PENTA HELIX COLLABORATION IN BORDER COMMUNITY DEVELOPMENT: AN EMPIRICAL STUDY OF INTEGRATED BORDER POST (PLBN) GOVERNANCE IN SOTA, MERAUKE

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Abstract

Border areas are strategic frontiers for safeguarding national sovereignty, yet border governance in Indonesia has long been dominated by a security-oriented approach. The development of Integrated Border Posts (PLBN) signals a shift toward a prosperity approach, which requires collaboration among multiple stakeholders. This study analyzes the application of the Penta Helix model (Academics, Business, Community, Government, and Media) in the governance of the Sota Integrated Border Post in Merauke, South Papua, on the border between Indonesia and Papua New Guinea. Using a descriptive qualitative approach, data were collected through interviews, observation, documentation, and a review of policy documents, scholarly literature, and media reports. The data were analyzed using the interactive model of Miles, Huberman, and Saldaña. The findings show that actor roles are relatively well distributed. The government acts as regulator and infrastructure provider, and local MSMEs and cross-border traders drive the border market. Academics contribute research-based recommendations, and the media expand information reach and destination promotion. The Kanum indigenous community serves as a source of social capital and a channel for grassroots cross-border diplomacy. However, collaboration remains constrained by government dominance, limited participation of MSMEs and indigenous communities in strategic decision-making, weak formal institutional mechanisms, and capacity gaps. The study identifies joint decision-making, consensus building, and formal institutional design as the key determinants of effective collaboration. It recommends establishing a border communication forum, developing MSME business incubation and indigenous ecotourism programs, and strengthening media-based destination branding. This study extends the Penta Helix literature to a cross-border and indigenous community context that has received little empirical attention.

Keywords: penta helix; collaborative governance; border community development; integrated border post (plbn); kanum indigenous community; merauke.

Introduction

State border areas possess vital geopolitical and socio-economic significance in maintaining the integrity and sovereignty of the Unitary State of the Republic of Indonesia (NKRI). Historically, border governance in Indonesia was heavily dominated by a conventional security approach (security approach) that treated border zones merely as military defense belts and isolated peripheral territories. However, following the

enactment of Law No. 43 of 2008 on State Territory and Presidential Regulation No. 12 of 2010 on the National Border Management Authority (BNPP), a new paradigm emerged: border development shifted toward a prosperity approach and a sustainable environmental approach.

This paradigm transformation was further reinforced by the strategic policy of developing Integrated Border Posts (Pos Lintas Batas Negara / PLBN) as the nation's front display showcases. One of Indonesia's key land border points is Sota District in Merauke Regency, South Papua Province, which directly borders neighboring Papua New Guinea (PNG). Sota District is located approximately 79 to 80 km from the center of Merauke City and lies within a unique landscape directly adjacent to the ecological ecosystem of Wasur National Park. The inauguration of the Sota Integrated PLBN by President Joko Widodo on October 3, 2021, marked a new era in border governance, wherein the 5.6-hectare area was comprehensively designed to include core immigration/security inspection zones, commercial border market spaces, public open spaces, and community social facilities.

Although the grand physical infrastructure of PLBN Sota presents a renewed face for eastern Indonesia's border, empirical reality demonstrates that the success of border community development cannot rely solely on government physical provisions. The Sota region faces multidimensional complexity, including cross-border local trading dynamics that remain dominated by the informal sector and barter systems, limited capital access for local MSMEs, the protection of customary land rights (hak ulayat) and local wisdom of the Kanum indigenous tribe, as well as security challenges related to the circulation of illicit transnational commodities. The government's limitations in reaching all sectoral needs underscore the urgency for an inclusive, adaptive, and collaborative governance model.

Theoretically, public administration and innovation management have evolved governance concepts from the Triple Helix model (Government, Academics, Industry) to the Quadruple Helix (adding Civil Society) and further into the Penta Helix model (ABCGM: Academics, Business, Community, Government, and Media). The Penta Helix model emphasizes that social innovation and sustainable development can only be realized through harmonious orchestration among five key stakeholders. Within this framework, Government acts as regulator and controller, Academics as drafter and knowledge source, Business actors as investment and technology enablers, Community as social movement accelerators, and Mass Media as publication expanders and regional brand image builders.

