Analysis of Inclusive Agricultural Management Models for Strengthening Institutions and Mushroom Industry Performance

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Article History:
Received: 2025-03-20
Revised: 2025-04-15
Accepted: 2025-06-20
Publish: 2025-07-31

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Keywords:
Inclusivity, agricultural industry management,

Abstract

This research aims to analyze the level of inclusivity in the mushroom industry management in Mojokerto Regency using the Agricultural Industry Inclusivity Management (IMIP) model and to identify factors influencing inclusivity. This study employed a quantitative approach with an explanatory design. Primary data were collected through a survey using a Likert-scale questionnaire administered to 60 respondents, comprising mushroom farmers and related business actors. The five dimensions of IMIP analyzed were participation, equitable access, benefit distribution, capability and innovation, and institutional connectivity. Data analysis was performed using descriptive statistics, Pearson correlation tests, and multiple linear regression with SPSS. The results indicate that the inclusivity level of the mushroom industry is in the "fairly good" category. The dimensions of participation and institutional connectivity were the most dominant factors influencing inclusivity ($p<0,01$), followed by equitable access and benefit distribution. Meanwhile, capability and innovation did not have a significant effect. The regression model explained 68% of the variation in mushroom industry inclusivity. These findings highlight the importance of strengthening collective participation, institutional networks, access to capital, and technical assistance to enhance the inclusivity and competitiveness of the mushroom industry in Mojokerto Regency.

INTRODUCTION

The mushroom industry is one of the rapidly growing horticultural subsectors in Indonesia, including Mojokerto Regency, East Java. This area is known as a major

mushroom production center, with oyster mushrooms (Pleurotus ostreatus) being the primary commodity, extensively cultivated by small farmers and micro and small enterprises. The development of the mushroom industry holds significant potential for contributing to increased rural income, job creation, and diversification of high-nutritional-value food products. However, the growth of this sector also faces serious challenges in terms of inclusive business management, particularly concerning the involvement of business actors in the value chain, access to resources, and supportive institutions.

Inclusivity within the context of agribusiness is defined as the fair and equitable involvement of all actors, especially small farmers and vulnerable groups, across various aspects of value chain management. In practice, many mushroom farming ventures remain traditional and individually oriented, leading to low bargaining power for farmers in the market and high dependence on middlemen. Issues such as limited access to capital, insufficient technological training, and weak institutional networks make it difficult for most business actors to increase production capacity and product quality. This situation creates a gap between the economic potential of the mushroom industry and the reality on the ground. Therefore, a mushroom industry management model is needed that not only focuses on economic profit but also considers aspects of participation, equitable access, benefit distribution, and collective strengthening of business capacity.

The concept of the Agricultural Industry Inclusivity Management (IMIP) Model emerges as an approach to measure the extent to which an agricultural business system or value chain can be considered inclusive. IMIP posits that the success of agricultural development is determined not only by productivity but also by the active involvement of business actors within it. The five main dimensions of this model are participation, equitable access, benefit distribution, capability and innovation, and institutional connectivity. Participation describes the involvement of farmers in planning and decision-making processes; equitable access measures the extent to which farmers have equal opportunities to obtain capital, information, technology, and markets; benefit distribution assesses the equitable distribution of business outcomes; capability and innovation relate to technical abilities and the adoption of innovations; and institutional connectivity refers to the strength of supporting institutional networks.

Various previous studies indicate that applying the principles of inclusivity in agribusiness can enhance competitiveness while empowering small farmers. A study by Latifah et al. (2022) found that active participation in farmer groups and partnership forums promotes the strengthening of farmers' positions in the value chain. Research by Lestari et al. (2023) affirmed that strong institutions can expand market access and facilitate cross-sector collaboration. Similarly, Chamberlin et al. (2021) stated that equitable access to capital and technology contributes to more inclusive farm business growth.

Nevertheless, many small industries in the horticulture sector, including mushrooms, have not fully implemented these principles. In Mojokerto Regency, efforts to strengthen institutions and increase participation in the mushroom industry have

begun, but the results have not been optimal. Business patterns that still rely on middlemen, capital limitations, low technological innovation, and a lack of partnership networks indicate that inclusivity has not yet been fully achieved. It is therefore important to scientifically examine this to provide an overview of the most influential factors on the level of inclusivity in the mushroom industry.

This research offers theoretical and practical contributions. Theoretically, it expands the application of the IMIP model to assess inclusivity in mushroom commodities, which has not been extensively studied in Indonesia. Practically, the research findings can serve as a basis for formulating policies and strategies for developing a more inclusive, sustainable, and small farmer-empowering mushroom industry at the local level. These findings also provide a framework for local governments, academics, and financial institutions to direct interventions toward the dimensions most influential in enhancing inclusivity.

LITERATURE REVIEW

Agricultural Industry and Inclusivity Challenges

Agriculture in Indonesia plays a strategic role in supporting economic growth, food security, and job creation, particularly in rural areas. Nevertheless, this sector still faces significant challenges, especially concerning disparities in the distribution of economic benefits and the involvement of vulnerable groups within agricultural value chains. In many cases, small farmers, women, and youth have not achieved equitable access to production resources, financing, training, and markets (IFAD, 2019). Many agricultural industry actors encounter structural barriers such as market monopolies by middlemen, limited price information, and a lack of supportive institutions. These conditions lead to imbalances in farm management and low bargaining power for farmers in the market. Within the context of community-based agriculture, such as the mushroom industry, inclusivity is crucial to ensure that every business actor can actively participate and receive equitable benefits.

