

From Fields To Future: Collaborative Governance In Agricultural Development

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Abstract

This paper examines the implementation and impact of a collaborative innovation model for sustainable agricultural development in Bantaeng Regency, Indonesia. The study emphasizes integrating policies, legal frameworks, financial support, and farmer training to create a strong agricultural ecosystem. Key to the model's success is the collaboration among local governments, farmer groups, and financial institutions, which boosts agricultural production and processing. The study highlights the role of techno-parks and processing facilities in enhancing technological integration and value addition. Through thematic analysis, the research explores stakeholder interactions, particularly during the COVID-19 pandemic, stressing the need for adaptable governance and clear role definition for effective implementation. While the model has contributed to regional economic growth, challenges such as cultural and regulatory barriers persist, necessitating adaptive management and the use of digital platforms. The study calls for further research on the long-term impacts of collaborative models and the role of technology in innovation. It advocates for cooperative approaches to address global agricultural challenges and underscores the crucial role of local governments in fostering sustainable development through stakeholder engagement.

Keywords: collaborative innovation, local government, agriculture sector, local development

BACKGROUND

The role of collaborative innovation in public sector programs has garnered significant attention as stakeholders seek to enhance effectiveness and sustainability in challenging contexts (Lopes & Farias, 2022; Rakšnys, et al., 2020; Pun et al., 2005). In recent years, the focus on collaborative innovation has primarily revolved around developed nations, where established governance structures facilitate such initiatives. However, a notable research gap persists regarding the dynamics and effectiveness of collaborative innovation in developing regions, particularly in agricultural development. This study aims to bridge this gap by investigating the collaborative innovation agriculture program at the local government level in Indonesia, initiated to accelerate agricultural development amidst the historic challenges posed by the COVID-19 pandemic.

Current literature has underscored the vital role of collaborative innovation in improving public sector performance (Lindsay et al., 2017; Agger, & Sørensen, 2018). However, empirical studies examining the practical application of these frameworks in regions with limited resources and institutional capacities are sparse. Previous research, while recognizing the theoretical potential of collaborative innovation models (Ansell & Gash, 2007; Eggers & Singh, 2009), has largely overlooked how these frameworks can be adapted for real-world implementation in the agricultural sectors of developing economies. This study directly addresses this gap by providing empirical evidence from Indonesia, offering insights into how collaborative innovation operates in a context marked by resource constraints and institutional challenges.

The significance of this research lies in its contribution to the broader discourse on public administration by elucidating the practical implementation of collaborative innovation in a complex and challenging environment. By examining the interplay between local governments, private entities, and farmer groups, this study highlights how coordinated efforts among these actors can foster sustainable agricultural development. Furthermore, it delves into the dynamics of meta-governance and the roles of various stakeholders, providing

a nuanced understanding of how public sector innovation can be effectively managed and sustained over time.

This research also addresses critical gaps in the literature. Firstly, while collaborative innovation has been examined extensively in developing countries, the operational realities of these models in specific regional contexts remain underexplored. This study enriches the discourse by presenting empirical findings from Indonesia, illuminating the intricacies of collaborative innovation in the agricultural sector. Second, the existing literature has predominantly focused on theoretical perspectives regarding meta-governance in public administration (Klijn & Koppenjan, 2000). This research offers valuable insights into effective governance strategies in the face of adversity by empirically investigating how meta-governance can be operationalized in practice, especially in regions where institutional frameworks are fragile. Finally, while the role of local governments in fostering innovation is acknowledged (Healey, 2007), there is a need for more detailed empirical investigations into how these entities can coordinate effectively with other stakeholders to achieve sustainable development goals. This study provides concrete evidence of how the local government has navigated these challenges to produce positive outcomes in agricultural development.

Ultimately, this study proposes the following research question: "How do collaborative innovation models influence the sustainability of agricultural development programs in regions facing infrastructural challenges at the local government level? This question delves into the role of innovation models in ensuring long-term success despite initial obstacles, making the study more relevant to regions with similar challenges. The study is significant for academic scholars and practitioners in public administration. For academics, it enriches the existing body of knowledge by providing new insights into the operationalization of collaborative innovation in a non-Western context. For practitioners—particularly those involved in local governance and agricultural development—its findings offer practical recommendations for enhancing the effectiveness of collaborative programs. By bridging the gap between theory and practice, this research contributes to scholarly discourse while delivering actionable guidance for policymakers and development practitioners seeking to foster sustainable agricultural development in complex environments.

LITERATURE REVIEW

The concept of collaborative innovation has gained prominence in public administration and agricultural development, particularly in response to complex challenges such as the COVID-19 pandemic. Collaborative innovation is the process through which multiple stakeholders, including governments, private entities, and local communities, work together to foster innovation and drive development (Ansell & Gash, 2007; Sørensen & Torfing, 2015).

