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## Collaboration Innovation for Optimizing Village Potentials through the Bermasa Program in Bengkalis Regency

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### ABSTRACT

This research investigates the Collaborative Innovation approach for optimizing village potentials through the BERMASA program in Bengkalis Regency. Utilizing a mixed-methods approach combining bibliometric analysis and qualitative empirical analysis, this study aims to identify research gaps and novelty while exploring the implementation and challenges of collaborative innovation within the BERMASA context. The core objective of this research is to effectively promote collaborative innovation within the BERMASA program by identifying and addressing the barriers that hinder cooperative efforts and evaluating how collaborative innovation contributes to optimizing village potential. Findings indicate that the village government holds a crucial and significant role as the primary actor and closest interface to the community in the collaborative innovation process within government initiatives. This collaborative innovation approach is deemed capable of meeting sustainability standards and enhancing community welfare in an integrated manner, aligning with the development vision of the Bengkalis Regency government through the BERMASA program. Based on these findings, the research recommends adopting the Pentahelix approach to maximize innovation-based collaboration, structuring the roles of different actors more clearly based on their tasks and functions. Furthermore, the study highlights the urgent need to address unequal access to internet networks and transportation in remote villages in Bengkalis Regency to fully optimize innovations initiated by both the village government and the community.

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Collaborative Innovation; Village Potentials; BERMASA Program; Pentahelix Approach; Development

## Introduction

The BERMASA program stands as one of the flagship initiatives of the Bengkalis Regency regional government. This program specifically involves providing financial support to village authorities across Bengkalis Regency, aiming for the vision of an "Advanced, Ethical Village" and overall prosperity (BERMASA). The BERMASA

Village Financial Support Program is designed to allocate substantial financial assistance, amounting to Rp 1 billion per village, to 136 villages within Bengkalis Regency. The fundamental objective is to facilitate the continued growth of these villages, fostering their development into independent, advanced, and prosperous communities within the Kingdom of Bengkalis. The Financial Support for BERMASA Village represents a specific budgetary allocation within the Bengkalis Regency Regional Budget (APBD), underscoring the commitment and pledges made by Regent Kasmarni and Deputy Regent Bagus H Santoso to execute eight priority programs for the region. The program's implementation adheres to relevant regulations, including Village Law No. 6 of 2014, Regulation No. 77 of 2020 by the Ministry of the Interior on Technical Guidelines for Regional Financial Management, and Regent Regulation No. 74 of 2021 on Guidelines for the Administration of Special Financial Assistance for the BERMASA Village Program to the Village Authorities of Bengkalis Regency.

The BERMASA program defines eight key indicators for village development: Technology-based public services, economic empowerment and participation of women in villages, needs-based infrastructure and village innovation, financial governance and general information of towns, environmentally friendly neighboring villages, building villages through partnerships, optimizing the role of children, adolescents, and young adults in a dynamic Village institution, adaptive village culture, and strategic village activities. Vani et al., (2020) provides a relevant analysis of the significance of collaboration across government programs, particularly for enhancing the existing conditions of society towards greater prosperity.

Based on current data, approximately 0.6% of the population in Bengkalis Regency, equivalent to about 3,400 individuals, live in extreme poverty. Extreme poverty often implies that these individuals struggle to meet basic survival necessities such as access to food, clean water, and shelter. Addressing extreme poverty remains a significant concern for any community or government.

Regarding stunting, Bengkalis Regency has achieved a notable reduction in its rate, decreasing from 21.9% in 2021 to 8.4% by the end of 2022. This marks a positive development, making it the lowest rate in the province of Riau. Stunting is a condition resulting from inadequate nutrition during a child's early years, which can lead to long-term health and developmental issues. The decline in stunting rates signifies successful efforts in improving the nutrition and health outcomes for children in the region. It is also noteworthy that Bengkalis Regency's achievement in having the lowest stunting rate in Riau province serves as an example of how local authorities and stakeholders can effectively address child nutrition and health challenges compared to other regions.

Thus, despite a small percentage of the population facing extreme poverty, the substantial reduction in stunting rates represents a significant positive achievement for Bengkalis Regency, demonstrating progress in enhancing the well-being of its residents, especially children. Sustained efforts are crucial to address poverty and improve overall living conditions to ensure a better quality of life for all residents.

Through the BERMASA Fund program, which allocates Rp 1 billion per village across Bengkalis Regency, the aim is to enable each village to prioritize development initiatives that benefit its community directly. This program entails the disbursement of a significant sum of 1 billion Indonesian rupiah to each village, potentially having a considerable impact on local development efforts. The program encourages villages to focus their development activities on community priority areas, aligning with the principles of community-led development where local communities are empowered to identify and meet their specific needs. The emphasis on "extended development into remote areas of villages" highlights a commitment to inclusive development, seeking to ensure that even remote and marginalized areas benefit from these initiatives. The overarching goal of the program is to enhance the quality of life for local residents by funding projects and initiatives that directly address the most pressing needs of the people of Bengkalis Regency. Therefore, the Dana Bermasa Program represents a substantial investment in local development in Bengkalis Regency, centered on community priorities and inclusivity. The success of such programs is contingent upon effective practical implementation, transparency, and the active participation of local communities in decision-making and project execution.