Although literature on the Penta Helix model has been widely published in Indonesia—such as in tourist village development in Java, social crisis management, or smart city innovations—most studies still focus primarily on the public sector and urban society. A noticeable literature gap remains regarding how the qualitative framework of Penta Helix operates in state border areas characterized by cross-border jurisdictional boundaries and specialized indigenous community structures, such as the Kanum Tribe in Sota District. Therefore, this study aims to present a comprehensive empirical analysis of the research findings on the application of Penta Helix at PLBN Sota, while sharply dissecting the core analytical discussions regarding key determinants, power dynamics, and the implications of collaboration for border community self-reliance.

Method

This study employs a descriptive method with a qualitative approach. The qualitative approach was selected due to its relevance in deeply exploring the natural context, interaction patterns among actors, and institutional dynamics involved in the implementation of Penta Helix collaboration at the Sota District Cross-Border Post (PLBN) in Merauke Regency, South Papua.

Data sources for this study include primary data—specifically interviews with officials, traders, and members of the public encountered incidentally while passing through the Sota PLBN. Additionally, the study utilizes a combination of validated secondary data, comprising: (1) Official reports and policy documents from the National Border Management Agency (BNPP RI), the Ministry of Public Works and Public Housing (PUPR), and the South Papua Provincial Government; (2) Regional profile documents and development statistics for Sota District from the Merauke Regency Government; (3) Empirical research reports and indexed scholarly articles examining Sota border governance and the Kanum indigenous community; and (4) Credible news publications from national and local media (such as RRI Merauke, Tabloid Jubi, and Papua Selatan Pos) regarding socio-economic activities at the Sota PLBN.

Research informants were selected using a combination of purposive sampling—for key informants representing institutions, traditional leaders, and the media—and incidental sampling for traders and members of the public encountered while passing through the Sota Cross-Border Post (PLBN) during data collection. Informant profiles are presented in Table 1 to demonstrate the representation of the five Penta Helix elements while ensuring transparency and accountability in the primary data collection process.

Table 1. Research Informants

No	Informants	Penta Helix Elements	Number
1	Sota PLBN Management	Government	1
2	Border Security Task Force	Government	1
3	Kanum Tribal Customary Leader	Community	1
4	PLBN Market Traders	Business	2
5	People Crossing the PLBN	Community	2
6	Local Media Practitioners	Media	1
Total			**8**

Data analysis applied the interactive model developed by Miles, Huberman, and Saldana (2014), consisting of three systematic stages: (1) Data Reduction—classifying, focusing, and filtering empirical data based on the five dimensions of Penta Helix actors; (2) Data Display—organizing research data into role-mapping matrices, descriptive narratives, and visualizations of the collaboration workflow; and (3) Drawing Conclusions and Verification, namely formulating philosophical and practical findings regarding the crucial aspects of collaboration effectiveness in border areas.

Result and Discussion

General Overview and Empirical Characteristics of the Sota District Border Area

Sota District is one of the 20 districts in Merauke Regency, situated at the easternmost tip of the Republic of Indonesia. Geographically, Sota is located approximately 79–80 km

from Merauke City center, accessible within a 60-to-90-minute overland drive across the forest and savanna corridors of Wasur National Park. The majority of Sota District consists of protected forest cover, wetlands, and conservation land, with residential settlements concentrated in several main villages (kampung).

Demographically, Sota's population structure is divided into two primary groups living in harmonious coexistence: indigenous residents from the Kanum tribe and migrant residents (largely transmigrants from Java, Bugis, and Nusa Tenggara). Indigenous Kanum residents traditionally rely for their livelihoods on forest hunting, foraging, fishing, and traditional handicraft making. Meanwhile, migrant residents engage in dryland agriculture, staple goods trading, and public service provisions. The availability of basic infrastructure in Sota has experienced significant improvements; 24-hour electricity supplied by PLN is fully operational, and Telkomsel's 4G telecommunication network reaches the border compound and tourist transit hubs.

The primary attraction of Sota District lies in the Sota Integrated Border Post (PLBN Sota), situated on a 5.6-hectare site. The PLBN features a modern architectural concept integrated with Kanum tribal cultural ornaments (such as Tifa-shaped roof structures and traditional Musamus anthill motifs). Beyond its primary administrative function as a national entry gate, PLBN Sota is equipped with the Merauke-Sabang Zero Kilometer Monument, border recreational parks, and a commercial border market (Pasar PLBN) that serves as a hub for socio-economic interaction between Indonesian citizens and Papua New Guinean nationals.

