key informants consisting of 20 government officials, 10 academics, and 20 community leaders. The results of the analysis indicate that the problem of low productivity is significantly influenced by three main factors: the dominance of traditional agricultural methods, limited access to modern agricultural technology, and the minimal distribution of relevant agricultural technical information for farmers.

Most respondents revealed that farming practices still rely on traditional seasonal calendars, uncertified local seeds, and land management that is not based on data and technology. This situation is exacerbated by limited training, extension services, and uneven government technological intervention. In fact, survey data shows that approximately 68 percent of farmers have never participated in technology-based training, while 75 percent stated they do not understand the potential of digitalization in farm management.

Qualitative findings indicate that informants from the government and academic sectors recognize the gap between Central Kalimantan's agricultural potential and its realized productivity. Community leaders and farmers complained about the lack of access to basic agricultural facilities such as irrigation, agricultural machinery (alsintan), and affordable business capital. Farmer institutions are also considered to be weak, as many cooperatives or farmer groups have not been empowered as centers of innovation and village economic development. The low contribution of agriculture to local revenue (PAD) reflects a weak system for recording and integrating agricultural value-added into the regional fiscal system.

Therefore, effective agricultural development must go beyond simply distributing tools and fertilizers. It also involves developing policies that adapt to local needs, strengthening farmer institutions, digitizing agribusiness systems, and providing ongoing training tailored to the geographic and social conditions of each district. Models like MUANZAR, which emphasize the integration of ecological, economic, and social aspects, exemplify alternative strategies that can boost productivity while simultaneously strengthening local revenue (PAD) and community well-being.

Thus, the results of this study confirm that agricultural policy in Central Kalimantan requires a paradigm transformation: from an input-based approach to an institutional and technological approach that focuses on long-term results, farmer economic resilience, and real contributions to regional development.

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Qualitative Research Data Results on Main Problems and Recommendations for Agricultural Development

Explanation of Table 4.3.1: Qualitative Interview Results on Key Issues and Recommendations for Agricultural Development in Central Kalimantan presents the results of qualitative interviews with 50 key informants from three main groups: government officials, academics, and community leaders. These interviews were conducted to delve deeper into the key issues in Central Kalimantan's agricultural sector and develop more contextual and applicable policy recommendations. These findings represent a multi-actor perspective on the challenges of agricultural sector development while providing strategic direction for policy reform based on local realities.

A group of 20 government officials, from provincial, district, sub-district, and village levels, stated that infrastructure disparities between regions are the most fundamental problem. The construction of production roads, irrigation, and agricultural warehouses is still concentrated in areas close to district capitals, while remote areas lag far behind. Other emerging issues include the inaccuracy of farmer data and poor cross-sector coordination, which leads to inaccurate agricultural assistance. Therefore, they recommended the use of up-to-date data-based spatial mapping, equitable development of agricultural infrastructure using a regional needs-based approach, and increasing the number and capacity of field agricultural extension workers as the spearhead of technical services.

From the academic perspective, 10 participants expressed concern that agricultural development policies have not been based on local research and tend to be normative. They identified low technology adoption by farmers as a result of low digital literacy and a lack of training tailored to the agro-ecological conditions of each region. The proposed solution is the involvement of academics and universities in policy planning, implementation, and evaluation, as well as the development of regionally based applied research that bridges farmers' needs with relevant scientific innovations.

Meanwhile, a group of community leaders, consisting of traditional leaders, religious leaders, and heads of farmer groups from nine districts/cities, emphasized that most farmers still use traditional methods and face difficulties in accessing training and market information. Dependence on planting seasons and limited knowledge of agricultural prices and inputs are major obstacles to making decisions about farming. Therefore, they recommended a locally based community empowerment approach, context-appropriate agroforestry training, and the development of a digital market information system that farmers can access in real time.

Summarizing the interview results from all three categories of informants, it can be concluded that the main challenges facing Central Kalimantan in agricultural development include gaps in infrastructure and program access, gaps in human resource quality, and low village community participation in policy formulation. Regional inequality is also a structural issue that exacerbates inequality in yields and productivity. To address these challenges, it is recommended to strengthen the human resource capacity of farmers, encourage the adoption of integrated farming systems, and implement policies based on agroecological zoning and local potential to make agricultural development more inclusive, equitable, and sustainable.

Thus, the results of this interview not only enrich the descriptive aspects of the research, but also form a strong empirical basis for the reformulation of agricultural policies in Central Kalimantan, which are able to address the issues of productivity and socio-economic disparities between regions.

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Volume 21, Issue 1, 2026
https://cgscopus.com/index.php/journals

Table 4.5.1. Qualitative Research Data Results from Interviews on Key Problems and Recommendations for Agricultural Development.