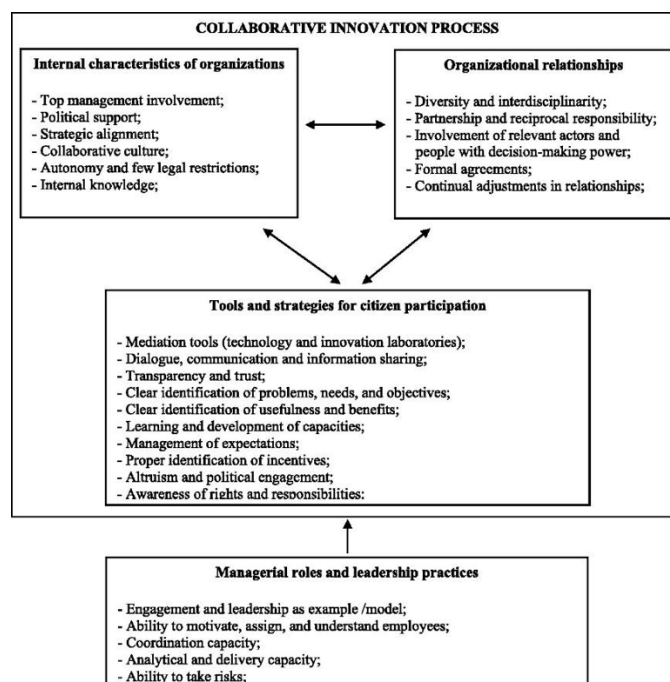
## **Literature Review**

Collaborative innovation is increasingly recognized as a crucial approach for optimizing public sector performance and addressing complex societal challenges. Fan et al., (2020) identified a significant link between collaborative innovation and innovation performance, highlighting its potential influence in contexts like the BERMASA program in Bengkalis Regency. Collaborative innovation involves the concerted efforts of multiple stakeholders, including government bodies, community leaders, non-governmental organizations (NGOs), academic researchers, and the private sector, working together to foster and promote innovation. This dynamic partnership aims to leverage collective resources and knowledge to maximize the potential of regions, particularly at the local level. Regional innovation, supported by collaboration among stakeholders, plays a central role in promoting socio-economic development and strengthening the regional innovation ecosystem. Ensuring long-term sustainability is a primary objective, and collaborative innovation is considered essential for achieving and maintaining the program's impact beyond its initial phase, with active community participation yielding benefits extending throughout the project's lifespan. Furthermore, collaborative innovation is expected to enhance the potential of villages, thereby directly contributing to Bengkalis Regency's economic competitiveness. Prosperous villages foster regional economic growth, attract investment, create employment opportunities, and improve living standards. In summary, collaborative innovation is fundamental to the BERMASA program, aligning with regional goals for innovation, sustainability, and economic growth and promising positive socio-economic transformation.

Bai et al, (2020) described collaborative innovation as a method for fostering synergy through interactions among organizations with diverse backgrounds. This perspective suggests that collaborative innovation is key to achieving sustainable development. The presence of collaborative innovation within an organization offers benefits, particularly in accessing resources that the organization might not possess internally, thereby enhancing organizational competitiveness. Through collaborative innovation, each involved organization can optimize its available resources to jointly gain a competitive advantage (Askary et al., 2022).

As defined by Torfing (2019), collaborative innovation addresses a research gap concerning the need for a comprehensive framework to analyze and understand the diversity and dynamics within innovation ecosystems. Existing frameworks for innovation ecosystems are often limited and require more illustrative detail. In response to this, Lopes & Farias (2022) proposed a new three-layer core-periphery framework designed to integrate two existing frameworks, facilitating a systematic examination of innovation ecosystems and their multifaceted collaborations. Their work delves into the theory of collaborative innovation within the context of innovation ecosystems, demonstrating how the concept, inspired by open innovation and collaborative innovation, emphasizes the critical importance of close collaboration between organizations and their partners for successful innovation. Furthermore, it highlights the varied functions and partnerships existing within an innovation ecosystem, illustrating that not all innovation ecosystems exhibit identical internal structures and collaboration patterns. Figure 1 provides a visual representation of key elements in the collaborative innovation process as conceptualized by Lopes & Farias (2022).

Figure 1. *Collaborative Innovation*.



Source: Lopes & Farias (2022)

Based on Figure 1, Lopes & Farias (2022) argue that different roles within innovation ecosystems necessitate distinct structures and components. Their comparative analysis emphasizes a significant gap in research and theory concerning the application of collaborative innovation within the public sector. This gap hinders the development of a specific model or theory of collaborative innovation tailored for the public sector context. The authors stress the importance of further exploration into how public governance structures can be designed to effectively support collaborative innovation processes. Essentially, there is a pressing need to bridge the divide between the theoretical understanding of collaborative innovation and its practical implementation in the public sector. This involves empirical assessments of innovation outcomes and identifying the characteristics of governance models that effectively promote the implementation of innovation for transformational or improved public services. Moreover, they underscore the need for more empirical research focusing on the role of leadership and the facilitating conditions for collaborative innovation within the public sector. These research objectives collectively aim to deepen the knowledge and understanding of collaborative innovation specifically within the public sector domain.

This study, therefore, seeks to contribute to bridging this gap by conducting an empirical investigation and performing a gap analysis through Scopus data to identify novelty and trends in similar research. The problem-solving plan and research objectives of this study are grounded in the need to effectively promote collaborative innovation within the context of the BERMASA program in Bengkalis Regency. To achieve this, it is essential to identify and address the obstacles that impede cooperative efforts. These barriers can range from communication deficiencies and trust deficits to resource allocation challenges and conflicting agendas.

## **Research Method**

This study employed a mixed-methods approach, combining bibliometric analysis with qualitative empirical research, to analyze the Collaborative Innovation approach for optimizing village potentials through the BERMASA program in Bengkalis Regency.

