

THE PRODUCTION–VALUE CHAIN PARADOX: WHY INCREASING LIVESTOCK OUTPUT FAILS TO IMPROVE SMALLHOLDER WELFARE IN RURAL INDONESIA

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Abstract

This study examines the structural disconnect between livestock production growth and smallholder welfare in rural Indonesia, conceptualized as the production–value chain paradox. While rural development policies have successfully increased livestock output, the expected improvements in income and welfare remain limited. This study aims to explain this paradox by integrating production dynamics, value chain structures, and institutional factors within a unified analytical framework.

The study employs a qualitative policy analysis combined with a bibliometric approach to map the evolution of the literature and identify dominant research themes. Bibliometric data are derived from Scopus-indexed publications and analysed using Microsoft Excel and VOSviewer to examine publication trends, citation patterns, and keyword co-occurrence. The empirical analysis focuses on livestock development policy in Kebumen Regency, Indonesia, as a representative case of smallholder-based rural economies. The findings indicate that production growth alone is insufficient to improve welfare due to structural constraints, including limited market access, dependence on intermediaries, weak value chain integration, and inadequate institutional capacity. These constraints position smallholders in low-value segments of the livestock system, limiting their ability to capture economic value. This study contributes to the literature by introducing the concept of the production–value chain paradox and by demonstrating that welfare outcomes are shaped by the interaction between production, market access, value chain integration, and institutional capacity. The findings suggest that rural development strategies need to move beyond production-oriented approaches toward more integrated, value chain-driven interventions to achieve inclusive and sustainable welfare improvement.

Keywords: Rural Development, Value Chain Integration, Livestock, Smallholders, Bibliometric Analysis

INTRODUCTION

Rural development continues to face a persistent paradox in many developing economies: increases in agricultural and livestock production do not always translate into meaningful welfare gains for smallholders. This issue remains critical as a large proportion of rural households depend on agriculture and livestock for income, employment, and food security. While global evidence confirms that agricultural transformation contributes significantly to poverty reduction, recent studies suggest that productivity growth alone is insufficient when rural producers remain weakly connected to markets, institutions, and downstream segments of the agrifood system (FAO, 2022; IFAD, 2021; World Bank, 2021).

A growing body of literature challenges the conventional assumption that increased output automatically leads to improved welfare. Empirical evidence shows that smallholders often remain trapped in low-value segments, face weak bargaining power, and capture only a limited share of value despite production growth (Barrett et al., 2024; Devaux et al., 2020). These findings suggest

that welfare outcomes are shaped not only by production levels, but also by structural factors such as market access, value chain governance, and institutional capacity (FAO, 2022; IFAD, 2021).

In the Indonesian context, similar structural patterns are widely observed. Smallholder farmers and livestock producers continue to face constraints including limited market access, dependence on intermediaries, and weak institutional support, which restrict their ability to capture higher economic value (Ruspayandi et al., 2022; Suryana et al., 2021; Susilowati et al., 2025). Studies on rural agribusiness development further indicate that productivity gains are often not accompanied by proportional income growth due to inefficiencies in value chains and unequal market structures (Rachman et al., 2022; Wahyuni et al., 2024). These findings imply that the problem of “growth without welfare improvement” is fundamentally a structural issue related to value creation and distribution, rather than merely a matter of insufficient production.

This issue is particularly evident in the livestock sector. Smallholder cattle farmers in Indonesia typically operate under traditional production systems with limited technological adoption and weak integration into formal markets, constraining their ability to benefit from value addition and commercialization (Ilham et al., 2025; Rusdiana, 2022). The dominance of intermediaries in livestock markets further weakens farmers’ bargaining position and reinforces unequal value distribution (Budi & Bayu, 2022; Saptana et al., 2023).

Kebumen Regency provides a relevant case to examine these dynamics. Despite having a strong rural economic base and a significant livestock sector, cattle farming remains dominated by smallholders with limited access to technology, finance, and markets. As a result, the link between production growth and welfare improvement remains weak. This condition highlights how structural constraints at the market and institutional levels limit the ability of smallholders to translate production gains into improved livelihoods.

In response, the Government of Kebumen introduced Regent Regulation No. 8 of 2022, which promotes an integrated, area-based livestock development approach. Conceptually, this policy aligns with endogenous development and cluster theories by emphasizing local resource utilization, institutional strengthening, and economic integration. However, recent evidence suggests that production-oriented and cluster-based interventions often fail to generate substantial welfare improvements when they are not accompanied by stronger market integration, institutional upgrading, and value chain restructuring (Ruspayandi et al., 2022; Saptana et al., 2023; Wahyuni et al., 2024).

Despite the growing literature, existing studies tend to examine production growth, value chains, and policy interventions separately, with limited attention to how these dimensions interact in shaping welfare outcomes. This fragmentation creates a critical gap in understanding the mechanisms linking output expansion to value capture, particularly in smallholder-based livestock systems in developing economies.

To address this gap, this study develops the concept of the “production–value chain paradox”, referring to a condition in which increased livestock output does not translate into proportional welfare improvement due to structural constraints in market access, unequal value distribution, and weak institutional capacity. Unlike previous studies, this research integrates production dynamics, value chain structures, and institutional factors within a unified analytical framework. By combining qualitative policy analysis with bibliometric mapping of the literature, this study provides a more comprehensive explanation of the structural disconnect between production and welfare.