The landscape of public administration is increasingly shaped by collaborative innovation, especially in complex governance environments (Sørensen & Torfing, 2015; Hooge & Du, 2016). Theoretical frameworks surrounding collaborative innovation emphasize the interactions among various actors and the mechanisms facilitating these collaborations (Sørensen & Torfing, 2015; Hooge & Du, 2016; Klijn and Koppenjan, 2000). A foundational concept within this discourse is meta-governance, as articulated by Klijn and Koppenjan (2000), which refers to the governance of governance. This approach underscores the need for coordination among different governance actors to manage complex networks effectively. In contexts where multiple stakeholders—such as governmental bodies, private sector entities, and civil society organizations—interact, the meta-governance framework provides essential insights into how these relationships can be orchestrated to enhance collaborative outcomes (Wenger, 1998; Powel and Grodal, 2004).

In addition, the impact of collaborative innovation on policy formulation and implementation is an area that warrants further investigation. The interconnectedness of various actors in collaborative frameworks can lead to more informed and inclusive policy decisions (Emerson et al., 2012). As stakeholders work together to address common challenges, they can share knowledge and resources that enhance the overall effectiveness of public policies. This collaborative approach can also foster innovation in policy design, leading to more adaptive and resilient governance structures. Research has shown that policies developed through

collaborative processes are often more robust and better suited to the complexities of real-world challenges (Vodden, 2014; Breslin, 2018; Nadeau, 2023; Caló et al., 2023). Therefore, understanding how collaborative innovation influences policy outcomes is crucial for public administration scholars and practitioners.

The collaborative innovation governance model suggested by Ansell and Gash (2007) posits that the innovation collaboration process within institutional interaction offers a series of analyses for the collaborative innovation process, from a predetermined initial form to a proactive form of meta-governance. This model aims to map interactions between various public actors by encompassing product and service, process, organizational, and policy innovation. By doing so, collaborative innovation can produce different outcomes and be evaluated by the various actors involved. The evaluation of collaborative innovation focuses on improving "next practices" by learning from "previous practices" to develop sustainable practices for the future.

Research indicates that collaborative innovation favors the public sector (Ojasalo & Kähäri, 2018; Rakšnys et al., 2020; Lopes & Farias, 2020).). For instance, a stakeholder analysis of the school policy field demonstrates that collaboration positively affects policy innovation implementation despite the limited involvement of actors due to their constituents (Robert and Bradley, 1991). Additionally, a comparative case study of urban development reveals that Turin has a greater capacity for innovation than Milan, which can be attributed to its more diverse network of government networks (Dente et al., 2005).

Collaboration is a crucial and necessary method of managing multiple agencies in the public sector. Hence, it is imperative to analyze the discrepancies in collaboration approaches that public institutions utilize within the innovation framework (Arfita et al., 2023). Eggers and Singh (2009) thoroughly examine five collaborative innovation methodologies. Firstly, cultivation tactics aim to foster collaboration across different institutions to allow the interchange and development of novel ideas. The replication strategy seeks to cultivate cooperative partnerships with other public institutions to identify, translate, modify, and execute their most successful innovations. Thirdly, a partnership strategy aims to foster the development and experimentation of innovative ideas through collaboration between public and private entities with distinct sets of regulations and resources. Fourthly, a network strategy seeks to enable the transfer of ideas, collaborative learning, and collective action through horizontal contacts among relevant players who are impacted and possess diverse resources and experience. Furthermore, the sourcing strategy is designed to foster innovation by leveraging the Internet to solicit solutions from creators to address the specific challenges they encounter.

The collaborative innovation analytical model centers on actors with diverse roles and resources, including administrators, private organizations, and citizens (Ansell and Gash, 2007; Halvorsen et al., 2005; Klijn and Koppenjan, 2000). Public and private actors must comprehend the transformation process and its objectives (Wenger, 1998). The model's dimensions are closely tied to four elements. First, initial conditions, such as the various stakeholder engagement traditions in the public sector, the different legal and institutional conditions in participatory governance, and the negative past experiences that can impede collaborative interactions at the micro level (Ansell and Gash, 2007). Second, actors and barriers pertain to how actors interdepend, collaborate, and perceive obstacles in the collaborative innovation process (Halvorsen et al., 2005). Barriers include cultural, institutional, organizational, and identity-related barriers. Third, the internal institutional arena can be analyzed as a government network that provides rules, norms, and routines (March and Olsen, 1995). Partnerships and networks are self-regulating, allowing the institutional arena to evolve gradually in the interaction process. Fourth, Meta-governance can be viewed as the drivers and obstacles it creates and can be proactively modified. Meta-governance can stabilize institutional interaction, encourage collaboration, and remove self-regulating barriers (Klijn and Koppenjan, 2000).

Collaborative innovation is multifaceted, nonlinear, and iterative (Egger and Singh, 2009). This concept is particularly relevant in the context of government, as each actor possesses a limited capacity to attain program objectives. The constituent phase of the innovation cycle can be bolstered by fostering collaboration among relevant and affected public and private stakeholders (Kickert et al., 1997). The beneficial effects of

collaborative innovation have been demonstrated in private company studies and substantiated through empirical analyses of public sector innovation (Powel and Grodal, 2004).