The initial phase involved conducting a bibliometric literature review using data from the Scopus database. The search was performed using the exact phrase keywords "collaborative innovation" AND "optimizing village potential". Data on research articles related to this topic were collected over a ten-year period, spanning from 2013 to 2023. Initially, a total of 3,363 articles were identified. Subsequently, articles were selected based on regional criteria, prioritizing studies focusing on Indonesia or similar developing/rural contexts to facilitate relevant comparisons. This process resulted in a selection of 55 papers. These selected articles were then analyzed using the Vos Viewer application to visualize publication trends, keyword co-occurrence, and author collaboration networks, helping to identify research clusters, emerging themes, and

potential research gaps. The insights gained from the bibliometric analysis, particularly concerning key research themes and the geographical focus of previous studies, informed the direction and focus of the subsequent empirical investigation, highlighting areas where empirical data was needed to complement the existing literature.

Following the bibliometric analysis, the study adopted a qualitative empirical approach, utilizing a case study design focused on the BERMASA program implementation in Bengkalis Regency. Empirical data was collected through various techniques, including observation of village activities related to the program, interviews with key stakeholders, and analysis of relevant program documents and reports. Interviews were conducted with village government officials, community leaders, representatives from relevant government agencies (such as DPMD), and members of the community to gather in-depth perspectives on the collaborative innovation process, challenges, and outcomes of the BERMASA program. The selection of interviewees was based on their direct involvement and knowledge of the program's implementation at the village level. Detailed notes were taken during observations and interviews. The qualitative data was then analyzed using the framework proposed by Miles, M. B. & Huberman, M (1992), which involves three interconnected activities: data reduction, data display, and conclusion drawing/verification. Data reduction involved transcribing interview recordings and field notes, coding the data to identify key themes and patterns related to collaborative innovation, village potential, and the BERMASA program. Data display involved organizing the coded data into matrices and thematic summaries to visualize the relationships between concepts and findings. Conclusion drawing involved interpreting the displayed data, identifying significant insights, and verifying conclusions by cross-referencing different data sources. The theoretical framework of Nambisan (2008) concerning the four roles of government in collaborative innovation was used as an analytical lens during the qualitative analysis to interpret the empirical data and understand the specific ways in which the Bengkalis Regency government and village authorities engaged in collaborative innovation within the BERMASA program context.

The second part of this article, particularly the discussion of government roles, draws on the theoretical framework of collaborative innovation and problem-solving in the public sector. This framework examines two critical dimensions: the nature of the innovation or problem (ranging from well-defined to emergent) and the nature of the collaborative agreement or network leadership (ranging from government-led/centralized to community-led/decentralized). Based on these dimensions, four distinct roles for government agencies in collaborative innovation and network-based problem-solving can be identified (Shu et al., 2016). Figure 2 illustrates these four roles.

Figure 2. Four roles for the government in collaborative innovation

		Network Leadership	
		Government-Led (centralized; formal structure/linkages)	Community-Led (diffused; informal structure/linkages)
Innovation Space	Emergent (new services/programs; unstructured problem space)	Government as Innovation Seeker	Government as Innovation Champion
	Defined (existing services/programs; structured problem space)	Government as Innovation Integrator	Government as Innovation Catalyst

Source: Nambisan (2008)

This study also contributes significantly to the field of collaborative innovation literature in several ways. First, it enriches the literature on collaborative innovation by establishing links between different aspects and applying theoretical frameworks (like Nambisan's roles) to an empirical case in rural Indonesia. Previous strategy literature on collaborative innovation has primarily focused on drivers from a stakeholder perspective, including influencing factors. The first two roles identified by Nambisan (Innovation Integrator and Innovation Seeker) suggest a greater degree of government involvement and authority, as they involve guiding external partners and converting exterior innovation concepts into services and initiatives for a new government. On the other hand, the latter two roles (Innovation Champion and Innovation Catalyst) represent a more supportive function, focusing on building consensus with different communities and stakeholders to create public benefits in complementary areas or expand beyond current services and programs.

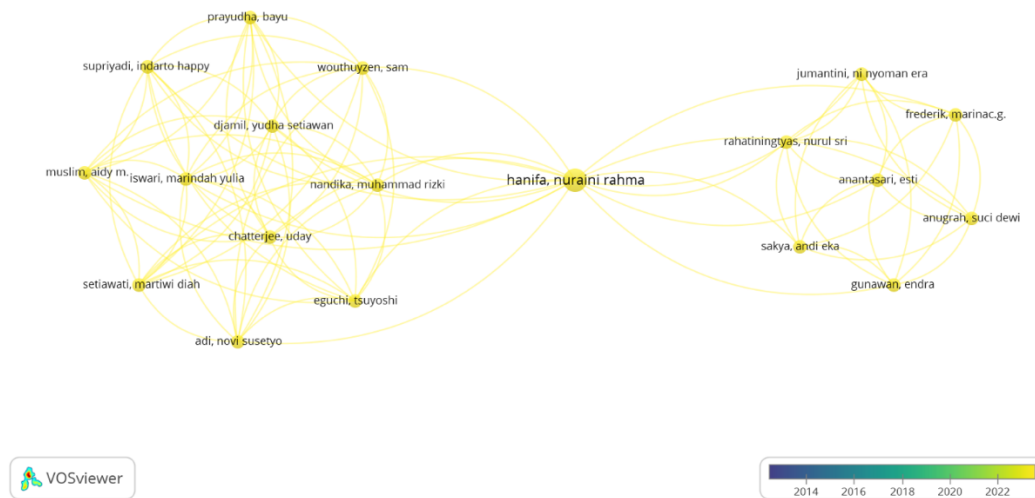
## Result

### *Bibliometric Results*

The bibliometric analysis conducted on Scopus data spanning from 2013 to 2023 reveals significant trends regarding research on collaborative innovation, particularly concerning village potential optimization. A total of 3,363 articles related to collaborative innovation were identified, indicating a high level of scholarly interest in this topic over the past decade. The author overlay visualization, as shown in Figure 3, demonstrates the collaboration networks among authors in this research area.