Informant Category	Amount	Key Interview Findings	Key Issues	Policy Recommendations
Government Apparatus	20 People	Infrastructure disparities between regions, weak accuracy of farmer data, low cross-sector coordination	Lack of production roads and irrigation in remote areas means aid is not reaching the right targets.	Data-based spatial mapping, priority farming infrastructure development, increasing the number and quality of extension workers
Academics	10 People	Policies are not yet based on local research, technology adoption is low, farmer training is not yet contextual	Low technological literacy, policies not suited to local agroecological conditions	Involvement of academics in policy planning and evaluation, area-based applied research
Public figure	20 People	Farmers still use traditional methods, minimal training, difficult market access	Seasonal dependence, lack of pricing and input information, non-inclusive programs	Community-based approach, agroforestry training, digital price & market information system
All Informants (Summary)	50 People	Inequality in program access, gaps in human resources and technology, low participation of village communities in policy	Regional inequality, uneven infrastructure, minimal program communication	Strengthening the capacity of farmer human resources, adoption of integrated farming systems, zone-based policies and local potential

Source: Results of qualitative research data in Central Kalimantan, 2025

Qualitative Research Data Results Regarding Research Problem Formulation Questions

This study explored stakeholder perspectives through a qualitative approach, providing a comprehensive picture of the challenges, opportunities, and needs for agricultural transformation in Central Kalimantan. Interviews with 20 government officials revealed that most recognized the importance of agricultural modernization but acknowledged weak cross-sectoral coordination and limited technical capacity at the implementation level. Several heads of district agricultural offices stated that programs such as agricultural machinery (alsintan) assistance or food estates had not been accompanied by adequate technical assistance for farmers. This resulted in the underutilization of these tools. Village officials also revealed that the distribution of agricultural development programs was uneven, tending to only reach farmers in formal groups. As a result, most farmers in the outlying areas were excluded from provincial priority programs. This reinforces the indication of spatial inequality in agricultural development in Central Kalimantan.

On the other hand, interviews with 10 academics from local universities, such as Palangka Raya University and STIPER Gumas, revealed sharp criticism of the low application of research-based approaches in regional agricultural policymaking. The academics stated that agricultural policies in Central Kalimantan tend to be normative and not contextualized to agro-ecological conditions and the needs of local farmers. They also highlighted the weakness of basic agricultural sector data, including actual productivity data, farmer profiles, and data on active agricultural land. This has implications for inaccurate and poorly targeted policy planning. The academics recommended synergy between local governments and higher education institutions in the form of applied research, technology incubation, and locally-based training to ensure agricultural policies are more grounded and responsive to environmental and market changes.

Meanwhile, interviews with 20 community leaders from nine research locations revealed that the majority of farmers and village stakeholders face difficulties in adopting modern agricultural technologies due to various limitations. Many farmers lack digital literacy, making it difficult to use agricultural applications, market price information, or weather forecasts provided via smartphones. Furthermore, the persistence of a tradition of traditional farming practices without innovation has led some farmers to be reluctant to change cropping patterns or try new commodities. Community leaders also stated that access to quality fertilizers and seeds remains a chronic problem. Delays in distribution and high prices force farmers to choose cheaper, albeit less productive, options. Traditional and religious leaders in several villages even highlighted that agricultural development has not addressed broader social issues such as the regeneration of young farmers, rural unemployment, and the conversion of agricultural land to non-agricultural uses.

In general, all three groups of informants agreed that low agricultural productivity is not solely caused by technical factors in the field, but is also closely related to structural and institutional issues. For example, the lack of an adequate incentive system for farmers to innovate or produce on a large scale has led to stagnant motivation. The local government has also not fully established farmer economic institutions, such as cooperatives or village-owned enterprises (BUMDes), which could act as a link between farmers and modern markets. In this regard, institutional development is a crucial aspect that needs to be addressed if Central Kalimantan's agricultural productivity and competitiveness are to be increased.

Several government informants emphasized the importance of developing a region-based agricultural system, as outlined in Governor Regulation No. 16 of 2022, which encourages the establishment of corporation-based farmer economic institutions. However, implementation remains very limited and has only reached a small portion of the province's farmers. Academics believe this farmer corporation program has significant potential to boost business efficiency and increase productivity, but it must be supported by a transparent governance system, intensive mentoring, and the involvement of universities in designing an implementation roadmap. Meanwhile, community leaders hope that this program will not only target established farmer groups but also consider traditional farmers who have been marginalized in terms of policy and market access.

In a broader discussion, interviews also revealed that spatial and social disparities in agricultural development in Central Kalimantan are inhibiting the sector's transformation into a regional economic driver. Regions like Kapuas and East Kotawaringin, which are major production centers, are relatively more advanced in terms of infrastructure, institutional capacity, and program interventions. However, areas like Gunung Mas, Sukamara, and Seruyan still lag behind in terms of productivity and farm management capacity. Academic and government

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Volume 21, Issue 1, 2026
https://cgscopus.com/index.php/journals

officials suggested a zoning-based approach and agroecological mapping to ensure agricultural development interventions are fairer, more equitable, and aligned with local potential.