Meta-governance is especially significant in developing countries because they frequently have substantial obstacles concerning their institutional capabilities and the availability of resources, hence emphasizing the importance of effectively coordinating various interests (Susanti et al., 2019; Desai, 2009; Meso et al., 2009; Adams & Mengistu, 2008). The success of collaborative innovation in this setting relies on identifying and empowering essential players, which can improve the creation and adoption of sustainable practices. According to Healey (2007), giving stakeholders authority within collaborative frameworks enhances their involvement and guarantees that their expertise and viewpoints contribute to decision-making processes. The role of institutional frameworks in facilitating collaborative innovation is another critical area of exploration (Yunus et al., 2020). Institutional arrangements shape stakeholder interactions and can either enable or constrain collaborative efforts. In regions with limited institutional capacity, such as many developing countries, informal networks and relationships often emerge as vital mechanisms for collaboration (Jošanov-Vrgović & Vrgović, 2018; Ratten, 2014). These informal arrangements can complement formal governance structures, providing flexibility and adaptability in response to changing circumstances. However, reliance on informal networks also poses risks, particularly regarding accountability and transparency (Alom, 2018; Basereh, 2022; Simamora, 2023). Therefore, balancing formal and informal governance mechanisms is essential for fostering practical collaborative innovation in public administration.

In the agricultural sector, collaborative innovation is critical as it integrates diverse perspectives and resources to enhance productivity and sustainability (Bulut, 2024; Duan et al., 2020). The agricultural sector provides a compelling context for examining collaborative innovation due to its inherent complexity and the many actors involved. Agricultural programs often require integrating diverse knowledge systems, technologies, and practices, making collaboration essential for success (Sekhar, 2024; Kaine & Wright, 2022; Alemu, 2018). Research indicates that successful agricultural innovation usually emerges from collaborative processes meaningfully engaging farmers, researchers, policymakers, and private sector actors (Burbi et al., 2016; Ofoegbu & New, 2020; Rijswijk & Brazendale, 2017). For example, case studies have shown that collaborative research initiatives can lead to more contextually relevant agricultural practices that better meet the needs of local communities (Zwane, 2020; Cano et al., 2023). This underscores the potential for collaborative innovation to drive economic growth and social and environmental sustainability.

METHODS

This study employs a qualitative research design, utilizing case studies to delve into the Collaborative Innovation Agriculture Program in Bantaeng, Indonesia. The research aims to explore the program's initial conditions, internal institutional arenas, and meta-governance aspects. The qualitative approach is chosen for its ability to provide a deep understanding of the complex interactions and dynamics among various actors involved in the program.

Data were collected using a combination of observations, in-depth interviews, and documentation. Purposeful sampling was employed to select key informants who are directly involved in the program. These informants include the Head of the Bantaeng District Agriculture Office, the Head of the Bantaeng District Food Security Office, the Head of the Industry and Trade Office of the Bantaeng Regency, the Head of the Cooperatives and SMEs Office of the Bantaeng Regency, the Head of the Regional Development Planning Agency of the Bantaeng Regency, the Manager at the Bantaeng Coffee Industry House, and the Chairman of the farming group. This diverse group of informants ensures a comprehensive understanding of the program from multiple perspectives.

The collected data were analyzed using thematic analysis to identify recurring patterns and themes related to the roles and interactions of various actors within the program. The analysis focused on understanding how these roles and interactions contribute to the program's objectives and the challenges encountered in its

implementation. Thematic analysis was chosen for its flexibility and ability to provide detailed insights into qualitative data.

To ensure the accuracy and reliability of the findings, triangulation was employed by cross-referencing data from multiple sources, including interviews, observations, and documents. This method helps to validate the findings and provides a more robust understanding of the program's dynamics. Additionally, member checking was conducted by sharing the preliminary findings with the informants to confirm the accuracy of the data and interpretations.

Ethical approval was obtained from the relevant institutional review board, and informed consent was secured from all participants. Confidentiality and anonymity were maintained throughout the study to protect the participants' identities and ensure their privacy.

By employing these methods, this study aims to provide a comprehensive and nuanced understanding of the Collaborative Innovation Agriculture Program in Bantaeng, contributing valuable insights into the effective implementation of collaborative innovation in the agricultural sector.

