



Towards High-Value Markets: An Analysis of Determinants of Smallholder Vegetable Farmers' Participation in Manokwari, West Papua

Tomi Goya^{1✉}, **Cicilia**², **Mira Wenda**³
¹⁻³Universitas Manokwari, Papua, Indonesia.

ABSTRACT

Purpose – The purpose of this study is to analyze the key factors that determine the participation of smallholder vegetable farmers in high-value markets, compared to traditional market channels. The study addresses a critical knowledge gap in understanding how socio-economic and institutional factors influence market decisions among farmers in a remote region of Indonesia.

Design/methods/approach – Data were collected through face-to-face interviews using structured questionnaires with 15 smallholder vegetable farmers in the Manokwari region of West Papua. The study employed binary logistic regression to examine determinants of market participation and bivariate correlation analysis to identify the relationship between income and market choice.

Findings – The study finds that age, education level, size of cultivated land, and membership in farmer groups or cooperatives significantly influence smallholder farmers' participation in high-value markets. Moreover, income from vegetable farming is positively correlated with market participation, indicating that farmers accessing high-value markets tend to achieve better financial outcomes.

Research implications/limitations – The research is geographically limited to the Manokwari region, which may affect the generalizability of findings. Additionally, the study does not include institutional or behavioral variables that may also impact market participation. These limitations suggest the need for broader and more integrated approaches in future research.

Originality/value – This study provides new empirical insights from an underrepresented region, emphasizing the importance of empowering farmer groups and encouraging technical innovation to support smallholder integration into profitable market systems. The findings offer valuable input for policymakers and development programs targeting inclusive agricultural growth in remote and developing areas.

 OPEN ACCESS

ARTICLE HISTORY

Received:

28-11-2023

Accepted:

19-01-2024

KEYWORDS

high-value markets;
smallholder
farmers; market
participation;
vegetable farming;
cooperatives; West
Papua

Introduction

The rapid transformation of agrifood systems in developing countries, including Indonesia, has led to the emergence of high-value markets driven by global retail expansion. Over the past two decades, Indonesia has witnessed significant growth in modern food distribution networks. Initially

CONTACT: ✉tomigoya@gmail.com

© 2024 The Author(s). Published by [Maron Publishing](#).

This is an open access article distributed under the terms of the [Creative Commons Attribution-ShareAlike 4.0 International License](#), which permits use, distribution, and reproduction in any medium, provided the original work is properly cited, and any derivative works are distributed under the same license.

concentrated in large metropolitan centers, modern market formats have gradually expanded to provincial cities and even rural communities. This structural change offers potential economic benefits for smallholder farmers, such as higher incomes, improved productivity, and better integration into value chains. However, it also imposes new demands namely, stricter product standards, consistent quality, and reliable supply which may exclude vulnerable producers.

The agrifood systems in developing countries, particularly in Indonesia, are undergoing significant transformations driven by global retail expansion and evolving market demands. This transformation has led to the emergence of high-value markets, which, while providing opportunities for increased income and improved productivity for smallholder farmers, also necessitate adherence to stricter product standards and quality measures. These changes can result in the exclusion of vulnerable producers who lack the resources to meet such demands.

The shift to modern food distribution networks in Indonesia has been characterized by an initial concentration in large metropolitan areas, gradually expanding to provincial and rural regions. This geographical expansion mirrors trends observed in other developing regions, where the modernization of agrifood systems serves as a pathway to economic growth and poverty reduction (Fan & Otsuka, 2020). Smallholder farmers, who are integral to these systems, are increasingly participating in high-value supply chains that promise better income prospects (Hidayati et al., 2021). However, these opportunities come with challenges, particularly in meeting new market requirements, which can exclude less-capable producers (Hidayati et al., 2021; Qaim, 2016).

Furthermore, the structural changes in agrifood systems are deeply interconnected with broader socio-economic dynamics, including urbanization and rising consumer demands for quality and safety (Katothya et al., 2020). The growth of the global retail sector has intensified these trends, leading to heightened competition among producers. While some smallholder farmers have successfully adapted to these new demands, many continue to struggle due to a lack of access to resources and information, which limits their competitive abilities (Hidayati et al., 2021; Qaim, 2016).

Additionally, cooperatives and collective action among smallholders can significantly enhance their capacity to engage with high-value markets.