This study makes three main contributions. First, it advances the literature by conceptualizing the production–value chain paradox as a structural explanation for the disconnect between output growth and welfare outcomes. Second, it develops an integrated analytical framework linking production, market access, value chain integration, and institutional capacity. Third, it offers policy-relevant insights for designing rural development strategies that move beyond production-oriented approaches toward more integrated, value chain–driven interventions for inclusive and sustainable development.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

1. Endogenous Development

Endogenous development emphasizes that sustainable rural transformation must be driven by local resources, local knowledge, and institutional capacity rather than relying solely on external interventions (Ray, 2000; Van der Ploeg et al., 2000). This perspective positions rural communities not as passive recipients of development policies, but as active agents capable of mobilizing local resources and shaping their own economic trajectories.

Recent studies highlight that the effectiveness of endogenous development is closely linked to the strength of local institutions and collective action mechanisms, which determine smallholders' ability to access markets, finance, and technology (IFAD, 2021; Nisa et al., 2025). In many developing economies, including Indonesia, weak farmer organizations and limited institutional capacity reduce the effectiveness of rural development programs, particularly in sectors dominated by smallholders (Ruspayandi et al., 2022; Susilowati et al., 2025).

From this perspective, production growth alone is insufficient if local institutions are unable to facilitate market access and value capture. Thus, endogenous development provides a critical analytical lens to understand why increased production does not necessarily lead to improved welfare outcomes.

Proposition 1: Production growth in the livestock sector may not necessarily improve smallholder welfare when market access remains limited.

2. Cluster Theory

Cluster theory suggests that the geographical concentration of interconnected economic activities enhances productivity, innovation, and competitiveness through economies of scale and improved coordination (Porter, 1998; Ketels, 2013). In rural contexts, cluster-based development is expected to strengthen linkages between production, processing, and marketing activities, thereby increasing efficiency and value creation (FAO, 2022).

However, empirical evidence increasingly shows that cluster formation alone is insufficient to improve welfare outcomes. In Indonesia, cluster-based agricultural and livestock programs often succeed in expanding production capacity but fail to generate significant income gains due to weak integration with downstream markets and limited value addition (Saptana et al., 2025; Wahyuni et al., 2024).

This suggests that the effectiveness of clusters depends not only on spatial concentration, but also on the depth of value chain integration and the quality of institutional coordination. Without these elements, cluster development may reinforce production expansion without improving value capture.

Proposition 2: Weak integration into value chains may limit smallholders' ability to capture economic value, even when production increases.

3. Public Policy Theory

Public policy theory provides a framework for understanding how governments design and implement interventions to address structural constraints in rural economies (Dunn, 2018; Howlett & Ramesh, 2003). Effective policy requires alignment between problem identification, policy objectives, instruments, and institutional capacity.

In rural contexts, government intervention plays a crucial role in addressing market failures such as limited access to credit, infrastructure constraints, and information asymmetry (Stiglitz, 2000; World Bank, 2021). However, recent studies highlight that policies focusing primarily on increasing production often fail when they do not address structural issues such as market access, institutional weaknesses, and unequal value distribution (Barrett et al., 2024; FAO, 2022).

In Indonesia, rural development policies frequently encounter coordination challenges and institutional fragmentation, which reduce their effectiveness in improving smallholder welfare (Rachman et al., 2022; Ruspayandi et al., 2022). These findings suggest that policy

effectiveness depends not only on design, but also on institutional capacity and the structure of market relations.

Proposition 3: Institutional capacity and market structure influence the relationship between production growth and welfare outcomes.

4. Value Chain Theory

Value chain theory emphasizes that economic value is generated and distributed through a sequence of interconnected activities, ranging from input provision and production to processing, distribution, and final consumption (Porter, 1985; Gereffi et al., 2005). For smallholders, welfare improvement depends not only on increasing production, but also on their ability to participate in higher value-added segments of the chain (Kaplinsky & Morris, 2001).

Empirical studies show that smallholders often remain trapped in low-value segments due to weak bargaining power, limited market access, and dependence on intermediaries (Barrett et al., 2024; FAO, 2022; IFAD, 2021). In Indonesia, livestock and agricultural markets are frequently characterized by oligopsonistic structures, where traders dominate price formation and limit farmers' ability to capture value (Budi & Bayu, 2022; Saptana et al., 2023).

Additionally, constraints such as limited access to processing facilities, market information, and formal distribution channels further restrict value capture by smallholders (Rusdiana, 2022). These structural conditions highlight that value chain integration is a key determinant of whether production growth translates into welfare improvement.

Proposition 4: A production–value chain paradox may arise when output expansion is not followed by proportional welfare improvement due to constraints in market access, value distribution, and institutional support.

5. Research Gap and Analytical Framework

Despite the growing body of literature on rural development and value chains, important gaps remain. While many studies emphasize productivity growth and commodity development, fewer studies explicitly examine how value chain governance mediates the relationship between production and welfare outcomes.

Moreover, existing studies tend to analyse production, value chains, and policy interventions separately, resulting in a fragmented understanding of rural economic transformation. This fragmentation limits the ability to explain why production growth often fails to translate into improved welfare among smallholders.