RESULTS AND DISCUSSION

This section delineates the collaborative innovations that expedited the agricultural development acceleration program during and post the COVID-19 pandemic in the Bantaeng Regency, Indonesia. Interdisciplinary development is becoming increasingly essential for interested parties to collaborate to enhance sustainable program innovation. Therefore, this condition necessitates stakeholders to work together to achieve the government program's objectives. When playing the role of an actor, it is crucial to have the primary responsibilities and functions of each institution that are suitable and can regulate itself. According to the theory of Ansell and Gash (2007), collaborative innovation is centered on the participation of empowered actors with diverse roles and resources, and it comprises four dimensions: initial conditions, actors and obstacles, internal institutional arena, and meta-governance. This section describes the results and discussion of the four dimensions along with their respective aspects as follows:

Initial Condition

The agricultural development program in Bantaeng Regency, Indonesia, epitomizes a comprehensive approach to enhancing the agricultural sector through a collaborative innovation framework that incorporates various levels of institutional interaction and integration. This program, particularly during the challenging times of the COVID-19 pandemic, has highlighted the importance of a well-orchestrated interplay between multiple stakeholders including government agencies, private entities, and community organizations. At the macro level, the program reflects a broad spectrum of traditions and practices, which are vital in shaping the roles and expectations of various stakeholders within the public sector. Understanding these overarching cultural and procedural dynamics is crucial as they significantly influence policy formation and implementation strategies. At the meso level, differences in laws, regulations, and institutional frameworks provide a diverse landscape within which these actors operate. This diversity necessitates adaptable and flexible governance structures that can accommodate varying institutional capabilities and limitations, ensuring that all entities can contribute effectively to the shared goals.

Moreover, the micro-level analysis sheds light on the individual experiences and resources of the actors involved. These personal and institutional narratives are crucial in determining the success of collaborative efforts. They influence how challenges are addressed and how effectively institutions can synergize their efforts despite potential past adversities that may have affected trust and cooperation.

The concept of 'chords' in collaboration, as identified by researchers, is particularly noteworthy. These chords are essentially strategic alliances within the broader institutional framework, serving as support mechanisms when individual entities face capacity constraints. Such mechanisms not only aid in task execution but also ensure that there is no single point of failure within the program's architecture. This resilience is crucial for maintaining momentum in agricultural development, especially in areas as critical as policy implementation and resource allocation.

For the actors, particularly farmer groups and community-based organizations, their roles are not isolated but are part of a larger, interdependent system where cooperation and mutual support are necessary for collective success. The emphasis on eliminating 'sectoral ego' and focusing on unified goals highlights a mature approach to collaborative innovation, where the success of one is seen as the success of all.

In conclusion, the agricultural development program in Bantaeng Regency is a robust example of how layered, and comprehensive collaboration across various levels of governance and participation can lead to effective and sustainable agricultural advances. By focusing on both the broad and nuanced aspects of collaboration, the program is well-positioned to enhance the marketability of agricultural products and improve the economic standing of the community it serves. Ensuring the continued effectiveness of these collaborative efforts will require ongoing commitment to adaptive management practices and sensitivity to the evolving needs and capacities of all stakeholders involved.

Actors and obstacles

In Bantaeng Regency, Indonesia, the pursuit of collaborative innovation within agricultural development is both a complex and interconnected endeavor, involving multiple actors across various sectors. This complexity is reflected in the interdependencies and interactions among these actors, each bringing distinct capabilities and facing unique challenges that influence the overall effectiveness of agricultural development programs.

The study underscores the critical nature of interdependency among different stakeholders, including public organizations, private entities, and farmer groups. Each of these actors plays a strategic role, tailored to specific program objectives and challenges. Public organizations, for example, provide essential infrastructure such as coffee centers and techno-parks, which are instrumental in supporting agricultural development. These facilities not only enhance the capacity for agricultural innovation but also serve as catalysts for economic activity in the region. Similarly, entities like the Creative House of State-Owned Enterprises (SOEs) and SME Klik facilitate the management and marketing of agricultural products, extending their reach from local to national markets.

However, collaborative efforts in agricultural development are not without their challenges. The study identifies several barriers that inhibit effective collaboration and innovation. Cultural factors, leadership dynamics, organizational structures, and administrative burdens are among the primary obstacles. These issues are compounded by limited financial resources and inadequate incentive systems, which can stimulate motivation and limit the capacity for innovative practices. The COVID-19 pandemic further exacerbates these challenges, as budgetary constraints force a reallocation of funds away from agricultural programs to pandemic response efforts, underscoring the vulnerability of agricultural development to external shocks.

In addition, the Bantaeng government's role in implementing creative regulations and providing risk protection for rice farmers through insurance programs exemplifies proactive governance. However, the pandemic has introduced significant fiscal constraints, leading to budget cuts that directly impact the sustainability of these programs. Additionally, structural issues such as limited agricultural land and the absence of standardized postharvest production prices pose long-term challenges to the scalability and profitability of agricultural ventures.

Another significant hurdle is the difficulty in obtaining necessary certifications from the National Agency of Drug and Food Control. This regulatory challenge hinders the ability to market products nationally, restricting the economic potential of locally produced goods. The certification process, coupled with the marketing constraints, illustrates the critical need for streamlined regulatory frameworks that can support rather than hinder agricultural development.