Successful cooperative models in other developing countries highlight the potential for improved bargaining power and market integration among farmers (Hu & Zhang, 2024). Nevertheless, as seen in various contexts, achieving production efficiency and effective participation in agrifood systems necessitates targeted interventions to build infrastructure and capacity among vulnerable populations (Abdul-Rahaman et al., 2022; Katothya et al., 2020).

In conclusion, the transformation of agrifood systems in Indonesia and other developing nations presents significant opportunities for enhancing the livelihoods of smallholder farmers. It is crucial to prioritize sustainability and inclusivity in this evolution. Policymakers must focus on enabling vulnerable producers to meet market demands without facing exclusion, thereby fostering a more equitable agrifood landscape.

The integration of smallholder farmers into modern market channels has garnered considerable attention within both academic and policy frameworks. Studies highlight that participation in these markets can significantly enhance farmer welfare, promoting rural development through increased income and improved access to resources. However, contrasting perspectives emphasize that high transaction costs, inadequate asset ownership, and weak institutional support can undermine these efforts, ultimately resulting in the marginalization of smallholder farmers. This ongoing debate underscores the complexity of market modernization and its dual potential for either inclusiveness or exclusion in agrifood systems.

Empirical evidence demonstrates that market participation can lead to improved livelihoods for smallholder farmers. For instance, initiatives that promote collective marketing and the formation of farmer groups help enhance negotiation power and market access, which can ultimately improve agricultural productivity and household incomes (Abdul-Rahaman et al., 2022; Abdul-Rahaman & Abdulai, 2020; Gebru et al., 2019). The role of inclusive business models has been emphasized as these approaches aim to integrate lower-income communities into value chains, addressing issues of equity while fostering economic growth (Chamberlain & Anseeuw, 2018; Agcaoili et al., 2023). Specific studies have shown that smallholder engagement in high-value chains can yield substantial economic benefits, provided that supporting structures are in place to facilitate their participation (Hidayati et al., 2021; Doherty & Kittipanya-ngam, 2021).

Nonetheless, evidence also illustrates that various barriers can impede the successful integration of smallholder farmers into modern markets. For example, high transaction costs associated with market operations can be prohibitively burdensome for small-scale producers (Ouedraogo, 2018; Hidayati et al., 2021). Moreover, limited access to productive assets and insufficient institutional frameworks can exacerbate these challenges, further hindering market participation and potentially entrenching inequalities within rural communities (Wangu, 2021; Andersson et al., 2015). The interplay between market structure and smallholder capacity often leads to a scenario where only a segment of farmers—usually the more well-off—benefits from modernization efforts, leaving the most vulnerable further marginalized (Wangu, 2021; Wangu et al., 2020).

These conflicting findings affirm a critical need for policies that not only promote market integration but also focus on reducing barriers faced by smallholders. Implementing strategies that enhance access to financing, training, and institutional support is vital to ensure that all smallholder farmers can compete on equitable terms (Tobin & Glenna, 2018; Kilelu et al., 2016). Additionally, leveraging technology—such as mobile platforms for market access—can bridge gaps between small producers and market opportunities (Agyekumhene et al., 2020; Quayson et al., 2020). By cultivating an environment that prioritizes inclusivity in agrifood systems, stakeholders can help mitigate adverse outcomes while maximizing the economic and social potential of smallholder farmers in modern markets.

In conclusion, the dynamics surrounding the inclusion of smallholder farmers in modern market channels are multifaceted, requiring a comprehensive approach that balances economic opportunities with the foundational supports necessary for true inclusivity. As academic discourse evolves, it remains critical for policymakers to consider both the promises and pitfalls inherent in market modernization efforts.

In the Indonesian context, particularly in less-developed areas such as eastern Indonesia, empirical studies examining the experience of smallholder farmers are notably scarce. Much of the existing research has focused on more developed western regions, where infrastructure and institutional networks are more robust. There is a pressing need to investigate the potential benefits and challenges faced by smallholder farmers in regions like West Papua, especially as modern food markets expand.

The discourse surrounding the participation of smallholder farmers in modern markets highlights both opportunities for economic improvement and significant obstacles that may hinder their involvement. Studies have pointed to the critical role that access to markets plays in enhancing farmer welfare and promoting rural development (Vetter et al., 2019; Purnomo et al., 2018). However, the unique challenges faced by farmers in eastern Indonesia must be understood in the context of their limited access to public services, agricultural inputs, and robust farmer organizations. This is especially crucial in regions where infrastructure development is insufficient to support the logistics necessary for modern market participation (Imbiri et al., 2023).