Figure 3. Author Overlay Visualization

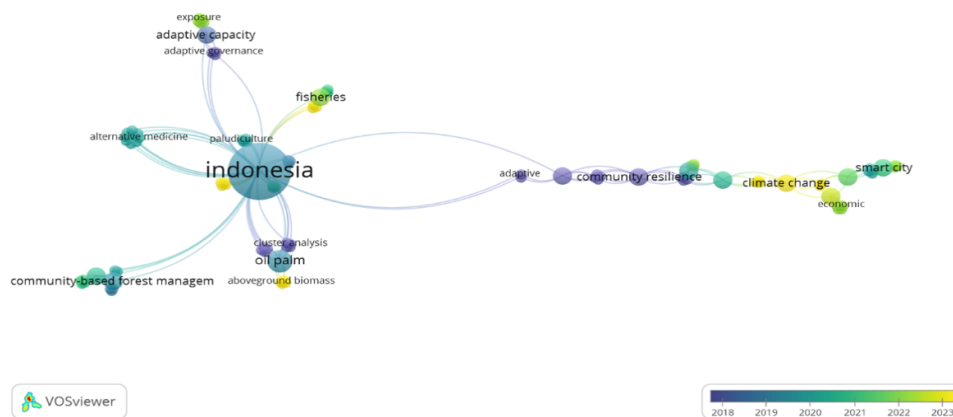


Source: Research Analysis, 2023

Based on Figure 3, the analysis reveals a notable increase in networking among authors in 2022, characterized by the synchronization of citations and the linkage of articles focusing on keywords related to collaborative innovation. This suggests that research on collaborative innovation saw a peak in collaborative efforts among authors in that year. The findings by Hanum et al., (2023) regarding the growth of social entrepreneurship and its alignment with the formal sector's limitations in absorbing labor, along with the crucial role of individual, social, and political factors in developing sustainability, resonate with the themes of collaborative efforts needed for development discussed within this research domain.

The keywords overlay visualization, presented in Figure 4, highlights the prominent terms associated with collaborative innovation and villages in the analyzed literature.

Figure 4. Keywords Overlay Visualization

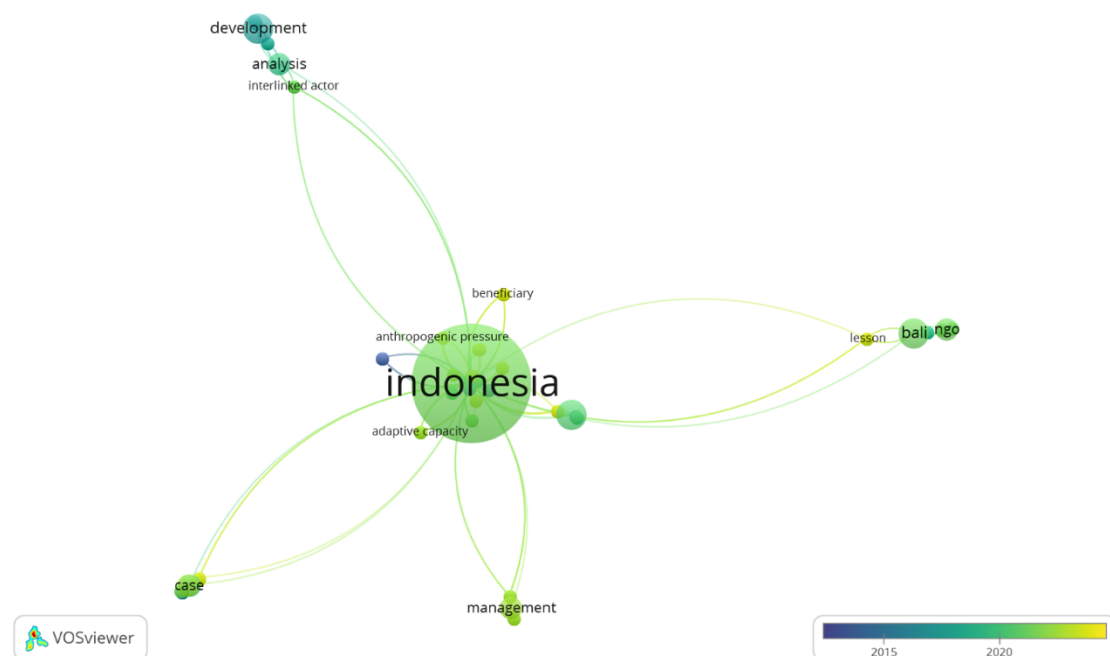


Source: Research Analysis, 2023

Figure 4 shows that keywords interconnected with collaborative innovation and villages frequently include Indonesian terms, with a significant impact observed around 2015. This suggests a focus on innovation cooperation in village areas within Indonesian research during that period. Furthermore, connections to keywords like "climate change" (prominent in 2023) and "adaptive governance" (prominent in 2018) indicate evolving research directions within this domain, suggesting potential areas for further investigation linking collaborative innovation to broader sustainability and governance challenges.

The title overlay visualization, displayed in Figure 5, further reinforces the research landscape, showing the prevalence of specific terms in article titles.

Figure 5. Title Overlay Visualization



Source: Research Analysis, 2023

Figure 5 confirms that Indonesia remains a central focus in the research landscape, particularly in titles including keywords such as "cooperative" and "village governance." This underscores the importance of this topic within the Indonesian context. The bibliometric data collectively indicates that while collaborative innovation in village contexts, especially in Indonesia, is an active area of research (3,363 articles from 2013-2023, with author collaboration peaking in 2022 and Indonesian keywords prominent in 2015), there is a potential research gap in explicitly linking collaborative innovation efforts to emerging challenges such as climate change and adaptive governance within rural settings. This study aims to contribute to filling this gap by examining collaborative innovation in the context of the BERMASA program, which seeks to optimize village potential while implicitly addressing sustainability and welfare.