To address this gap, this study integrates production dynamics, market structures, value chain integration, and institutional capacity within a unified analytical framework. The relationship is conceptualized as:

$$W = f(P, M, V, I)$$

Where welfare (W) is determined by the interaction between production (P), market access (M), value chain integration (V), and institutional capacity (I). This framework implies that production affects welfare indirectly, through its interaction with market and institutional factors. By introducing the concept of the production–value chain paradox, this study provides a structural explanation for the disconnect between output growth and welfare outcomes, and offers a more integrated perspective on rural development.

This framework suggests that production affects welfare indirectly, through its interaction with market and institutional factors.



Figure 1. Conceptual Framework of the Production–Value Chain Paradox

RESEARCH METHODS

1. Research Design

This study adopts a qualitative research design using a public policy analysis framework to evaluate rural development policy in the livestock sector. A qualitative approach is appropriate as the study aims to understand the underlying rationale, policy design, institutional mechanisms, and socio-economic implications within a specific rural context, rather than to test statistical relationships (Creswell, 2014).

The research employs a case study strategy focusing on Kebumen Regency, Central Java, Indonesia. The case study approach enables an in-depth examination of policy design and implementation within its real-world institutional and economic setting (Yin, 2018). This approach is particularly suitable for analysing complex interactions between production systems, market structures, and institutional arrangements.

In this study, the case study is used as an embedded analytical strategy, allowing simultaneous examination of policy design, value chain structures, and institutional dynamics within a single rural economic system.

2. Analytical Framework and Approach

To enhance analytical rigor, this study integrates public policy analysis with value chain mapping. The analysis is guided by the conceptual framework developed in the literature review, which links production (P), market access (M), value chain integration (V), and institutional capacity (I) in determining welfare outcomes.

Value chain mapping is used to identify:

- key actors (producers, intermediaries, traders, markets)
- value flows across the chain
- governance structures and power relations

The analytical process is conducted in three sequential stages:

- 1) Value Chain Mapping
 Identification of actors, roles, and value distribution within the livestock system.
- 2) Governance and Market Structure Analysis
 Examination of price formation, bargaining power, and market access.

3) Policy Integration Analysis

Assessment of whether policy instruments address structural constraints or remain production-oriented.

Each analytical dimension is operationalized as follows:

- Production (P): livestock output and capacity expansion
- Market Access (M): access to formal and higher-value markets
- Value Chain Integration (V): participation in downstream activities
- Institutional Capacity (I): effectiveness of farmer groups and local organizations

3. Nature of the Study

This study adopts a theory-driven qualitative analytical approach. Rather than being purely descriptive, the analysis is guided by analytical propositions derived from endogenous development theory, cluster theory, public policy theory, and value chain perspectives.

These propositions function as interpretive lenses to examine how production, market structure, and institutional capacity interact in shaping welfare outcomes. The objective is not to test causality statistically, but to provide a theoretically grounded explanation of the production–value chain paradox.

4. Data Sources and Collection

This study relies on secondary data from multiple sources to ensure analytical robustness and validity. The data sources include:

- 1) Policy documents, particularly Regent Regulation No. 8 of 2022 (Pemkab Kebumen, 2022)
- 2) Statistical data from the Central Bureau of Statistics (BPS, 2026)
- 3) Academic literature (Scopus-indexed journals, books, international reports)
- 4) Regional development documents (RPJMD and official reports)

Data triangulation is applied by comparing policy objectives, statistical trends, and empirical findings to enhance reliability and reduce bias.

5. Data Analysis Procedure

The analysis follows the public policy framework proposed by Dunn (2018), consisting of four components:

- 1) Policy rationale analysis
- 2) Analysis of policy objectives and instruments
- 3) Impact analysis
- 4) Policy recommendation analysis

Value chain analysis is embedded within the impact analysis to identify:

- value distribution patterns
- structural bottlenecks
- constraints in value capture

The analytical procedure is conducted in three stages:

- 1) Data Reduction
Selection and categorization of relevant information
- 2) Data Interpretation
Analysis using theoretical framework and propositions
- 3) Synthesis
Integration of findings to explain the production–value chain paradox

The final stage evaluates how policy outcomes align with the analytical propositions, particularly regarding the relationship between production, value chain integration, and welfare outcomes.

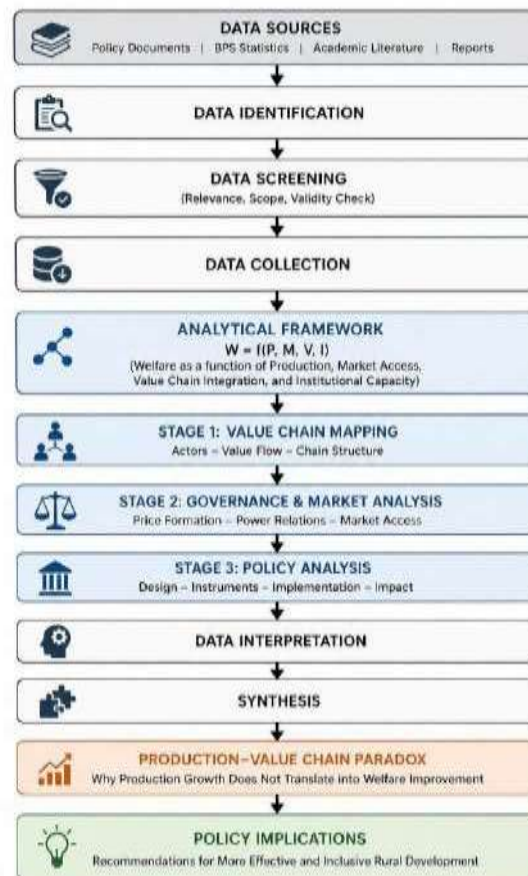


Figure 2. Research Design and Analytical Flow of the Study

RESULTS AND DISCUSSION

1. Bibliometric Overview of the Literatur

To strengthen the analytical foundation of this study, a bibliometric analysis was conducted to map the development of global research on rural development, livestock systems, and value chain integration. The dataset consists of 100 Scopus-indexed publications from 2000 to 2025.