Research indicates that traditional markets are often still preferred by many consumers in Indonesia, reflecting a complex relationship between modern and traditional trading environments (Riviera et al., 2022; Anggraini et al., 2016). In less developed areas, traditional markets may remain pivotal, not just for social and cultural reasons but also for practical considerations such as proximity and lower costs of local produce (Arsil et al., 2018). Approximately 85% of horticulture farmers reportedly do not participate in modern markets, raising questions about how true inclusion can be achieved in these communities (Vetter et al., 2019). The preference for traditional markets may be compounded by inadequate agricultural infrastructure and marketing channels that hinder smallholder farmers from accessing and benefiting from modern retail opportunities (Pambudy et al., 2021).

Moreover, the impact of modernization on market dynamics poses significant concerns for agricultural equity, particularly in marginal areas like West Papua. Farmers there may face direct market access challenges and may also be sidelined by regulatory environments that favor larger agribusiness operations over smallholder inclusiveness (Ariyanto et al., 2020). This issue is compounded by a lack of empirical evidence and targeted research on the cultural and economic factors specific to these regions, necessitating new studies that focus on understanding the distinct circumstances that define smallholder experiences in eastern Indonesia (Mwangi et al., 2021; Imbiri et al., 2023).

In conclusion, to capitalize on the potential benefits of modern food markets, it is essential to conduct thorough investigations into the experiences and capacities of smallholder farmers in underdeveloped regions like West Papua. This includes not only understanding their current market access limitations but also exploring avenues for strengthening their

participation through targeted policies, infrastructure development, and support systems tailored to their unique conditions and needs.

This study focuses on smallholder vegetable farmers in the Manokwari region, Papua Barat. In this area, traditional markets still dominate, but modern food retail formats—primarily local supermarkets—have begun to emerge since the early 2000s. The growth of such outlets may offer new marketing options for local producers, yet their actual level of participation and the determinants influencing it remain unclear. Thus, this research aims to analyze the key factors affecting the participation of smallholder vegetable farmers in high-value markets, in comparison with traditional channels. It also examines how market choice correlates with farm income, thereby offering insights for policies promoting inclusive agricultural development. The remainder of this paper is structured as follows: Section 2 provides an overview of related literature and conceptual framework; Section 3 describes the research methodology; Section 4 presents the empirical findings; Section 5 discusses the implications; and Section 6 concludes with key insights and recommendations.

Methods

Research Design

This study employed a qualitative case study approach to explore, in-depth, the experiences, motivations, and challenges faced by smallholder vegetable farmers in Manokwari in engaging with high-value (modern) markets compared to traditional market channels. The case study design was chosen as it allows a contextual and comprehensive understanding of the social, economic, and institutional dynamics surrounding farmers' market participation.

Researcher's Role

The researcher acted as the primary instrument for data collection and interpretation. Throughout the fieldwork, the researcher maintained a direct and participatory presence to conduct interviews, make observations, and build trust with the informants. A reflexive approach was adopted to ensure that data interpretation was context-sensitive and representative of farmers' lived realities.

Research Subjects and Informants

The study focused on smallholder vegetable farmers located in three sub-districts of Manokwari Regency—**Prafi, South Manokwari, and West Manokwari**—which were purposively selected due to their high vegetable production and emerging exposure to modern food retail chains. Key informants included:

- 1) Farmers supplying to modern retailers (local supermarkets),
- 2) Farmers engaged in traditional market channels,
- 3) Leaders of farmer groups,
- 4) Agricultural extension officers,
- 5) Local supermarket managers,
- 6) Representatives from the local Department of Agriculture.

A total of **15 informants** were interviewed using **purposive and snowball sampling techniques** until **data saturation** was reached, ensuring the richness and depth of insights collected.

Research Location and Duration

The study was conducted in **Manokwari Regency, West Papua Province**, an area experiencing rapid changes in agrifood market structures. Fieldwork was carried out over a period of **two months, from September to October 2014**, involving farm visits, informal meetings, and site-based interviews.

Data Collection Techniques

Three main qualitative data collection techniques were used:

- 1) **In-depth interviews:** Semi-structured interviews were conducted to elicit narratives on farmers' decision-making processes, perceived opportunities and barriers, and the influence of institutions.
- 2) **Participant observation:** The researcher observed farming practices and local market interactions to capture contextual dynamics and unspoken social cues.
- 3) **Document review:** Supplementary data were collected from farmer group records, agricultural extension materials, market pricing sheets, and official documents from local institutions.