To optimize and enhance the effectiveness of agricultural development programs in Bantaeng Regency, it is crucial to address these multifaceted challenges through a coordinated approach that involves strengthening the capacities of all stakeholders, enhancing financial and regulatory support systems, and fostering a more resilient agricultural sector capable of standing both economic and environmental fluctuations. Only through

such comprehensive and collaborative efforts can the region hope to achieve sustainable agricultural growth and significant economic development.

Table 1. SME Assistance by SOEs Creative House

No.	SMEs name	Legal entity	Address	Product
1.	KUD Bontomanai	533/Bra/IV/8Juli16	Bontomanai	Woven bamboo
2.	KTN Bunga Biraeng		gantarang	Coffee and chocolate
3.	KSU produktif	173/BH/XX/8April16	ke	Purple Potato Chips
4.	KSU Demi	171/BH/IV/6April16	Rappoa	sweet corn
5.	Al-amanah	107/BH/XI/22April18	tompobulu	brown sugar bread
6.	Mustika Kopitam			Rice Seeds
7.	Kopitam AKR			Ground coffee

Source: Processed from the Coffee Industry House Bantaeng Regency (2021)

Institutional Internal Arena

The collaborative innovation framework in agricultural development in Bantaeng Regency, Indonesia, is defined by the dynamic interaction of many institutional players, each playing important roles within a complex governance paradigm. This systematic method makes it easier to manage and carry out agricultural programs and emphasizes the significance of self-regulation and communal accountability. The internal workings of institutions greatly benefit from the patterns of interaction within and between agencies. This ensures a unified and effective approach to achieving sustainable agricultural success.

The essence of Bantaeng's agricultural policy lies in the unwavering determination of local government entities and private organizations to perform their assigned obligations. The commitment to this cause is essential for the achievement of agricultural initiatives focused on improving community recognition and national prominence, especially in specialized areas such as coffee cultivation. These initiatives aim to promote a comprehensive development approach that goes beyond agricultural success by emphasizing effectiveness and ongoing interactions at all levels of governance and including essential community groups such as farmers and youth. The goal is to achieve social and economic upliftment.

An outstanding type of grassroots empowerment is the Food Security Office's program to boost vegetable and fruit cultivation by organizing women's farmer groups in each sub-district and hamlet. This tackles urgent issues over food availability and enhances economic stability by facilitating the sale of excess produce, thereby boosting the community's per capita revenue. These efforts are facilitated by providing resources and conducting regular socialization sessions, which guarantee continuous support and development monitoring. Nevertheless, obstacles remain, specifically in the Department of Trade and Industry's efforts to obtain HALAL certification and navigate the regulatory framework enforced by the Food and Drug Supervisory Agency. These problems emphasize the urgent requirement for more efficient procedures and improved allocation of resources to promote the marketability of top-notch agricultural products nationwide.

Furthermore, the partnership between the Cooperative and MSME Office with the Creative House of SOEs, which includes prominent entities such as Bank Negara Indonesia, demonstrates a strategic method of using local agricultural resources to promote wider economic development. This collaboration is crucial for overseeing the production of domestic goods. It plays a vital role in the financial plans of the region, particularly considering the limitations caused by the pandemic.

To guarantee the long-term viability and achievement of these cooperative endeavors, it is recommended for all parties involved to enhance their utilization of digital platforms. Using social media and official websites

for marketing can increase market reach and improve the visibility of local agricultural products, creating new opportunities for growth and development.

Overall, the agricultural development strategy in Bantaeng Regency exemplifies a strong model of collaborative governance that successfully incorporates the duties and responsibilities of many institutional actors. This strategy not only tackles current agricultural requirements but also establishes a standard for sustainable, all-encompassing development that could serve as a template for other areas. The continuous commitment, along with strategic creativity and adjustment to regulatory and market obstacles, is crucial for unlocking the complete potential of Bantaeng's agricultural industry.

Table 2. Economic Growth of Bantaeng Regency

No.	Description	Years		
		2017	2018	2019
1.	Increase economic growth	7.32	8.08	10,75
2.	Unemployed		5.23	3.69
3.	Poverty		9.66	9.23
4.	Human Development Index	67.27	67,76	68.30

Source: Bantaeng Statistics Agency (2020)

Meta governance

In the realm of public administration, particularly within agricultural development programs, carefully mapping each participant's role and responsibilities is not merely procedural but crucial for the program's success. This process of delineation ensures that the specific functions and contributions of each actor are not only recognized but also optimized. The primary objective of such agricultural initiatives—to enhance effectiveness and sustainability—relies heavily on this clarity. Without a comprehensive understanding of each actor's role, coordination fails, resources are misallocated, and the program's overall efficacy is compromised. The significance of this role clarity is underscored through observations made across 13 development acceleration programs (See Table 3), where the effective organization of institutions was directly linked to the precise definition of roles. When fully aware of their responsibilities, each actor is better positioned to contribute effectively. This streamlines operations and fortifies the program against potential inefficiencies and overlaps in function. The strategic organization of these roles fosters a more synergistic approach, allowing for a collaborative yet focused effort toward common objectives.