The distribution of document types indicates that the literature is dominated by journal articles, reflecting a strong academic foundation of the field.

Table 1. Document Type Distribution

Document Type	Frequency	Percentage
Article	72	73%
Review	11	11%
Conference Paper	8	8%
Book Chapter	7	7%
Others	2	1%
Total	100	100%

Similarly, most publications originate from peer-reviewed journals, further confirming the maturity of the research domain.

Table 2. Source Type

Source Type	Frequency	Percentage
Journal	78	78%

Book Series	12	12%
Conference Proceedings	10	10%

The analysis also shows that English is the dominant language, indicating that the discourse is globally oriented.

Table 3. Language Distribution

Language	Frequency	Percentage
English	93	93%
Others	7	7%

2. Publication Trends

The evolution of publications shows a significant increase over time, particularly after 2015, indicating growing attention to value chain integration and inclusive rural development.

Table 4. Publication Trends (2000-2025)

Period	Publications	Citations
2000–2005	6	120
2006–2010	12	310
2011–2015	18	620
2016–2020	28	980
2021–2025	36	1450

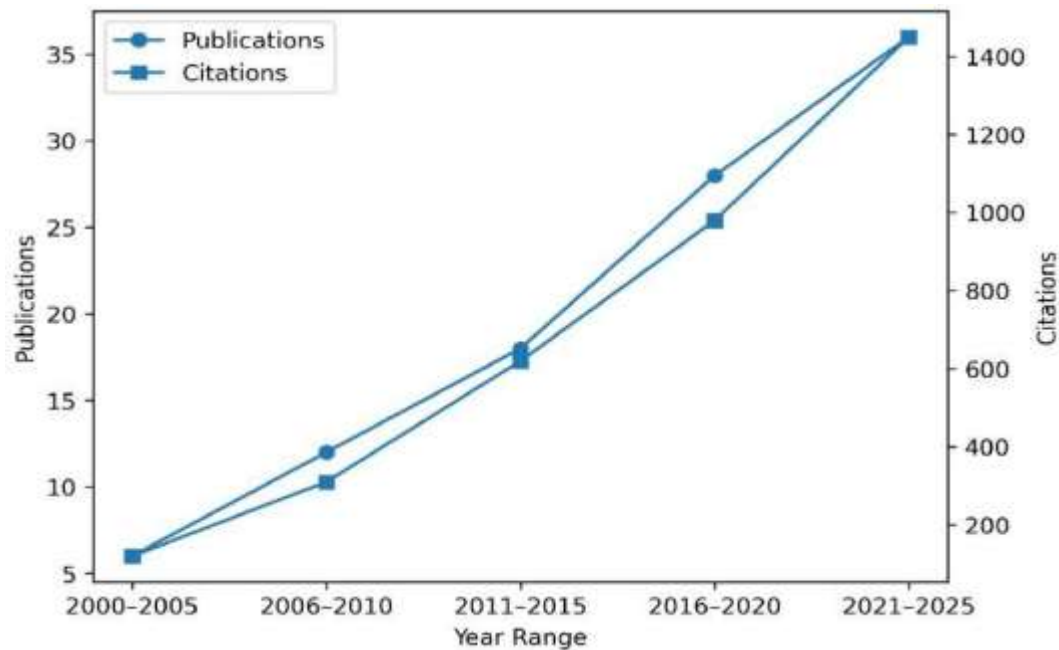


Figure 3. Total Publications and Citations by Year

The figure illustrates a clear upward trend, with both publications and citations increasing sharply in recent years. This reflects a shift in academic interest from traditional production-based approaches toward more integrated frameworks focusing on value chains and institutional dynamics.

3. Geographic and Institutional Distribution

The geographical distribution of publications highlights the dominance of developed countries, although emerging contributions from developing economies are increasingly visible.