Cross-Border Dynamics and Economic Activities of the Sota Border Market

Empirical findings show that cross-border activity at the Sota PLBN (Pos Lintas Batas Negara, the border crossing post) is highly dynamic and dominated by the movement of Papua New Guinean (PNG) citizens from the nearest border villages, particularly members of the Kanum tribe from Wariaber Village, PNG. These traditional border crossers enter Indonesian territory using an official Cross-Border Travel Document (Surat Perjalanan Lintas Batas, SPLB) issued by immigration officials.

Trading at the Sota PLBN Market takes place every day from 08.00 to 16.00 WIT (Eastern Indonesia Time). PNG residents cross the border carrying game and natural products from their country, such as deer antlers, dried leftover game meat, crocodile skins, cajuput oil, and traditional handicrafts. These goods are sold or bartered to Indonesian traders and visitors. Conversely, the money earned from these sales is used by PNG residents to buy daily necessities that are hard to obtain in their own area, such as rice, sugar, coffee, instant noodles, clothing, and household goods, from Indonesian micro, small, and medium enterprise (MSME) traders (such as Marta Dhimar at the Sota Market).

The transaction system at the Sota border has its own distinctive character: transactions are conducted in Indonesian Rupiah (IDR), in the Papua New Guinean Kina (PGK), or through direct barter. This cross-border trade shows that the Sota PLBN is not merely an administrative checkpoint but a 'living economic gateway' that sustains the food security and logistical needs of border residents on both sides.

From a broader theoretical perspective, these practices can be read as grassroots diplomacy, that is, interstate relations built and sustained by ordinary citizens through everyday interaction rather than by formal diplomatic apparatus. The Kanum tribe performs this function because its kinship and cultural ties extend across the national border. The concept of social capital helps explain the mechanism. Social capital is

understood as trust, norms of reciprocity, and networks of relationships that facilitate cooperation among parties (Coleman, 1988; Putnam, 2000). At Sota, Kanum trust and kinship networks operate at three levels. First, as bonding social capital among Kanum people living on both sides of the border. Second, as bridging social capital that connects the Kanum with Indonesian traders and visitors of different ethnic and national backgrounds. Third, as linking social capital that connects residents with immigration officers and the PLBN area managers (Szreter & Woolcock, 2004).

The Sota market shows this social capital at work. Transactions in three media, namely Rupiah, Kina, and barter, can take place every day because the parties trust one another's exchange values and honesty, not merely because of formal rules. Repeated trading relationships between PNG residents and Indonesian MSME traders, such as Marta Dhimar, strengthen reciprocity and cross-border trust. The theoretical contribution of these findings is therefore to show that ethnicity-based social capital can function across national borders as an informal infrastructure that complements, rather than replaces, the formal infrastructure of the PLBN and the SPLB. The grassroots diplomacy of the Kanum tribe is thus not a by-product of trade but a source of stability in Indonesia–PNG relations at the local level.

Empirical Mapping of Penta Helix Actor Roles in Sota District

Based on a comprehensive analysis of public governance documents in Sota, the respective roles of the five Penta Helix actors (ABCGM) are detailed as follows:

1. Government / Regulator & Controller : Government holds regulatory and operational authority. BNPP serves as the overarching administrator of the PLBN complex. The Regional Government of South Papua and Merauke Regency provide local APBD budget allocations and public services. CIQS agencies (Customs, Immigration, Quarantine, and Security) handle cross-border documentation and biosecurity/customs compliance. Meanwhile, the TNI/Polri Border Security Task Force (Satgas Pamtas) safeguards physical sovereignty and executes identity checks (KTP) for visitors prior to entering the border zone.
2. Business / Enabler : The private sector acts as the engine of economic activity. Local MSMEs occupy commercial stalls in the Sota PLBN Market selling staples and manufactured goods. PNG cross-border traders act as commercial partners supplying forest products. In addition, state-owned enterprises (SOEs) and national contractors (such as PT Nindya Karya and PT Laser Indonesia) provided physical architectural technology and infrastructure for the Merauke-Sota corridor road.
3. Community / Accelerator : The Kanum indigenous community, alongside local community leaders, acts as the primary accelerator of development. The Kanum tribe holds customary land rights (hak ulayat), preserves customary norms, maintains the ecological integrity of Wasur National Park, and nurtures cross-border kinship ties with PNG villagers in Wariaber. Their role is pivotal in establishing community-based security and preserving local wisdom.
4. Academics / Drafter & Conceiver : Academic researchers from Universitas Musamus Merauke and national research institutes (such as BRIN) formulate research-based policy recommendations. Academics contribute through border governance studies, tourism potential assessments, social capital mapping of the