### *Empirical Results: The BERMASA Program in Bengkalis Regency*

The BERMASA program in Bengkalis Regency provides a concrete case study for examining collaborative innovation in optimizing village potential. This program allocates substantial financial aid of Rp 1 billion per village to 136 villages with the goal of fostering autonomous, advanced, and prosperous towns. This allocation is part of the Bengkalis Regency Regional Budget (APBD) and reflects the commitment to implementing key regional programs aligned with relevant regulations, as mentioned in the introduction (Regent Regulation No. 74 of 2021, etc.). The program's vision aligns with the overall development goals of the Bengkalis Regency government and the aspirations of the village governments and local communities.

The BERMASA Village Program has demonstrated tangible impacts, contributing to infrastructure development, community empowerment, and enhancement of local economic resources. These initiatives are managed equitably across participating villages to promote a decent, progressive, and prosperous society. The implementation of the program highlights various forms of collaboration among different actors. As supported by Haq et al (2023), collaborations such as developing a rural development plan involving the Bengkalis Regency Government, Faculty of Social and Political Sciences of the University of Riau, community, private sector (CSR), and the regional budget exemplify collaborative innovation initiated at the local government level, open to input from various stakeholders.

Specific examples of collaborative efforts observed during the study within the BERMASA program context include:

1. A key collaboration involves a partnership between the Bengkalis Regency Government, specifically through the Village Community Empowerment Service (DPMD), and Polbeng. This collaboration facilitated the submission of requests for the exceptional financial support for the BERMASA village program (Rp 1 billion for each village) by the village governments. The objective of this partnership is to promote transparency in the utilization of these significant funds and assist the Bengkalis Regency Government in conducting more efficient assessments of the proposals.
2. Collaboration also exists with supporters of the Family Hope Program (PKH), who play a crucial role in efforts to alleviate poverty. This collaboration is essential for promoting empowerment as a functional social movement, aimed at expediting beneficiaries' access to resources and fostering greater independence.
3. Compared to Village Social Workers (TKSK) are recognized as strategic partners of the government in addressing social problems, providing social assistance, and supporting the implementation of government social protection programs. Therefore, maintaining strong cooperation and coordination with the government is vital, reinforcing their role as an operational hub for poverty management programs in Bengkalis Regency.
4. Cooperation and coordination efforts are also undertaken with the Riau Institute of Malay Tradition (LAMR) in Bengkalis, reflecting the cultural and traditional dimensions relevant to local development initiatives.

5. Collaboration with academics is utilized to conduct evaluations and research aimed at assessing the success rates of implementing the BERMASA program, providing valuable insights for program improvement.

The Bengkalis Regent Administration supports village administrations by providing development facilities. These facilities are allocated based on a village development index determined by analyzing the development levels of villages and sub-districts within the regency. The evaluation considers several indicators: demographic development, community economy, village domestic product, per capita income, control of community economic assets, community education, community political sovereignty, community institutions, and community and village governments.

The BERMASA program also aims to address complex and ambiguous problems that may extend beyond the direct purview of government organizations, often requiring broader community effort. The case of Parit Kebumen Village in Bengkalis Regency serves as a notable example. This village successfully implemented the BERMASA Village program in 2022, allocating the funding uniformly across all villages at 60% for development activities and 40% for empowerment initiatives. Parit Kebumen village received recognition as the best village in the SPBE (Electronic-Based Government System) program in Bengkalis Regency and achieved its Sustainable Development Goals (SDG) targets. It also garnered ministerial awards. Factors contributing to its success include the development of a village website and Android application, increased allocation of Village Fund (ADD), budget alignment with government priority programs, and the implementation of the BERMASA program with integrated empowerment infrastructure and clear performance indicators. In terms of infrastructure, Parit Kebumen boasts amenities such as a free Wi-Fi tower, a sports center catering to 100 users, and various joint ventures managed by the Village-Owned Enterprise (BUMDes), including convenience stores, agricultural tool rentals, and palm oil trading. Notably, this village was established following the expansion of Lecak Bay in 2004. Additionally, coffee produced in the village is sold as far as Lombok, and income generated from plantations and land is utilized to support local places of worship.

Another initiative observed within the BERMASA context emphasizes community-initiated efforts to tackle well-defined problems that complement existing services. In Bengkalis district, many village authorities utilize BERMASA funds to develop websites and e-services. This aims to facilitate administrative tasks for residents, especially given inadequate road conditions and the considerable distance to the village government offices for some, including those living far from the beach. This demonstrates a response to a clearly defined local problem (access to services due to distance/infrastructure) through community-led, technology-based innovation supported by the program's funding. This aligns with the findings of Adianto et al (2022) and Mayarni et al (2021), which emphasize the role of collaboration in building sustainable community governance and development, and how these collaborative

components support the BERMASA program's eight success indicators for a community program.

To address the challenges in the administrative process, particularly concerning the submission, validation, and verification of proposals for the BERMASA program, an internet-based system known as SIDESA has been implemented. Putra et al (2023) describe the implementation of the SIDESA application, highlighting its functions for reporting activities, confirmations, and budget proposals. This system is intended to streamline the process for village authorities and the Village Community Empowerment Department (DPMD), which is designated by the district administration as the manager of this process. While the SIDESA application aims to facilitate the process, empirical findings reveal challenges. Village representatives encountered problems during field inspections and visits to the DPMD office for verification and confirmation, requiring multiple submissions and corrections of documents. This poses particular difficulties for villages in remote areas with limited access and work schedules. For DPMD, managing the large volume of documents for 136 villages requires extensive storage space. Therefore, while SIDESA represents an innovation, its effectiveness is hindered by practical implementation issues and the need for improved digital infrastructure and user capacity in remote areas, aligning with the challenges identified in previous studies on the implementation of similar financial support programs (Ramodhani, A., 2023; Pebiona & Fiddin (2023).