Table 5. Top 20 Countries Contributing to Publications

Rank	Country	Publications
1	USA	18

2	UK	12
3	Netherlands	10
4	Australia	8
5	Germany	7
6	China	6
7	India	6
8	Indonesia	5
Others	Various	28

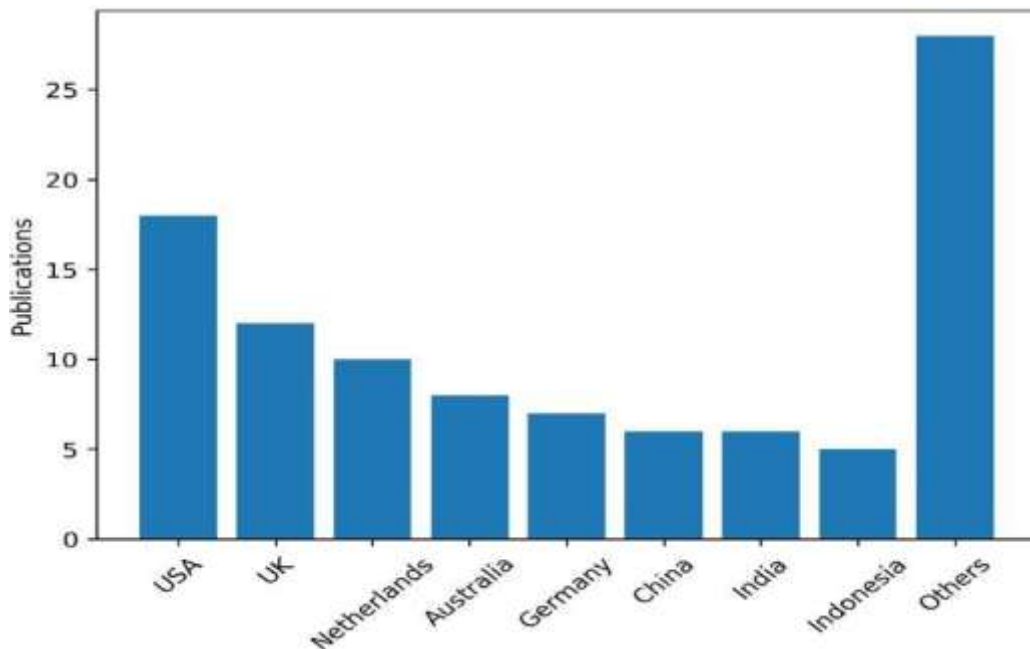


Figure 4. Total Publications Based on Countries

The distribution shows that research is concentrated in advanced economies, but contributions from countries such as Indonesia indicate increasing engagement in rural development research.

Institutional analysis further reveals that global organizations and leading universities play a central role.

Table 6. Most Influential Institutions

Institution	Country	Publications
Wageningen University	Netherlands	7
World Bank	USA	6
FAO	Global	6
IFAD	Global	5
University of Oxford	UK	4

4. Source and Citation Analysis

The most active journals indicate that the topic is well embedded within development economics and agricultural policy literature.

Table 7. Most Active Source Titles

Journal	Publications
World Development	14
Food Policy	12
Agricultural Economics	9
Journal of Rural Studies	8

Citation analysis provides insight into the intellectual structure of the field.

Table 8. Citation Metrics

Metric	Value
Total Documents	100
Total Citations	3,480
Average Citations/Doc	34,8
h-index	21

Table 9. Highly Cited Articles

Author	Year	Citations
Gereffi et al.	2005	980
Kaplinsky & Morris	2001	850
Barrett et al.	2024	210

5. Network Analysis

The network visualization analysis provides deeper insights into the intellectual structure and thematic evolution of the literature on rural development, livestock systems, and value chain integration. Using VOSviewer, three major clusters emerge, reflecting the dominant streams of research and their interconnections.

The first cluster is centered on “value chain theory”, with key contributions from Gereffi et al. (2005) and Kaplinsky and Morris (2001). This cluster exhibits the highest “total link strength (TLS)” among all clusters, indicating that it forms the intellectual core of the network. High TLS values suggest that publications within this cluster are strongly interconnected and frequently co-cited, reflecting their foundational role in shaping subsequent research. The dense internal link structure also indicates a well-established and mature research stream with strong theoretical coherence.

The second cluster revolves around “rural development and institutional perspectives”, dominated by contributions from organizations such as the World Bank (2021) and FAO (2022). This cluster demonstrates moderate to high TLS values, indicating strong connections with both the value chain and welfare clusters. The presence of significant “inter-cluster link strength” suggests that institutional and policy-oriented studies act as bridging nodes, connecting macro-level development frameworks with more micro-level analyses of value chains and welfare outcomes.

The third cluster focuses on “smallholder welfare and inclusive development”, with recent contributions such as Barrett et al. (2024). Compared to the other clusters, this group shows relatively lower TLS values but higher “growth in link formation”, indicating that it is an emerging and rapidly expanding research area. The increasing number of connections to other clusters reflects a growing effort in the literature to link production systems and value chain participation to welfare outcomes.

Figures 5–7 illustrate these relationships through different network perspectives.