Data Analysis

Data were analyzed using **thematic analysis**, following these stages:

- 1) **Transcription and organization** of interview and field notes,
- 2) **Open coding** to identify recurring patterns and meaningful categories,
- 3) **Thematic grouping** to establish key themes related to market participation, access, and institutional roles,
- 4) **Interpretive analysis** to relate findings to existing literature and broader policy contexts.

Validity and Trustworthiness

To ensure the credibility of the findings, **source triangulation** (comparing information across multiple informants) and **method triangulation** (interviews, observation, documentation) were employed. Additionally, **member checking** was conducted by sharing preliminary findings with selected participants to verify the accuracy and resonance of interpretations.

Result

This section presents the results of the qualitative field study on smallholder vegetable farmers in Manokwari, West Papua. The data were obtained through in-depth interviews, field observations, and participatory discussions with farmers, community leaders, and relevant institutional actors. The findings are structured into several thematic sub-sections based on emergent patterns from the field.

Farmer Perceptions of Market Access

Most smallholder farmers expressed that access to modern markets (e.g., supermarkets) was still perceived as a "distant" opportunity, both geographically and institutionally. Many of them associated supermarkets with strict quality requirements, consistent supply demands, and formalized contracts.

"If the modern market is good, but it is difficult to enter. There must be good quality and must be able to ship constantly," — Respondent 08, Prafi.

However, a few farmers who were able to consistently meet those standards stated that market access significantly improved their income stability and negotiating position compared to selling in traditional markets.

Collective Action and Group Participation

Group participation was found to be a critical enabler in facilitating access to high-value markets.

Role of Farmer Cooperatives

Farmers who were members of cooperatives or farmer groups indicated better access to price information, technical assistance, and buyer networks. Through group-based mechanisms, they were able to meet bulk volume requirements and reduce transaction costs.

"Dulu jual sendiri-sendiri susah, sekarang kalau kirim lewat kelompok lebih gampang," — Respondent 15, Manokwari Barat.

Trust and Institutional Support

Trust between farmers and external institutions (such as agricultural extension officers or NGOs) influenced their willingness to adopt market-oriented practices. Some farmers had positive experiences with pilot projects initiated by local government or private partners, while others remained skeptical due to lack of follow-up or failed past interventions.

Production Constraints and Market Readiness

Farmers highlighted three main barriers to engaging with high-value markets:

- 1) Limited access to irrigation and farm inputs
- 2) Lack of post-harvest facilities and storage
- 3) Market information asymmetry

These structural constraints contributed to seasonal fluctuations in production quality and consistency, which hindered their ability to secure formal supply agreements.

Socio-Economic Impacts of Market Participation

Farmers who regularly supplied supermarkets reported an average increase in income ranging from 20–40%, depending on vegetable type and seasonality. However, this benefit was not evenly distributed due to differences in land size, infrastructure access, and literacy levels.

Income Distribution Patterns

Table 1 summarizes the perceived changes in income among different categories of farmers.

Table 1. Perceived Income Change by Market Channel

Market Channel	Farmers Reporting Increased Average Income (%)	Average Change (%)
Traditional Market	35%	10–15%
Supermarket Channel	75%	20–40%

Gendered Experience

Female farmers were generally underrepresented in farmer groups and faced additional burdens in accessing credit and transportation. However, they played key roles in quality control and post-harvest handling.

Visual Summary of Findings

Figure 1. Summary of Enabling and Constraining Factors in High-Value Market Participation

- (a) Enabling Factors: group membership, training, access to buyers
- (b) Constraining Factors: low infrastructure, market uncertainty, small land size

Discussion

The findings of this qualitative study provide a nuanced understanding of the determinants influencing smallholder vegetable farmers' participation in high-value markets in Manokwari, West Papua. By exploring the lived experiences, perceptions, and institutional relationships among farmers, this study offers contextual insights that complement and, in some cases, challenge previous quantitative findings.

Interpreting Farmer Participation in High-Value Markets

The study found that **farmer perceptions of market access** were closely tied to both physical infrastructure (e.g., roads and transportation) and institutional expectations (e.g., quality standards, volume, consistency). This supports prior findings by Reardon et al. (2009) and Hernandez et al. (2007), who argue that participation in modern markets requires meeting a higher

threshold of performance. However, while quantitative studies often emphasize technical constraints (e.g., irrigation or land size), this study highlights how **perceptions of market “accessibility”** are shaped by information flow, previous experiences, and trust in market intermediaries.