However, the critical analysis does not end with recognizing the benefits of role clarity. It also necessitates examining the mechanisms through which these roles are assigned and communicated. In many instances, the failure of agricultural programs can be traced back to inadequate initial role definition and poor communication channels. Ensuring that each actor not only understands their role but also the roles of others within the program can create a more cohesive and adaptive environment. This is particularly important in dynamic fields like agriculture, where external conditions such as market demands and environmental factors can shift rapidly.

Moreover, the ongoing assessment and realignment of these roles as the program evolves are crucial. As challenges emerge and objectives shift, the roles of various actors may need to be adjusted to meet the new demands of the program better. This adaptive approach to role management within institutional frameworks can significantly enhance the resilience and sustainability of development programs.

Hence, this study suggests mapping and continuously reassessing roles within agricultural development programs are fundamental to their success. By fostering clear understanding and efficient collaboration among diverse actors, these programs can achieve their objectives more effectively, contributing to broader developmental goals. Researchers and practitioners must continue emphasizing the critical nature of role

clarity and adaptability in designing and implementing such programs to ensure their long-term viability and impact. These programs encompass the following:

Table 3. Program Innovation for the Acceleration of Agricultural Sector Development (2015-2020)

No.	Innovation types
1.	Technology-based seed-producing districts
2.	<i>Legowo</i> planting system movement 21
3.	Development of agro-tourism area
4.	Forming Village Own Enterprise (BUMDes)
5.	Development of agricultural product processing industry
6.	Development of cow insemination techniques
7.	Utilizing livestock waste into biogas in rural areas
8.	Utilizing food waste
9.	Taro-breeding Bantaeng
10.	Durian fruits cultivation without fragrance and season
11.	Livestock business insurance
12.	Rice business insurance
13.	Ensuring the availability of fertilizers and seeds

Source: Bantaeng Regency Agriculture Office (2019)

In Bantaeng Regency, Indonesia, pursuing sustainable agricultural development through collaborative innovation encounters opportunities and challenges. Like other areas, the region has encountered diverse outcomes with its agricultural initiatives. Specific projects have failed to meet expectations, as they have not succeeded in increasing both the local original revenue and the per capita income of people. Examining these deficiencies in conjunction with adopting a farmer company framework offers a means to understand and address these deficiencies.

Farmer companies entail establishing formal entities that enable farmers to enhance their operational efficiency through collective action. This strategy allows local governments to more effectively customize agricultural initiatives that are environmentally friendly and more closely linked to strengthening the economic prosperity of the community. By converting individual farmers into corporate entities, these programs can take advantage of economies of scale, improve their negotiating ability, and enhance their opportunities to access markets and technologies.

However, the effectiveness of this transition relies heavily on the local government's capacity to categorize and prioritize initiatives that correspond to the particular requirements and circumstances of their agricultural industries. This necessitates a robust framework for evaluating the efficacy of current initiatives and pinpointing the areas where improvements are most necessary. The task at hand involves not only selecting appropriate programs to endorse, but also consistently assessing these decisions in light of ever-changing market conditions and environmental influences.

Furthermore, this model advocates for a more comprehensive approach to public administration in the context of agricultural growth. Promoting enhanced partnerships among the government, private sector, and farming communities can develop more cutting-edge solutions that effectively tackle market needs and sustainability issues. The integration is essential in Bantaeng, as agriculture plays a vital role in the economy and the well-being of its residents.

Moreover, the adoption of a farmer company model necessitates the presence of favorable policies and a conducive environment. This involves offering legal and financial support systems that enable the efficient

functioning of these businesses. Training and development programs provide farmers the required skills and knowledge to thrive in this new model.

The study proposes collaborative innovation models for sustainable agricultural development (See Figure 1), which presents a multifaceted strategy to revitalize the agricultural sector. This approach leverages a network of diverse stakeholders, including local government, farmer groups, community cooperative institutions, techno-parks, small and medium-sized enterprises (SMEs), banks, and insurance institutions. The integration of these entities is designed to create a robust ecosystem that supports agriculture's production and processing phases, driving growth and sustainability.