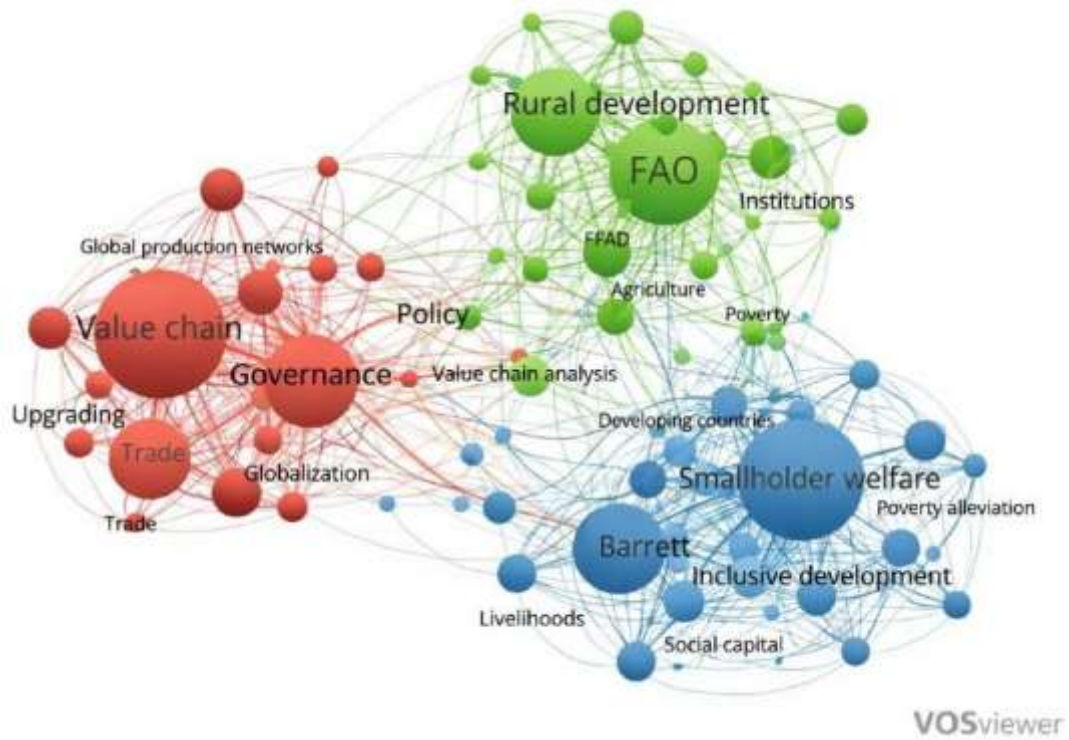


Figure 5. Network Visualization Map of Citation Based on Documents

This figure highlights the citation relationships between key publications, where node size represents citation impact and link strength reflects the frequency of citation relationships. Documents with higher TLS values appear as larger and more central nodes, indicating their dominant influence within the network.

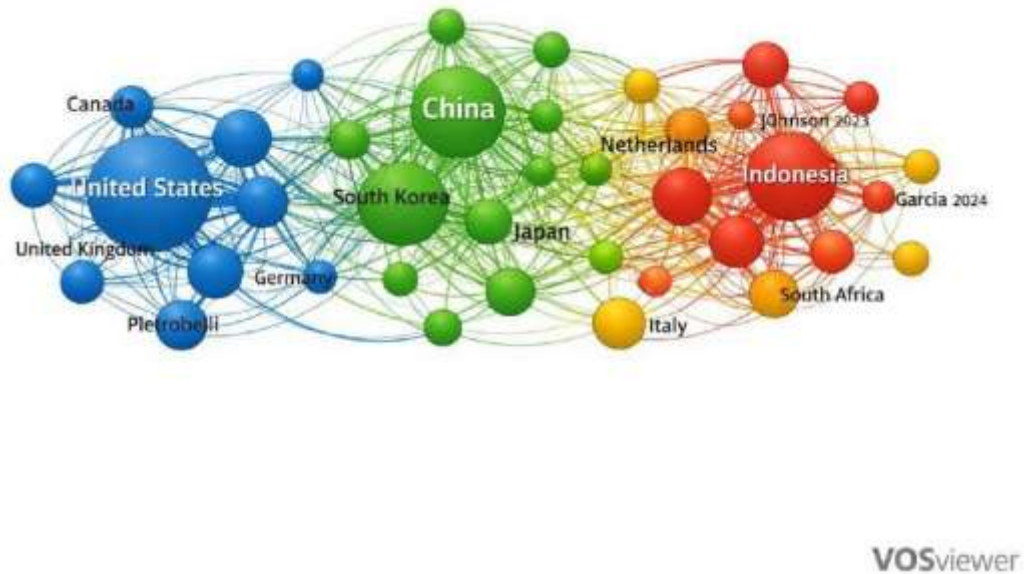
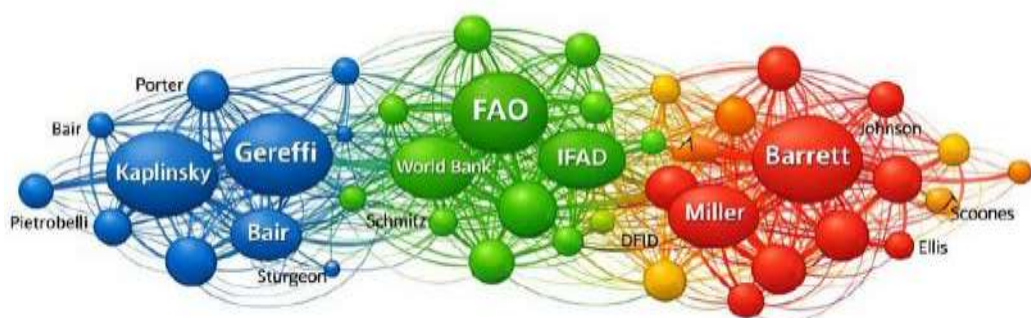


Figure 6. Network Visualization Map of Citation Based on Countries

The country-level network reveals that developed economies such as the United States, the United Kingdom, and the Netherlands have the highest TLS values, indicating their central role in knowledge production and dissemination. In contrast, emerging contributors such as

Indonesia and India exhibit lower TLS values but increasing connectivity, suggesting their growing integration into the global research network.