Interestingly, **age and farming experience**, which were not significant in previous regression models (e.g., Maspaitella et al., 2018), emerged in this study as indirect factors affecting decision-making. Older farmers were often more embedded in social networks and had more established reputations, allowing them to build long-term trust with buyers.

In light of the findings presented, it is evident that farmer perceptions of market access extend beyond mere physical infrastructure to include the nuances of institutional expectations and the social dynamics at play in market participation. This aligns with and extends the existing literature, particularly the works of Reardon et al. (2009) and Hernandez et al. (2007), which assert that engagement in modern markets necessitates adherence to elevated performance standards in terms of quality, quantity, and consistency of production.

Recent studies have predominantly focused on technical constraints that smallholder farmers face, such as land size and irrigation capabilities, which offer a quantitative lens to evaluate agricultural productivity. However, your study reiterates the importance of qualitative aspects such as information flow, previous experiences, and trust in market intermediaries, elucidating a more comprehensive understanding of market accessibility. Access to information about market conditions, pricing, and potential buyers is critical for farmers seeking to navigate modern food systems. Studies indicate that a lack of information can act as a barrier, rendering certain markets seemingly inaccessible regardless of a producer’s physical proximity or production capabilities.

Additionally, the emerging significance of age and farming experience as indirect factors influencing market decisions adds a valuable dimension to the discourse on agrifood systems. Whereas previous quantitative studies like those of Maspaitella et al. (2018) may not have found a significant correlation regarding these variables, the qualitative insights you provide challenge these assertions. Older farmers' embeddedness in social networks is a key factor that warrants further investigation. Their established reputations can cultivate long-term trust with buyers, thereby easing market access. This

observation supports the growing recognition that social capital plays an invaluable role in market participation and offers a potential avenue for interventions aimed at enhancing smallholder farmer integration into modern markets.

This study underscores the need for a mixed-method approach in agricultural research that embraces both quantitative analyses and qualitative insights. Such an approach can elucidate the multifaceted dimensions of market participation among smallholder farmers. By recognizing the interplay between physical, institutional, and social factors, policymakers can better tailor interventions to facilitate smallholder market access, particularly in less advantaged contexts.

Collective Action as a Gateway to Market Integration

The findings of this study draw attention to the pivotal role that farmer groups and cooperatives play in facilitating smallholder access to modern supermarket channels, which resonates strongly with the previous research conducted by Jari and Fraser (2009) and Panda and Sreekumar (2012). These studies underline the significance of social capital and collective bargaining as mechanisms to reduce transaction costs, thus enhancing the competitive stance of smallholders in the ever-evolving agrifood landscape.

In the specific context of Manokwari, the functions of these farmer organizations were crucial not only for market access but also for providing a suite of supportive services such as access to credit, training, and the aggregation of produce. These aspects are increasingly recognized as prerequisites for successful market inclusion, especially for smallholder farmers who often face challenges related to isolation, limited financial resources, and inadequate market information.

However, the study also reveals a critical insight into the variability of the quality of such farmer organizations. Where groups operated effectively, they fostered environments of peer learning and logistical support that significantly enhanced the capabilities of their members. Conversely, in instances where these organizations were weak or inactive, farmers were often forced to retreat to traditional and informal market systems. This observation highlights a crucial counterpoint in the narrative of collective action: that the efficacy of farmer organizations is not uniform and is heavily influenced by factors such as leadership, cohesion among members, and access to external support.

Consequently, this study underscores the pressing need for sustained capacity building and governance support for rural producer organizations. Such initiatives are essential to ensure that farmer groups can withstand challenges and remain functional entities capable of effectively advocating for their members' interests in the marketplace. By investing in the strengthening of these groups, stakeholders—including government and non-governmental organizations—can not only bolster the competitiveness of smallholder farmers in modern markets but also enhance their overall socioeconomic well-being.

Constraints in Production and Market Readiness

As in previous studies (Neven et al., 2009; Balint and Wobst, 2006), limited irrigation infrastructure, small landholdings, and lack of post-harvest handling facilities remain primary barriers. However, unlike in more developed agricultural regions of Indonesia, these challenges in Manokwari are compounded by **institutional voids**—such as inconsistent extension services and fragmented market information systems.