The discussion also showed that the integrated farming model was the approach most supported by informants. This model integrates food crop farming with livestock, fisheries, and agricultural processing cottage industries. This approach is believed to be more adaptive to the challenges of climate change and market prices, and to open up more income opportunities for farmers. In this regard, many academic informants and community leaders cited the MUANZAR Model as an example of ecological and social zoning-based agricultural management that prioritizes resource efficiency, commodity diversification, and sustainable value-added enhancement.

The conclusions from this interview discussion reinforce that agricultural development in Central Kalimantan still faces significant challenges, particularly in productivity, technology, and institutional aspects. However, there is a significant opportunity to drive transformation in this sector through a more adaptive, collaborative, and data-driven approach. More contextual policy support, sustainable farmer human resource development, and strengthening of farmer economic institutions are essential for making agriculture a primary catalyst for increasing regional income and socio-economic transformation in Central Kalimantan.

Table 4.5.2 Qualitative Interview Results on Research Problem Formulation Questions

Informant Category	Amount	Research Questions	Key Interview Findings	Qualitative Analysis
Government Apparatus	20 People	What is the role of human resource quality in managing the agricultural sector in Central Kalimantan?	Most people said that the quality of farmers' human resources was low due to minimal training, lack of technical assistance, and the farmers being predominantly old.	Human resources are a key obstacle hindering technology adoption and production efficiency. Local governments need massive, locally-based training programs.
		What is the agricultural development policy based on technology and infrastructure?	The program remains centralized and has not yet reached remote villages. Agricultural machinery is not being used optimally. Farm road infrastructure is minimal.	Policies are less adaptive and less inclusive. Policy decentralization and precise mapping of infrastructure needs are needed.
		What is a more sustainable agricultural	Most agree with the integrated agricultural system (crops-livestock-	Integrated farming models are more efficient, reduce dependence on a single

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Volume 21, Issue 1, 2026
https://cgscopus.com/index.php/journals

Informant Category	Amount	Research Questions	Key Interview Findings	Qualitative Analysis
		management model?	fisheries) based on corporate institutions.	commodity and increase farmers' incomes.
Academics	10 People	How does increasing human resource capacity contribute to the progress of the agricultural sector?	Farmer education is minimal, requiring a community-based approach and local research. Training curricula need to be adapted to the realities of the field.	Collaborative technology incubation and applied research between campuses and local governments is needed.
		How effective are infrastructure and technology-based agricultural policies?	Low effectiveness due to weak baseline data and lack of evidence-based program planning.	The main weakness is inadequate spatial data and mapping, so that policy implementation is not on target.
		What agricultural model can increase PAD in the long term?	Agroforestry, integrated farming, and farmer corporation models are the future direction of agriculture in Central Kalimantan.	Diversification and integration of sustainable farming systems are needed to increase local revenue through farming levies and MSME taxes.
Public figure	20 People	What are the challenges in agricultural management today?	Traditional methods, dependence on seasons, and limited access to fertilizer and tools are the main obstacles.	The digital and social gap hinders farmer development. Digital literacy programs and regular mentoring from extension workers are needed.
		To what extent do farmers feel the benefits of technology-based programs?	Access to market, weather, and superior seed information remains limited, and the program has not yet reached non-group farmers.	Technology implementation must be accompanied by training, equipment subsidies, and cheap internet access in villages.
		What kind of agricultural model is most relevant?	Farmers prefer the combined farming and livestock model (e.g. rice-ducks, oil palm-cattle) because it is more risk-tolerant.	Integrated farming systems support the economy of farming families and strengthen local food security.

Source: Results of qualitative research data in Central Kalimantan, 2025

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CONCLUSIONS

This study concludes that agricultural development policies in Central Kalimantan have significant potential to function as a catalyst for increasing Regional Original Revenue (PAD) and driving socio-economic transformation; however, their effectiveness remains constrained by structural, institutional, and capacity-related challenges. Empirical findings from the mixed-methods analysis demonstrate that low agricultural productivity is closely linked to the dominance of traditional farming practices, limited access to modern technology, inadequate infrastructure, and weak farmer institutions. Although the provincial and district governments have introduced numerous regulations and strategic programs—such as food estate development, agricultural machinery distribution, and integrated planning mechanisms—their impacts have not been evenly distributed across regions or consistently felt at the household level. As a result, the contribution of agriculture to PAD and rural welfare remains below its potential, reinforcing regional disparities and limiting inclusive growth.

Furthermore, this study affirms that meaningful socio-economic transformation in Central Kalimantan's agricultural sector requires a paradigm shift from an input-oriented and project-based approach toward an integrated, institutional, and technology-driven development model. The proposed MUANZAR Model (Integrated Farming System) offers a contextual policy innovation by integrating ecological suitability, economic diversification, and social empowerment within local agro-ecosystems and cultural practices. Strengthening farmer human resources, improving cross-sector coordination, enhancing digital and market access, and embedding evidence-based monitoring and evaluation are essential to ensure that agricultural policies generate sustainable value added and inclusive socio-economic outcomes. In this regard, agriculture can evolve beyond a subsistence sector into a strategic engine of regional development, capable of increasing PAD while simultaneously improving social equity, resilience, and long-term sustainability in Central Kalimantan.

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