Based on Nambisan (2008) framework (Figure 2), the Bengkalis Regency government, through the BERMASA program, demonstrates aspects of the four roles in collaborative innovation and problem-solving:

1. Innovation Integrator: The government acts to integrate external innovative concepts (e.g., community proposals, academic input) into new services and initiatives, as seen in structuring the BERMASA program to incorporate village-level priorities and partnerships (a, e).
2. Innovation Seeker: The government actively seeks external ideas and solutions to address existing problems within their purview, evident in collaborating with various partners (PKH, TKSK, LAMR) to enhance social programs and services (b, c, d).
3. Innovation Champion: The government plays a supportive role in fostering consensus among stakeholders for collaborative efforts, although the empirical data emphasizes the direct implementation role more strongly.
4. Innovation Catalyst: The government facilitates and enables collaborative initiatives, encouraging innovation in areas potentially beyond traditional government scope, such as community-led digital services or BUMDes development supported by BERMASA funds.

The implementation of the BERMASA program principles in Bengkalis Regency can be examined through the foundational principles of network-based collaborative innovation proposed by Nambisan (2008). Table 1 outlines these principles and their application within the program.

<b>Key Principle</b>	<b>Description</b>	<b>The Principle Applied to the BERMASA program in Bengkalis Regency</b>
Shared goals and objectives	One or more goals that help bring the network members together and channel their diverse resources and activities	The BERMASA program in Bengkalis Regency is guided by the shared goal of optimizing village potentials. This objective unites various stakeholders, including government entities, community leaders, NGOs, and researchers, in a collective effort to harness their resources and activities towards enhancing village development through financial assistance from the regent of Bengkalis worth 1 billion for each village with classification indicators according to the development index village.
Shared "worldview"	Common assumptions and mental models related to innovation and its external environment	Villages are provided with the chance to enhance technology-driven public services, utilizing websites or applications and elevating village recognition in implementing village Sustainable Development Goals (SDGs) at the national level across Indonesia.
"Social" knowledge creation	Emphasis on interactions among network members as the basis for new knowledge creation	An internet-based system has been put into operation to assist village authorities and the DPMD in executing proposals and conducting validation and verification procedures. This software, known as SIDESA, incorporates elements for budget proposals, validation, and activity implementation reports. This system is expected to streamline the administrative procedures related to financial assistance programs, particularly the BERMASA program designed for village administrations.

<b>Key Principle</b>	<b>Description</b>	<b>The Principle Applied to the BERMASA program in Bengkalis Regency</b>
Architecture of participation	Defines a set of systems, mechanisms, and processes to facilitate participation in value creation and value appropriation	The Bermasa Program engages various stakeholders, including village governments, local communities, and non-governmental organizations. This provides an opportunity for collaborative efforts and joint innovation to maximize the potential of the villages. Collaborative innovation entails the active participation of diverse parties in generating novel ideas and innovative solutions. It promotes broad involvement with newsletters, educational workshops, and tours to disseminate best practices and pertinent information, enabling all partners to reap the initiative's benefits.

Table 1. Foundational Principles of Network-Based Collaborative Innovation as Applied to the BERMASA Program in Bengkalis Regency. *Source:* Research Analysis, 2023

Based on Table 1 and the empirical findings, the BERMASA program embodies key principles of network-based collaborative innovation. The shared goal of optimizing village potential unites stakeholders. The program fosters a shared understanding ("worldview") by promoting specific types of innovation like technology-based services and SDG alignment. "Social" knowledge creation occurs through interactions facilitated by the program, including the development and use of systems like SIDESA, although challenges in its practical use need addressing. The "architecture of participation" is built into the program by actively involving village governments and communities in planning and implementation, leveraging diverse resources and promoting collaborative activities like the partnerships with DPMD, PKH, academics, etc. This application of principles, drawing from both the structure of the program and the empirical observations of its implementation, demonstrates how collaborative innovation is being pursued to optimize village potential in Bengkalis Regency.

The BERMASA program, therefore, represents a significant investment in local development in Bengkalis Regency, focusing on community priorities and inclusion. The success of such programs depends on practical implementation, transparency, and active participation of local communities in decision-making and project implementation, which is relevant to Fan et al., (2020) Lopes & Farias (2022) who identified the link between collaborative innovation and innovation performance and the need for governance structures to support collaboration.

## Discussion

The context of collaborative innovation theory, as highlighted by Vivona et al (2023) in their discussion on the costs involved in collaborative arrangements, provides a backdrop for understanding the complexities of the BERMASA program. Their work on cost theory, drawing from transaction cost economics, game theory, and the knowledge-based view, identifies factors like the number of employees, hierarchical relationships, cohesion, reliability, and institutionalization as influences on the effectiveness of collaborative innovation governance. While this study did not focus specifically on the costs, these factors implicitly play a role in the success or challenges faced by the BERMASA program's collaborative structure.

Empirical studies, such as that by Al-Omouh et al (2022) on the role of social capital in facilitating collaborative innovation and collective intelligence, and Vani et al., (2020) linking social trust to increased collaborative innovation, resonate with the importance of community dynamics and relationships within the BERMASA program. The findings that the village government plays a significant role as the front guard and closest actor to the community underscore the importance of local social structures and trust in driving the collaborative process forward. Lopes & Farias (2022)'s discussion on the public sector's adoption of collaborative innovation to solve complex problems and increase efficiency aligns with the BERMASA program's goals, while their emphasis on the need to explore how to organize public governance structures to support collaborative innovation highlights a crucial area for improvement within the program's implementation framework, particularly concerning coordination between DPMD and village authorities.