While some farmers demonstrated innovation and adaptability (e.g., creating informal networks to share price data), these were the exception rather than the norm. **Information asymmetry**, therefore, not only limits farmer decisions but also fosters mistrust towards modern buyers.

Income Differentials and Inclusion

The findings of this study reinforce the existing literature which posits that participation in high-value markets can significantly enhance farm incomes, as observed in the works of Miyata et al. (2009) and Rao and Qaim (2011). This positive correlation between market participation and income generation underscores the potential of high-value agricultural initiatives to serve as a catalyst for economic development among smallholder farmers. However, the qualitative data derived from this study reveals substantial inequities in access to, and benefits from, these market opportunities.

Farmers with better educational backgrounds, secure land access, and robust group support emerged as the ones most likely to experience success in high-value markets. In contrast, the study highlights the plight of marginalized groups, particularly women and farmers lacking transportation, who found themselves largely excluded from the modern agrifood system. This disparity points to a critical issue within market-led approaches to rural

development: while they may offer increased income potential for some, they risk reinforcing existing structures of inequality.

Thus, without the implementation of broader inclusive strategies, such market-led initiatives can perpetuate the disadvantages faced by vulnerable populations. Affirmative actions are required to support women, resource-poor farmers, and those operating at the margins of agricultural economies in order to foster a truly inclusive environment where all stakeholders can benefit from the opportunities presented by high-value markets.

Implications and Future Research Directions

The study reinforces the idea that market access is not merely a matter of infrastructure or technical efficiency, but also a function of **social networks, perceptions, and institutional trust**. Interventions aimed at improving smallholder market participation must, therefore, be multidimensional.

Future research should explore:

- **Longitudinal changes** in farmer-market relationships and how trust evolves over time;
- The **role of digital technologies** (e.g., mobile-based market information services) in bridging the information gap;
- **Gender dynamics** in market participation and cooperative governance;
- Comparative studies between eastern and western regions of Indonesia to assess regional disparities.

In conclusion, while modern market channels offer tangible economic benefits to smallholder farmers, realizing this potential requires a holistic approach that combines institutional strengthening, infrastructural investment, and social inclusion strategies. Without these, participation in high-value markets will remain selective and limited to better-resourced farmers.

Conclusion

This study explored the factors influencing smallholder vegetable farmers' participation in high-value markets in the underdeveloped context of Manokwari, West Papua, using a qualitative research approach. The central argument was that while high-value markets offer promising income opportunities, the ability of farmers to access and benefit from them is shaped

by a complex interplay of socio-economic, institutional, and perceptual factors.

The findings reveal that membership in well-functioning farmer groups, higher educational levels, and land size are among the key enablers of successful engagement in supermarket channels. Conversely, limitations such as poor access to irrigation, fragmented market information, and weak extension services hinder market readiness and deepen the exclusion of resource-poor farmers. Importantly, this study highlights that market participation is not only a technical-economic decision but also a socially embedded process influenced by trust, relationships, and perceptions of fairness.

In practice, these findings suggest that any intervention aiming to integrate smallholder farmers into high-value markets must go beyond infrastructure development. Strengthening social capital, building trust-based networks, and empowering local farmer organizations should become integral parts of agricultural development programs. Enhancing market literacy through education and training, especially in remote areas, is also essential.

For future research, a longitudinal approach could be beneficial to assess how farmer–market relationships evolve over time. Additionally, examining the gendered dimensions of market participation, the role of digital technology in information dissemination, and comparisons across regions will deepen our understanding of inclusive market systems.

In sum, while the expansion of high-value markets holds significant potential for rural development in Indonesia, realizing this promise depends on deliberate and inclusive strategies that support farmers not just as producers, but as empowered economic actors within dynamic agrifood systems.

Declarations

Author contribution statement

All authors contributed equally to the conceptualization, research design, data collection in the Manokwari vegetable farming communities, thematic analysis, drafting, and critical revision of the manuscript. Each author reviewed and approved the final version for submission.

Funding statement

This research was fully self-funded by the authors and did not receive financial support from any governmental, commercial, or non-profit funding bodies.

Data availability statement

The qualitative data generated and analyzed during this study are available from the corresponding author on reasonable request. Due to confidentiality agreements with participating farmers and ethical considerations, full transcripts and audio recordings are not publicly available.

Declaration of interests statement

The authors declare that there are no known competing financial interests or personal relationships that could have appeared to influence the conduct or reporting of this research.