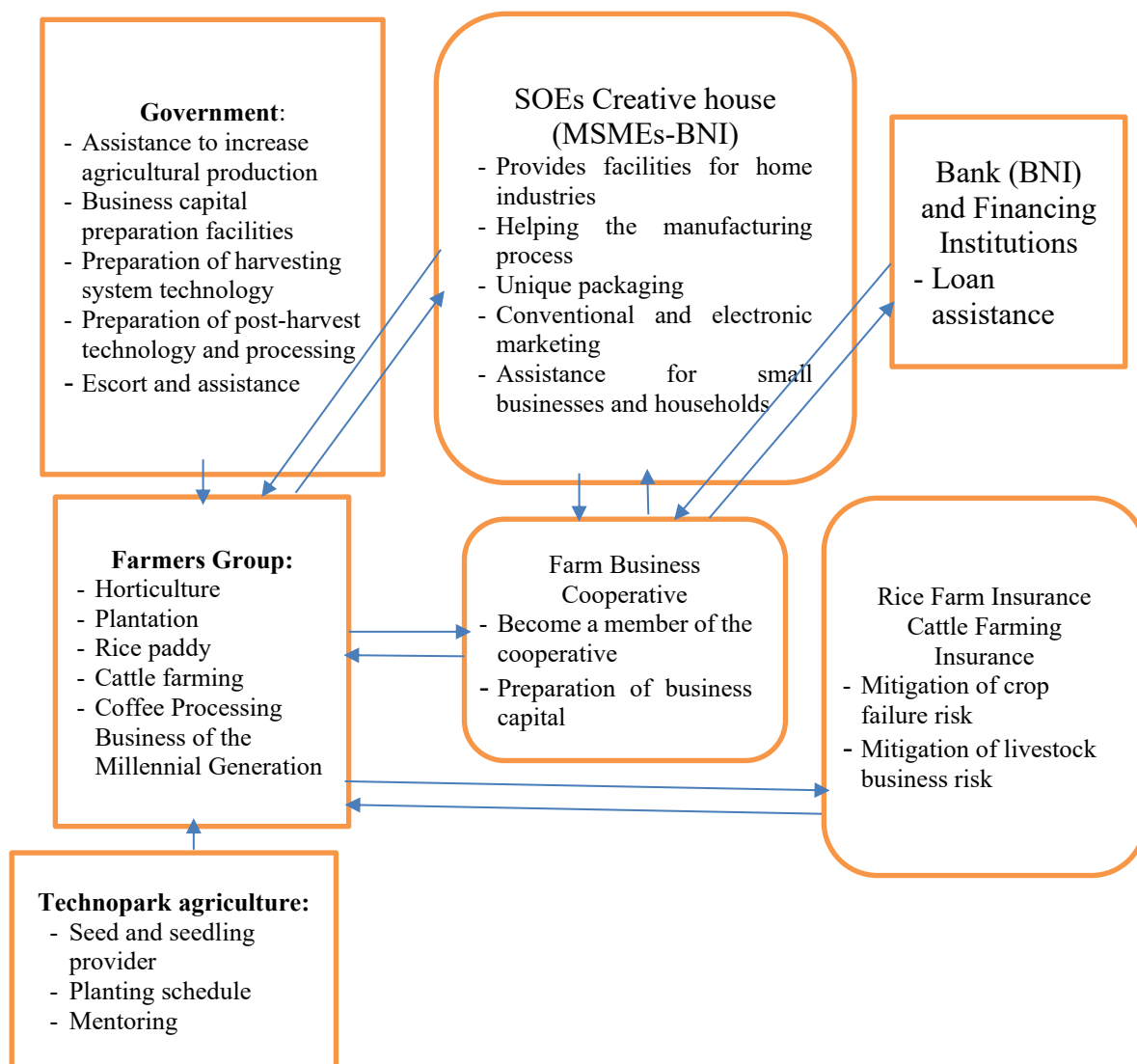


Figure 1: Recommendations for Collaborative Innovation Models for Sustainable Agriculture Development

Introducing techno-parks in seed-producing districts is a strategic move towards enhancing technological integration in agriculture. These parks are hubs for innovation, where advanced agricultural technologies are developed and disseminated. This infrastructure supports the production of high-quality seeds, which is crucial for improving crop yields and the overall productivity of the farming sector. Techno-parks not only

facilitate technological advancement but also act as a bridge connecting researchers, technologists, and farmers, ensuring that innovations are practically applicable and readily available to the farming community. Moreover, the collaborative model extends to the processing of agricultural products, involving an intricate network of stakeholders, including the government, private sector, banks, and farmer groups. This collective approach ensures that all phases of the agricultural value chain are supported. For example, developing both household and industrial-scale processing facilities underscores the commitment to enhancing value addition, vital for increasing farmers' incomes and fostering economic resilience.

Financial support from government and financial institutions plays a critical role in this model. Initiatives like establishing a coffee center, funded by Bank Negara Indonesia (BNI) and supported by the Agency of Cooperatives, Micro, Small, and Medium Enterprises of Bantaeng Regency, exemplify how corporate social responsibility can be aligned with regional development goals. This facility not only supports the local coffee industry but also serves as a platform for enhancing the management capabilities of agricultural enterprises, enabling them to compete effectively in local and national markets.

In conclusion, the collaborative innovation model adopted in Bantaeng Regency is a comprehensive approach to agricultural development that integrates technology, enhances processing capabilities and utilizes strategic financial partnerships to build a sustainable and competitive agricultural sector. This model serves as a blueprint that could be replicated in other regions to achieve similar developmental outcomes, promoting a sustainable and economically viable agricultural sector capable of meeting the challenges of the modern market and environment.