Kanum Tribe, and community service programs (Pengabdian kepada Masyarakat) focused on financial literacy and entrepreneurship training for Sota MSMEs.

5. Media / Expander : Public broadcasting institutions (RRI Merauke, TVRI) and independent cyber media (Tabloid Jubi, Papua Selatan Pos, Republika) expand information reach. Mass media consistently reports on Sota Market's economic dynamics, promotes the tourist appeal of the Zero Kilometer Monument, and disseminates public education regarding legal border-crossing procedures.

Table 2. Empirical Mapping of Penta Helix Actor Roles in Sota District, Merauke Regency

Penta Helix Element	Primary Actors in Sota District	Empirical Contribution & Strategic Role
Government	BNPP RI, South Papua Provincial Govt., Merauke Regency Govt., CIQS, TNI/Polri Satgas Pamtas	Regulator & Controller: Issuing Border Pass Cards (SPLB), managing PLBN infrastructure, allocating national/regional budgets (APBN/APBD), and maintaining territorial sovereignty.
Business	Sota Market MSME Vendors, PNG Cross-Border Traders, SOE Infrastructure Contractors	Enabler: Facilitating daily trading of staples, enabling barter of forest products/handicrafts, and building commercial infrastructure.
Community	Kanum Indigenous Leaders & Residents, Sota Pokdarwis, Customary Community Council (LMA)	Accelerator: Safeguarding Wasur local wisdom, bridging RI-PNG kinship diplomacy, driving local market activities, and fostering inter-ethnic harmony.
Academics	Universitas Musamus Merauke, National Research Agency (BRIN), Public Researchers	Drafter & Conceiver: Providing scientific policy studies, regional economic analyses, social mapping, and MSME human resource training.
Media Massa	LPP RRI Merauke, Tabloid Jubi, TVRI Papua, Papua Selatan Pos, Cyber Media Outlets	Expander: Publishing border development potential, promoting the Zero Kilometer tourist destination, and building national display branding.

Discussion

Border Governance Paradigm Transition: From Centralized Security to Collaborative Prosperity

Empirical findings in Sota District affirm a philosophical shift in managing state border territories. The legacy militaristic, top-down security approach proved insufficient to address fundamental border community needs. The establishment of PLBN Terpadu Sota—which integrates commercial markets and public amenities—serves as concrete proof of the operationalization of the prosperity approach.

In this context, the Penta Helix model acts as an operational instrument to realize this prosperity paradigm. The government no longer positions itself as a sole authority controlling all border activities, but opens public participation spaces for non-state elements. Integrating border markets within the PLBN complex demonstrates that state sovereignty is enforced not only through border markers and weaponry, but through creating economic growth hubs that foster national pride and well-being among border

residents. This transition aligns with Ansell and Gash's (2008) Collaborative Governance framework, wherein public forums become arenas for collective problem-solving.

Analysis of the Central Role of the Kanum Tribe as Social Capital and Grassroots Diplomacy Instrument

A critical analytical finding of this study is that the Kanum Tribe in Sota District is not merely a passive beneficiary of development, but a central collaborative actor determining collaboration success (Irawan & Adam, 2023). Within Penta Helix theory, the Kanum Tribe represents the Community element rich in social capital—comprising trust norms, social networks, and local wisdom.

First, the Kanum Tribe serves as ecological guardians. Their customary lands located within Wasur National Park are managed under indigenous principles prohibiting environmental destruction. These customary norms have proven more effective in curbing illegal logging than formal law enforcement inspections. Second, and most strategically, the Kanum Tribe executes 'grassroots diplomacy.' Because Kanum tribespeople in Sota (Indonesia) share blood kinship and marital ties with Kanum villagers in Wariaber (Papua New Guinea), potential cross-border state tensions can be defused through familial customary approaches. When trade disputes or border domain issues arise, traditional leaders from both sides settle matters through customary consensus (musyawarah) before escalations turn into formal diplomatic crises. This proves that indigenous social capital constitutes an invaluable immaterial security asset in state border governance.