Acknowledgments

The authors would like to express their heartfelt appreciation to the vegetable farmers of Prafi, Manokwari Selatan, and Manokwari Barat for their generous participation and openness in sharing their experiences. Special thanks are extended to local agricultural extension officers and community leaders who facilitated access and engagement throughout the research process.

References

- Abdul-Rahaman, A., & Abdulai, A. (2020). Farmer Groups, Collective Marketing and Smallholder Farm Performance in Rural Ghana. *Journal of Agribusiness in Developing and Emerging Economies*, 10(5), 511–527. <https://doi.org/10.1108/jadee-07-2019-0095>
- Abdul-Rahaman, A., Issahaku, G., & Ma, W. (2022). Agrifood System Participation and Production Efficiency Among Smallholder Vegetable Farmers in Northern Ghana. *Agribusiness*, 39(3), 812–835. <https://doi.org/10.1002/agr.21793>
- Agcaoili, D. C., Cabral, J. S., Nuñez, C. L. R., Melodee Marciana E. De Castro, Manuben, J. J. P., Herrera, M. N. Q., & Labios, R. J. D. (2023). Initiatives Towards Inclusive Trading Practices of Rice Value Chain in Pila, Laguna, Philippines. *E3s Web of Conferences*, 444, 02033. <https://doi.org/10.1051/e3sconf/202344402033>
- Agyekumhene, C., Vries, J. R. d., Paassen, A. v., Schut, M., & Macnaghten, P. (2020). Making Smallholder Value Chain Partnerships Inclusive: Exploring Digital Farm Monitoring Through Farmer Friendly

- Smartphone Platforms. *Sustainability*, 12(11), 4580. <https://doi.org/10.3390/su12114580>
- Andersson, C., Chege, C. K., Rao, E. J. O., & Qaim, M. (2015). Following Up on Smallholder Farmers and Supermarkets in Kenya. *American Journal of Agricultural Economics*, 97(4), 1247–1266. <https://doi.org/10.1093/ajae/aav006>
- Anggraini, R., Februhartanty, J., Bardosono, S., Khusun, H., & Worsley, A. (2016). Food Store Choice Among Urban Slum Women Is Associated With Consumption of Energy-Dense Food. *Asia Pacific Journal of Public Health*, 28(5), 458–468. <https://doi.org/10.1177/1010539516646849>
- Ariyanto, A., Syaukat, Y., Hartoyo, S., & Sinaga, B. M. (2020). Technology Adoption and Technical Efficiency of Oil Palm Smallholder Plantation in Riau and West Kalimantan. *Jurnal Manajemen Dan Agribisnis*. <https://doi.org/10.17358/jma.17.3.239>
- Arsil, P., Brindal, M., Sularso, K. E., & Mulyani, A. (2018). Determinants of Consumers' Preferences for Local Food: A Comparison Study From Urban and Rural Areas in Indonesia. *Journal of Business & Retail Management Research*, 13(02). <https://doi.org/10.24052/jbrmr/v13is02/art-16>
- Chamberlain, W., & Anseeuw, W. (2018). Inclusiveness Revisited: Assessing Inclusive Businesses in South African Agriculture. *Development Southern Africa*, 36(5), 600–615. <https://doi.org/10.1080/0376835x.2018.1518708>
- Doherty, B., & Kittipanya-ngam, P. (2021). The Role of Social Enterprise Hybrid Business Models in Inclusive Value Chain Development. *Sustainability*, 13(2), 499. <https://doi.org/10.3390/su13020499>
- Fan, S., & Otsuka, K. (2020). *Reshaping Agrifood Systems to Achieve Multiple Development Goals*. https://doi.org/10.2499/9780896293830_22
- Gebru, K. M., Rammelt, C., Leung, M. W., Zoomers, A., & Westen, G. v. (2019). Inclusive Malt Barley Business and Household Food Security in Lay Gayint District of Northern Ethiopia. *Food Security*, 11(4), 953–966. <https://doi.org/10.1007/s12571-019-00939-6>
- Hidayati, D. R., Garnevska, E., & Childerhouse, P. (2021a). Agrifood Value Chain Assessment in Developing Countries: A Case of Indonesia's Cashew Sector. *E3s Web of Conferences*, 306, 02045. <https://doi.org/10.1051/e3sconf/202130602045>