The bibliometric findings (Figures 3, 4, 5) indicate that collaborative innovation in Indonesian village contexts is a well-established research area, peaking in author collaboration in 2022 and showing a historical focus on village-level innovation (2015 keywords). The emerging keywords like 'climate change' suggest that future research, and implicitly collaborative efforts, may increasingly need to address broader environmental and adaptive challenges at the village level, an area where the BERMASA program's flexible funding mechanism could potentially be leveraged through collaborative initiatives.

The empirical results demonstrate that the BERMASA program leverages network-based collaborative innovation (Nambisan, 2008) by involving multiple external partners (citizens, NGOs, academics, other government bodies) alongside the village government. The program's initiatives, such as the development of e-services to overcome geographical barriers or community-led ventures through BUMDes, illustrate attempts to optimize village potential through innovative solutions driven by these collaborations. The application of Nambisan's four roles (Integrator, Seeker, Champion, Catalyst) shows that the Bengkalis government and village authorities are actively engaging in fostering innovation, particularly in integrating external ideas and seeking solutions for both well-defined (e-services for administration) and more complex issues



(poverty, stunting, though specific innovative collaborative approaches beyond funding allocation need deeper exploration).

Ji & Miao (2020) argue that indirect government support, such as creating inter-organizational networks, can significantly impact collaborative innovation. The BERMASA program's structure, which facilitates partnerships and network creation at the local level (e.g., DPMD-Polbeng, village-PKH, village-academics), aligns with this perspective. The financial support acts as a direct catalyst, but the effectiveness hinges on the collaborative networks it enables. However, the empirical data also highlighted practical challenges, such as difficulties with the SIDESA system and issues faced by remote villages, which can hinder the smooth functioning of these networks and limit the optimization of innovations initiated by the village government and community. This suggests that while the *structure* for collaborative innovation exists and aligns with theoretical principles and findings from other studies Muhammad & Nasution (2022) on grants for infrastructure, Ginanjar & Harikesa (2021) on sanitation subsidies, Pratama et al (2023) on financial support influence), the *process* requires refinement, particularly in addressing infrastructure gaps like internet access and transportation in remote areas, which are critical for digitally-enabled collaboration.

The BERMASA program, therefore, serves as an important case demonstrating the potential and challenges of implementing large-scale, financially supported collaborative innovation at the village level in Indonesia. It highlights the central role of the village government as the key facilitator and actor closest to the community, and the necessity of structured partnerships and overcoming practical barriers like digital access and administrative complexities to maximize the program's impact on village potential and community welfare, aligning with the eight development indicators.

## Conclusion

The BERMASA program is a significant initiative by the Bengkalis Regency government aimed at providing substantial financial aid of Rp 1 billion per village to 136 regional villages. Its overarching goal is to foster the development of autonomous, advanced, and prosperous towns throughout the regency, aligning with the vision of Regent Kasmarni and Vice Regent Bagus H Santoso and the eight flagship programs. This financial allocation from the Bengkalis Regency Regional Budget (APBD) underscores a commitment to local development.

Based on this research, which combined bibliometric and qualitative empirical analysis, it was found that the village government plays the most critical role in the collaborative innovation process within government initiatives, serving as the primary interface and actor closest to the community. Empirical evidence from the program implementation, including partnerships and initiatives like the SIDESA system and village-level development projects, demonstrates attempts to leverage collaborative innovation. Supported by previous analyses and the bibliometric findings, the collaborative innovation approach within BERMASA is considered capable of contributing to sustainability standards and improving community welfare in an

integrated manner, consistent with the Bengkalis district government's development objectives, which are reflected in the eight BERMASA achievement indicators.

This research recommends adopting the Pentahelix approach to enhance innovation-based collaboration within the BERMASA program. This approach would help maximize the roles of all actors (government, community, academia, business, media) in a more structured manner, clarifying their specific duties and functions to support collaborative innovation. Furthermore, the study highlights that practical barriers, particularly the unequal distribution of internet network access and transportation challenges in remote villages in Bengkalis Regency, must be addressed promptly. Overcoming these infrastructure limitations is crucial for optimizing the innovations initiated by both the village government and the community under the BERMASA program.

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### Author's Declaration

The authors made substantial contributions to the conception and design of the study. The authors took responsibility for data analysis, interpretation and discussion of results. The authors read and approved the final manuscript.

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### Availability of data and materials

All data are available from the authors.

### Competing interests

The authors declare no competing interest.

### Additional Information

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## References

- Adianto, A., As'ari, H., Mayarni, M., & Rosaliza, M. (2022). Pemanfaatan Tanaman Sawit Melalui Inovasi Teknologi Bernilai Ekonomi Di Desa Sako Margasari Kabupaten Kuantan Singingi. *Reswara: Jurnal Pengabdian Kepada Masyarakat*, 3(1), 6–14. <https://doi.org/10.46576/rjpkm.v3i1.946>
- Al-Omoush, K. S., Ribeiro-Navarrete, S., Lassala, C., & Skare, M. (2022). Networking and knowledge creation: Social capital and collaborative innovation in responding