Evaluation of Multi-Actor Synergy: Power Imbalance and Government Structural Dominance

Despite the positive impacts generated by Penta Helix synergy in Sota District, critical analysis uncovers power imbalances among collaborative actors. As identified in public governance literature (e.g., Amin et al., 2021; Mukhlis et al., 2018), Government actors (BNPP, Regency Govt., and CIQS) continue to dominate joint decision-making processes.

This asymmetric condition is evident in one-way top-down communication from government agencies to other stakeholders. Local MSME vendors and Kanum tribal members are frequently involved only during policy socialization stages or formal ceremonial activities, but lack representation in strategic planning and budget allocation decisions. Academics from Universitas Musamus also note that policy research findings are not fully accommodated by municipal technical agencies due to bureaucratic hurdles and sectoral egos (Irawan & Tanzil, 2020). If left unaddressed, this capacity disparity risks dampening non-state innovation potential and breeding chronic dependency on government assistance.

Determinants of Collaboration Effectiveness: Joint Decision-Making, Consensus, and Formal Institutional Design

Drawing on Penta Helix effectiveness indicators, this study identifies three key determinants of success for border community development collaboration in Sota:

1. Joint Decision-Making: Effective collaboration demands an egalitarian table where all five actors possess equal voice in formulating Sota border development agendas.

2. Consensus Building: A shared value agreement is required to align three core interests: national security sovereignty, MSME economic growth, and Wasur indigenous/environmental preservation.
3. Formal Institutional Design: Collaboration must not rely solely on personal relationships or incidental interactions. Structured institutional rules (ground rules) and formal bodies are needed to bind multi-party commitments sustainably.

Sustainable Collaboration Enhancement Strategies in Sota District

Based on a comprehensive synthesis of empirical findings and field dynamics, this study formulates three structured corrective strategies to reinforce Penta Helix synergy in Sota:

1. Establishment of Sota Integrated Border Communication Forum Sota : Merauke Regency Government and BNPP should issue formal decrees establishing Border Communication in Sota as a joint secretariat. This forum will serve as a quarterly meeting platform for Kanum indigenous representatives, MSME Associations, Universitas Musamus, CIQS, and Mass Media to participatorily plan and evaluate border programs.
2. Business Incubation & Indigenous Ecotourism Mentorship for MSMEs: Universitas Musamus academics, alongside state-owned enterprises and banks, should design integrated training programs for Kanum villagers and Sota MSMEs. Training should focus on product packaging, digital financial literacy, and cultural ecotourism packages connecting PLBN visits with Wasur National Park tours.
3. Mass Media Optimization for Destination Branding and Cross-Border Education: Strengthening partnerships with public broadcasters (RRI/TVRI) and cyber media to broadcast positive narratives of Sota as the 'Border Civilization Display' nationally and internationally, while educating the public on cross-border legal compliance.

Conclusion

This study concludes that community development in the Indonesia-Papua New Guinea border region, specifically in Sota District, has undergone a positive transformation through the application of the Penta Helix collaboration model. Role distribution among actors has functioned effectively: Government acts as infrastructure provider and regulator, Business drives commercial markets, the Kanum Indigenous Community serves as a pillar of social capital and cultural diplomacy, Academics supply research-grounded recommendations, and Mass Media expands public promotion.

However, the core analytical finding reveals that collaboration effectiveness in Sota remains constrained by power imbalances, government structural dominance, the lack of binding formal institutional mechanisms, and managerial capacity gaps within indigenous communities. Nonetheless, Kanum tribal social capital and the physical infrastructure of PLBN Terpadu Sota provide a robust foundation for achieving sustainable border community self-reliance.

As practical guidance for policymakers, this study presents three actionable recommendations: (1) Local Government and BNPP must immediately formalize the Sota Integrated Border Communication Forum (FKTP Sota); (2) Academics and banking institutions should institute MSME business incubation and Wasur indigenous

ecotourism programs; and (3) Mass media outlets should amplify border destination branding to position Sota as a new economic growth node for Indonesia.

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