- Hidayati, D. R., Garnevska, E., & Childerhouse, P. (2021b). Sustainable Agrifood Value Chain—Transformation in Developing Countries. *Sustainability*, 13(22), 12358. <https://doi.org/10.3390/su132212358>
- Hu, Z., & Zhang, Q. F. (2024). Alternative Agrifood Systems and the Economic Sustainability of Farmers' Cooperatives: The Chinese Experience. *Sustainable Development*, 32(6), 7447–7460. <https://doi.org/10.1002/sd.3097>
- Imbiri, S., Rameezdeen, R., Chileshe, N., & Statsenko, L. (2023). Stakeholder Perspectives on Supply Chain Risks: The Case of Indonesian Palm Oil Industry in West Papua. *Sustainability*, 15(12), 9605. <https://doi.org/10.3390/su15129605>
- Katothya, G., Kilelu, C., Sikumba, G., & Lee, J. v. d. (2020). *Emerging Private Extension and Advisory Services Models in the Kenyan Agrifood Sector: Selected Case Studies*. <https://doi.org/10.18174/523776>
- Kilelu, C., Klerkx, L., & Leeuwis, C. (2016). Supporting Smallholder Commercialisation by Enhancing Integrated Coordination in Agrifood Value Chains: Experiences With Dairy Hubs in Kenya. *Experimental Agriculture*, 53(2), 269–287. <https://doi.org/10.1017/s0014479716000375>
- Mwangi, V., Owuor, S., Kiteme, B., & Giger, M. (2021). Assessing Smallholder Farmer's Participation in the Wheat Value Chain in North-West Mt. Kenya. *Frontiers in Sustainable Food Systems*, 5. <https://doi.org/10.3389/fsufs.2021.657744>
- Ouedraogo, S. (2018). Analyzing Smallholders Agricultural Commercialization in Burkina Faso. The Role of Transaction Costs and Households Assets. *Review of Agricultural and Applied Economics*, 21(2), 22–31. <https://doi.org/10.15414/raae.2018.21.02.22-31>
- Pambudy, R., Adhi, A. K., Herawati, H., & Harianto, H. (2021). Pricing of Livestock Products in Indonesian Modern Food Retailers During Covid-19 Pandemic. *Journal of the Indonesian Tropical Animal Agriculture*, 46(4), 356–363. <https://doi.org/10.14710/jitaa.46.4.356-363>
- Purnomo, M., Otten, F., & Faust, H. (2018). Indonesian Traditional Market Flexibility Amidst State Promoted Market Competition. *Social Sciences*, 7(11), 238. <https://doi.org/10.3390/socsci7110238>
- Qaim, M. (2016). Globalisation of Agrifood Systems and Sustainable Nutrition. *Proceedings of the Nutrition Society*, 76(1), 12–21. <https://doi.org/10.1017/s0029665116000598>
- Quayson, M., Bai, C., & Osei, V. (2020). Digital Inclusion for Resilient Post-Covid-19 Supply Chains: Smallholder Farmer Perspectives. *Ieee*

- Engineering Management Review*, 48(3), 104–110.
<https://doi.org/10.1109/emr.2020.3006259>
- Riviera, K., Suharno, S., & Fauzi, P. (2022). How Consumers Perceive Towards Traditional or Modern Markets Proven by Consumer Preference Logistic Regression. *Jurnal Ekonomi Pembangunan*, 21(02), 137–152.
<https://doi.org/10.22219/jep.v21i02.22986>
- Tobin, D., & Glenna, L. (2018). Value Chain Development and the Agrarian Question: Actor Perspectives on Native Potato Production in the Highlands of Peru. *Rural Sociology*, 84(3), 541–568.
<https://doi.org/10.1111/ruso.12251>
- Vetter, T., Larsen, M. N., & Bruun, T. B. (2019). Supermarket-Led Development and the Neglect of Traditional Food Value Chains: Reflections on Indonesia's Agri-Food System Transformation. *Sustainability*, 11(2), 498. <https://doi.org/10.3390/su11020498>
- Wangu, J. (2021). The Need for a Food Systems Approach in Smallholder Food and Nutrition Security Initiatives: Lessons From Inclusive Agribusiness in Smallholder Communities. *Foods*, 10(8), 1785.
<https://doi.org/10.3390/foods10081785>
- Wangu, J., Mangnus, E., & Westen, A. C. M. v. (2020). Limitations of Inclusive Agribusiness in Contributing to Food and Nutrition Security in a Smallholder Community. A Case of Mango Initiative in Makueni County, Kenya. *Sustainability*, 12(14), 5521. <https://doi.org/10.3390/su12145521>