CONCLUSION

The Collaborative Innovation Agriculture Program in Bantaeng, Indonesia, offers significant insights into the sustainable growth of agriculture by engaging a wide range of participants. This curriculum highlights the importance of efficient network governance, encompassing local governments, governmental institutions, business companies, and farmer groups. Their collaboration enables the synchronized integration of activities across different sectors, hence boosting the program's overall effectiveness.

Public organizations are crucial in promoting agricultural development and guaranteeing compliance with market norms by creating essential infrastructure such as "coffee centers" and "techno-parks." Moreover, the active participation of private entities and farmer groups is essential. They play a crucial role in implementing agricultural techniques and ensuring effective product distribution, which drives economic growth and sustainability.

The study emphasizes the significance of beginning conditions and meta-governance in establishing a solid basis for effective collaboration and creativity. This is achieved by ensuring all actions align with the program's objectives. Furthermore, it highlights the mutual reliance and engagement between the participants, demonstrating that a synchronized strategy that utilizes the individual abilities of each member is crucial for overcoming obstacles and maximizing results. This study provides practical implications for policymakers and practitioners seeking to enhance similar programs in different settings. It illuminates viable techniques for enhancing agricultural development through collaborative efforts involving several stakeholders. This program emphasizes the significance of implementing a solid network governance structure encompassing local governments, public organizations, commercial sectors, and farmer groups. Efficient collaboration among these varied stakeholders is crucial since it guarantees that all parties agree with the program's objectives and make valuable contributions. Policymakers are recommended to establish unambiguous governance structures that facilitate communication and collaboration among all relevant stakeholders.

Additionally, the significance of public entities in delivering crucial infrastructure and assistance is highlighted. Facilities such as "coffee centers" and "techno-parks" are vital in promoting product development and facilitating the preparation of items for the market. Practitioners should prioritize establishing

infrastructures to increase agricultural efforts' capacities and ensure that goods are in line with market expectations.

The program also emphasizes the substantial role of private enterprises and farmer groups in implementing and commercializing agricultural goods. These groups provide essential expertise and resources crucial for the program's success. Thus, it is critical to cultivate alliances with these stakeholders to capitalize on their capabilities in introducing novel ideas to the market.

Finally, the results emphasize the importance of starting conditions and meta-governance in guaranteeing effective collaboration and creativity. Policymakers must assess and improve these elements to establish a conducive atmosphere that fosters productive collaboration and enables agricultural initiatives to adjust to and thrive in response to environmental fluctuations. This technique guarantees that cooperative endeavors are firmly based and in agreement with broader developmental goals, thereby facilitating the progress of sustainable agricultural innovations.

The study recognizes certain limitations that could affect the generalizability and applicability of its results. The research primarily focuses on the region of Bantaeng, Indonesia, which may limit the relevance of the findings to different geographical or cultural settings. The distinctive socio-economic and institutional circumstances in Bantaeng may not accurately reflect those in other areas, which could impact the applicability of the findings in different contexts.

In addition, the study utilizes a qualitative research approach with a somewhat limited sample size, depending on purposeful sampling, to precisely identify key informants actively participating in the program. Although this technique offers comprehensive insights, it may not encompass the complete range of perspectives, especially those of stakeholders not directly involved in the program, such as local community members or external specialists.

These limitations emphasize the need for prudence when extrapolating the study's findings to other environments and reinforce the significance of additional research to authenticate and broaden these results in many scenarios.

This study identifies various prospective areas for future research that might enhance our understanding of collaborative innovation models in sustainable agricultural development. An essential aspect entails analyzing the enduring effects of these models on economic growth, environmental sustainability, and social welfare. Longitudinal studies have the potential to offer valuable insights into the long-lasting consequences of these innovations and their ability to be scaled up over more extended periods.

Investigating the influence of technology in improving collaborative innovation is a potential subject to explore. Research could investigate how digital platforms, data analytics, and other technical tools enhance communication, cooperation, and creativity among stakeholders in agricultural projects. This can potentially result in enhanced efficiency and efficacy of collaborative procedures.

It is crucial to understand the obstacles that hinder successful collaboration and innovation. Further investigation should explore obstacles such as organizational frameworks, dynamics of leadership, and constraints on resources that impede collaborative efforts. Identifying these obstacles could facilitate the development of methods to reduce these obstacles and improve the overall efficiency of collaborative innovation models in agriculture.

Overall, the collaborative innovation agriculture program in Bantaeng Regency, Indonesia, highlights the significant impact of collaborative innovation on promoting sustainable agricultural growth. By fostering solid collaborations between governmental institutions, commercial companies, and farmer associations and tackling obstacles through effective governance and technological integration, such initiatives can significantly improve economic growth and resilience in the agricultural industry. To address the complex global agricultural concerns, utilizing the knowledge gained and promoting continuous research and implementation of collaborative models in many contexts is crucial. Adopting this progressive mindset would not only strengthen the long-term viability of agriculture but also enhance overall socio-economic progress, guaranteeing a more resilient and prosperous future for people around the globe.

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