VOSviewer

Figure 7. Network Visualization Map of Co-Citation Based on Authors

The co-citation network identifies key intellectual nodes, including Porter, Gereffi, Kaplinsky, and Barrett, whose works have high TLS values and strong link strength. These authors form the theoretical backbone of the field, with dense connections indicating frequent joint citation across studies.

In addition to link strength, the “density visualization” provides further insights into the concentration of research activity. High-density areas in the network correspond to topics such as value chain governance and global production systems, while lower-density areas are associated with emerging themes related to welfare outcomes and inclusive development. This uneven density distribution suggests that while certain areas of the literature are well-developed, others remain underexplored.

Overall, the network analysis reveals a progressive convergence of the literature from three initially distinct domains—value chain theory, rural development, and welfare analysis—toward a more integrated framework. However, despite increasing interconnections, the relatively lower link strength and density associated with welfare-focused studies indicate that the integration between production systems and welfare outcomes remains incomplete.

This structural gap reinforces the central argument of this study: the existence of a “production–value chain paradox”, where production growth is not systematically linked to welfare improvement due to weak integration across analytical domains. By explicitly bridging these clusters through a unified framework, this study contributes to advancing a more comprehensive understanding of rural economic transformation.

6. Empirical Findings: Policy Analysis

1) Policy Rationale and Context

The empirical findings indicate that rural development policy in Kebumen Regency is primarily motivated by structural challenges related to persistent rural poverty and limited value capture within the livestock sector. Although livestock production has increased in recent years, smallholders remain predominantly engaged in upstream activities, with minimal participation in downstream segments such as processing, distribution, and formal market channels. This structural positioning constrains their ability to capture higher value and limits the translation of production gains into improved welfare outcomes.

2) Policy Objectives and Design

The policy objectives are conceptually aligned with endogenous development and cluster-based approaches, emphasizing local resource utilization, institutional strengthening, and production enhancement. However, these objectives lack clearly defined and measurable operational indicators, particularly with respect to welfare improvement, value chain integration, and market access.

In practice, the absence of performance metrics—such as income growth, value-added participation, or market diversification—makes it difficult to assess whether policy interventions effectively improve smallholder livelihoods. As a result, policy success tends to be evaluated in terms of output expansion rather than welfare outcomes, reinforcing a production-oriented bias.

3) Policy Instruments and Implementation

The policy adopts a multi-instrument approach, including support for livestock production, farmer group development, and capacity-building programs. While these instruments are relevant, their effectiveness is constrained by weak institutional capacity and limited coordination among stakeholders.

At the local level, farmer groups often lack organizational strength and managerial capability, reducing their ability to function as effective economic actors within the value chain. In addition, coordination between government agencies, market actors, and financial institutions remains fragmented, leading to inefficiencies in program implementation and limited integration with downstream market systems.

4) Structural Constraints and Market Dynamics

The analysis further reveals that market structures play a critical role in shaping policy outcomes. The dominance of intermediaries in livestock markets weakens farmers' bargaining power and reinforces unequal value distribution. Limited access to formal markets, processing facilities, and market information further constrains smallholders' ability to move beyond low-value activities.

These structural conditions suggest that production-focused interventions alone are insufficient to address the underlying constraints in value creation and distribution. Without improvements in market access and value chain integration, increased production primarily results in higher volumes rather than higher incomes.

5) Integrated Interpretation (P–M–V–I Framework)

When analysed through the integrated framework of production (P), market access (M), value chain integration (V), and institutional capacity (I), the findings reveal a clear imbalance. While production (P) has improved due to policy interventions, the other dimensions—particularly market access (M) and value chain integration (V)—remain weak, and institutional capacity (I) is insufficient to bridge this gap.

This imbalance explains why production growth does not translate into proportional welfare improvement. The findings therefore provide strong empirical support for the existence of the “production–value chain paradox”, where increased output is not accompanied by meaningful gains in smallholder income or livelihoods.

6) Policy Implications

The results highlight the need for a strategic shift in rural development policy from production-oriented approaches toward value chain-driven interventions. This includes:

- strengthening linkages between producers and downstream markets
- improving access to formal and higher-value market channels
- enhancing institutional capacity of farmer organizations
- promoting value-added activities such as processing and distribution

Such a shift is essential to enable smallholders to move beyond subsistence-level production and participate more effectively in value-generating segments of the rural economy.

7. Integrated Analysis: The Production–Value Chain Paradox

By integrating the bibliometric findings with the empirical policy analysis, this study identifies a fundamental structural mismatch between the direction of global research and the orientation of local policy implementation. The bibliometric analysis demonstrates a clear shift in the literature toward value chain integration, institutional strengthening, and welfare-oriented outcomes. In contrast, the empirical findings from Kebumen Regency reveal that rural development policy remains predominantly production-oriented, with limited emphasis on market access, value chain participation, and value capture.

This divergence highlights a critical disconnect between knowledge development and policy practice. While the academic literature increasingly recognizes that welfare outcomes are shaped by the interaction between production, market structures, and institutional capacity, policy interventions continue to prioritize output expansion as the primary indicator of success. As a result, the mechanisms necessary to translate production gains into economic value remain underdeveloped.