- to the COVID-19 crisis. *Journal of Innovation & Knowledge*, 7(2), 100181. <https://doi.org/10.1016/j.jik.2022.100181>
- Anggina, S., & Zaki, A. (2023). Peran Kerjasama Regional Keantariksaan bagi Pembangunan Berkelanjutan Indonesia: Studi Kasus APRSAF. *Jurnal Ilmu Sosial dan Humaniora*, 12(2), 248–258. <https://doi.org/10.23887/jish.v12i2.60614>
- Askary, A., Alwi, A., & Susanti, G. (2022). Collaborative Innovation Pada Birokrasi Publik di Kabupaten Mamuju Tengah: Studi Kasus Program Membara. *Vox Populi*, 5(1), 53–60. <https://doi.org/10.24252/vp.v5i1.29650>
- Bai, C., Feng, C., Yan, H., Yi, X., Chen, Z., & Wei, W. (2020). Will income inequality influence the abatement effect of renewable energy technological innovation on carbon dioxide emissions? *Journal of Environmental Management*, 264, 110482. <https://doi.org/10.1016/j.jenvman.2020.110482>
- Fan, F., Lian, H., & Wang, S. (2020). Can regional collaborative innovation improve innovation efficiency? An empirical study of Chinese cities. *Growth and Change*, 51(1), 440–463. <https://doi.org/10.1111/grow.12346>
- Ginanjari, Y., & Harikesa, I. W. A. (2021). Implementasi Program Sanitasi Australia Indonesia Infrastructure Grants For Sanitation/Saig Di Kota Cimahi Jawa Barat Pada Tahun 2020-2021. *Jurnal Academia Praja*, 4(2), 396–409. <https://doi.org/10.36859/jap.v4i2.465>
- Hanum, L., Noor, I., & Wahyudi, L. E. (2023). Individual and Social Influence on the Sustainable Social Entrepreneurs Development. *Jurnal Ilmu Sosial Dan Humaniora*, 12(2), 288–295. <https://doi.org/10.23887/jish.v12i2.62081>
- Haq, Z., Tua, H., & Adianto, A. (2023). Dynamic Governance Dalam Pembangunan Pariwisata Di Kecamatan Rupat Kabupaten Bengkalis. *Journal Publicuho*, 6(1), 189–201. <https://doi.org/10.35817/publicuho.v6i1.102>
- Ji, H., & Miao, Z. (2020). Corporate social responsibility and collaborative innovation: The role of government support. *Journal of Cleaner Production*, 260, 121028. <https://doi.org/10.1016/j.jclepro.2020.121028>
- Lopes, A. V., & Farias, J. S. (2022). How can governance support collaborative innovation in the public sector? A systematic review of the literature. *International Review of Administrative Sciences*, 88(1), 114–130. <https://doi.org/10.1177/0020852319893444>
- Mayarni, M., & Rahmanul. (2021). Pengelolaan Pariwisata Danau Napangga Berkelanjutan Oleh Bumdes Di Kabupaten Rokan Hilir. *PUBLIKA: Jurnal Ilmu Administrasi Publik*, 7(1), 46–63. [https://doi.org/10.25299/jiap.2021.vol7\(1\).6774](https://doi.org/10.25299/jiap.2021.vol7(1).6774)
- Miles, M. B. & Huberman, M. (t.t.). *Analisis Data Kualitatif* ((1992).).
- Muhammad, A., & Nasution, S. (2022). The Role of Grants in Infrastructure Development Efforts. *Jurnal Ekonomi, Manajemen, Bisnis dan Akuntansi Review*, 2(1).
- Nambisan. (2008). *Transforming Government Through Collaborative Innovation*. Washington, DC: IBM Center for the Business of Government. 2008.
- Pebiona, G., & Fiddin, F. (2023). The Evaluation of Bermasa Village Program on Planning and Budgeting for Village Development in Mandiri Village, Bantan Sub-District. *International Journal of Financial and Investment Studies (IJFIS)*, 4(1), 31–39. <https://doi.org/10.9744/ijfis.4.1.31-39>

- Pratama, A. I., Rosa, N. T., & Yudani, P. (2023). Implementasi Aplikasi Sidesa Untuk Pengusulan dan Pelaporan Pendanaan Program Bermasa Kabupaten Bengkalis. *Tanjak: Jurnal Pengabdian Kepada Masyarakat*, 3(1). <https://doi.org/10.35314/tanjak.v3i1.2817>
- Putra, F. P., Pratama, A. I., Rosa, N. T., & Yudani, P. (2023). Implementasi Aplikasi Sidesa Untuk Pengusulan dan Pelaporan Pendanaan Program Bermasa Kabupaten Bengkalis. *Tanjak: Jurnal Pengabdian Kepada Masyarakat*, 3(1). <https://doi.org/10.35314/tanjak.v3i1.2817>
- Ramodhani, A. (t.t.). Analisis Pelaksanaan Pembangunan Desa Atau Infrastruktur Desa Melalui Swakelola Pada Hibah BERMASA [Doctoral dissertation]. Politeknik Negeri Bengkalis.
- Shu, C., Zhou, K. Z., Xiao, Y., & Gao, S. (2016). How Green Management Influences Product Innovation in China: The Role of Institutional Benefits. *Journal of Business Ethics*, 133(3), 471–485. <https://doi.org/10.1007/s10551-014-2401-7>
- Torring, J. (2019). Collaborative innovation in the public sector: The argument. *Public Management Review*, 21(1), 1–11. <https://doi.org/10.1080/14719037.2018.1430248>
- Vani, R. V., Priscilia, S. O., & Adianto, A. (2020). Model Pentahelix Dalam Mengembangkan Potensi Wisata di Kota Pekanbaru. *Publikauma: Jurnal Administrasi Publik Universitas Medan Area*, 8(1), 63–70. <https://doi.org/10.31289/publika.v8i1.3361>
- Vivona, R., Demircioglu, M. A., & Audretsch, D. B. (2023). The costs of collaborative innovation. *The Journal of Technology Transfer*, 48(3), 873–899. <https://doi.org/10.1007/s10961-022-09933-1>