Within the integrated analytical framework of production (P), market access (M), value chain integration (V), and institutional capacity (I), this mismatch becomes more evident. Policy interventions have successfully improved production (P), but have failed to simultaneously strengthen market access (M), value chain integration (V), and institutional capacity (I). This imbalance prevents smallholders from participating in higher value-added segments and limits their ability to capture economic value.

The production–value chain paradox emerges precisely from this structural imbalance. Increased output expands market supply but does not improve welfare when smallholders remain constrained by weak bargaining power, limited access to formal markets, and insufficient institutional support. In such conditions, production growth leads to volume expansion rather than income enhancement, reinforcing unequal value distribution within the rural economy.

Furthermore, the network analysis supports this interpretation by revealing that the literature is evolving toward an integrated understanding of production, value chains, and welfare, yet these dimensions remain only partially connected in practice. The relatively lower link strength and density associated with welfare-oriented studies indicate that the translation of theoretical advances into policy design remains incomplete.

This study therefore contributes by bridging the gap between these domains and providing a unified explanation of how production, market access, value chain integration, and institutional capacity interact in shaping welfare outcomes. The production–value chain paradox is not merely an empirical observation, but a structural condition that reflects the incomplete integration of these dimensions within both policy frameworks and development strategies.

Overall, the integrated analysis suggests that resolving this paradox requires a shift from a linear production-focused model toward a systemic approach that explicitly links production with value creation, market participation, and institutional effectiveness. Without such integration, rural development policies are likely to continue generating output growth without achieving inclusive and sustainable welfare improvements.

8. Policy Implications

The findings of this study suggest that rural development strategies need to undergo a fundamental transformation from production-oriented approaches toward more integrated, value-driven frameworks. Specifically, three strategic shifts are required.

First, policy orientation should move from “production expansion toward value chain integration”. Rather than focusing solely on increasing livestock output, policies should facilitate smallholder participation in downstream activities, including processing, distribution, and access to formal markets. This requires the development of market linkages, infrastructure, and partnerships with private sector actors to enable value-added activities.

Second, there is a need to shift from “institutional formality toward market capability”. While the formation of farmer groups and cooperatives is important, their effectiveness depends on their ability to function as economic actors within the market system. Strengthening managerial capacity, improving access to market information, and enhancing negotiation power are essential to ensure that institutions contribute to value creation rather than merely fulfilling administrative roles.

Third, policy priorities must transition from “output growth toward value capture”. This involves creating mechanisms that allow smallholders to retain a greater share of economic value, such as improving price transparency, reducing dependency on intermediaries, and promoting collective marketing strategies. Without addressing value distribution, increases in production will continue to generate limited welfare improvements.

In addition to these strategic shifts, policy design should incorporate measurable performance indicators related to income growth, market participation, and value-added activities. This would enable a more accurate assessment of policy effectiveness beyond production metrics.

Overall, achieving inclusive and sustainable rural development requires a systemic approach that integrates production, market access, value chain participation, and institutional capacity. Without such transformation, rural development policies are likely to continue producing output growth that is not accompanied by meaningful improvements in smallholder welfare.

CONCLUSION

This study demonstrates that increasing livestock production alone is insufficient to improve smallholder welfare in rural economies. The findings show that welfare outcomes are determined not merely by production levels, but by the interaction between value chain integration, market access, and institutional capacity. Evidence from Kebumen Regency reveals that rural development policies, although conceptually aligned with endogenous development and cluster theory, remain predominantly production-oriented in practice. Consequently, they fail to address key structural constraints, including weak value chain integration, limited market access, and inadequate institutional capacity among smallholders.

To explain this structural disconnect, this study introduces the concept of the production–value chain paradox, defined as a condition in which output expansion does not translate into proportional welfare improvement. The analysis shows that this paradox emerges when smallholders are confined to low-value segments and lack the capacity to capture value within broader economic systems. Under such conditions, production growth leads to volume expansion rather than income enhancement, reinforcing unequal value distribution.

From a theoretical perspective, this study challenges the conventional assumption that productivity growth alone is sufficient to drive rural welfare improvement. Instead, it highlights the need to integrate value chain dynamics, market structures, and institutional factors within a unified analytical framework. By explicitly linking these dimensions, the study advances the literature on rural development and provides a structural explanation for the disconnect between production and welfare outcomes.

From a policy perspective, the findings call for a fundamental shift from production-oriented strategies toward value chain-driven approaches. This includes strengthening downstream integration, improving access to formal and higher-value markets, and enhancing the capacity of local institutions to support smallholder participation in value-added activities. Without such transformation, rural development policies are likely to continue generating output growth without meaningful improvements in livelihoods, thereby limiting their inclusiveness and long-term sustainability.

This study has several limitations. The analysis is based on a qualitative case study, which may constrain the generalizability of the findings across different regional contexts. Future research should therefore employ quantitative or mixed-method approaches to empirically test the proposed framework and examine its applicability across diverse settings. In particular, further studies should explore the role of digitalization, financial inclusion, and global market integration in strengthening value capture and improving smallholder welfare.

Overall, this study underscores the importance of moving beyond production-centric models toward a more integrated and systemic approach to rural development, in which production, value creation, market participation, and institutional capacity are jointly addressed to achieve inclusive and sustainable outcomes.

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