Concept of Inclusivity in Agricultural Industry Management

Inclusivity in agricultural industry management refers to an approach that guarantees the involvement of all actors from production to marketing, while ensuring equity in access to resources and the distribution of outcomes. This concept is rooted in the principles of social justice and active participation, as explained by Chambers and Conway (1992), who argue that sustainable agricultural development must include strengthening local capacities and empowering marginalized groups. Sen (1999), in his capability theory, also emphasized the importance of providing space for communities to choose and develop their potential through access to education, technology, and institutions. Thus, inclusivity is not merely defined as formal involvement, but also as strengthening the role and competitiveness of actors in confronting market changes and the business climate. In practice, inclusivity can be implemented through institutional designs that support the involvement of women, youth, and small farmers; technical training and assistance; and the provision of access to capital, technology, and market networks.

Agricultural Industry Inclusivity Management (IMIP) Model

The Agricultural Industry Inclusivity Management (IMIP) Model was developed as a conceptual framework to assess the extent to which the principles of inclusivity have been applied in the management of the agricultural sector. This model adopts a multidimensional approach encompassing social, economic, institutional, and technological aspects. The five main dimensions of this model include:

1. Participation: The involvement of all parties in decision-making and the implementation of farming activities, including small farmers, women, and youth.
2. Equitable Access: The availability of equal access to resources such as land, capital, training, technology, and markets.
3. Benefit Distribution: The equitable distribution of outcomes and profits from agricultural activities among actors, preventing domination by specific parties.
4. Capability and Innovation: The strengthening of technical and entrepreneurial abilities, as well as the adoption of innovations in production and marketing.
5. Institutional Connectivity: The role of supporting institutions such as cooperatives, NGOs, local governments, and financial institutions in strengthening business networks.

This concept is further supported by research from Widiastuti and Suryani (2020), who emphasize that the success of agricultural SMEs is highly determined by their ability to build an inclusive management model, both internally (at the business level) and externally (institutional relations).

Relevance of IMIP to the Mojokerto Mushroom Industry

Mojokerto Regency has numerous micro and small-scale mushroom business actors, managed by individuals or family groups. The mushroom industry exhibits high growth potential due to continuously increasing market demand and cultivation processes that do not require extensive land. However, most business actors still face limitations in access to technology, training, and institutional support. By applying the IMIP model, this research can identify areas of weakness in aspects of participation, access, and capability, while simultaneously formulating data-driven strategies to promote a more inclusive and competitive mushroom industry. This study is expected to bridge the gap between inclusivity theory and managerial practices in the local agricultural industry.

Research Hypotheses

Based on the theoretical framework and reviewed literature, the research hypotheses are as follows:

H0: There is no significant effect of the inclusivity dimensions (participation, equitable access, benefit distribution, capability, and institutional connectivity) on the level of mushroom industry management inclusivity in Mojokerto Regency.

Ha: There is a significant effect of the inclusivity dimensions (participation, equitable access, benefit distribution, capability, and institutional connectivity) on the level of mushroom industry management inclusivity in Mojokerto Regency.

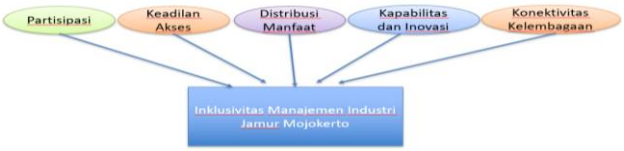

Figure 1 illustrates the research framework concerning the Agricultural Industry Inclusivity Management (IMIP) Model within the mushroom industry in Mojokerto Regency. The five IMIP dimensions (Participation, Equitable Access, Benefit Distribution, Capability & Innovation, and Institutional Connectivity) are assumed to influence the level of mushroom industry management inclusivity

RESEARCH METHODS

This research employed a quantitative approach with the primary objective of analyzing the level of inclusivity in the mushroom industry in Mojokerto Regency based on the Agricultural Industry Inclusivity Management (IMIP) Model and testing the influence of the five IMIP dimensions on inclusivity levels. This study is explanatory in nature, as it seeks to elucidate the causal relationship between the independent variables (participation, equitable access, benefit distribution, capability and innovation, and institutional connectivity) and the dependent variable (mushroom industry inclusivity level). The research population comprised all active mushroom business actors in Mojokerto Regency, including mushroom farmers, owners of small mushroom processing businesses, and members of mushroom farmer groups. The sampling technique used was purposive sampling, involving the selection of respondents who met the criteria of having operated a mushroom business for at least 2 years and being actively involved in production or marketing activities. The total number of respondents in this study was 60, considered sufficient to represent the conditions of mushroom businesses in the area according to the minimum sample size rules for regression analysis.

The research instrument was a closed-ended questionnaire utilizing a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The questionnaire was developed based on indicators from the five IMIP dimensions: (1) Participation, (2) Equitable access, (3) Benefit distribution, (4) Capability and innovation, and (5) Institutional connectivity. Additionally, the questionnaire included questions to measure overall inclusivity. Before use, the instrument's validity and reliability were tested. Validity testing was conducted using item-total correlation, while reliability was measured with Cronbach's Alpha. An alpha value > 0.6 indicated that the instrument was reliable.

Data analysis was performed through several stages. First, descriptive analysis was conducted to determine respondent characteristics and provide a general overview of the inclusivity level based on the average scores for each dimension. Second, Pearson correlation analysis was used to examine the strength of the relationship between the independent and dependent variables. Third, multiple linear regression analysis was employed to test the influence of each IMIP dimension on mushroom industry inclusivity. Data processing was carried out using SPSS version 26 software. This approach was chosen because it aligns with the research objective of explaining the relationships and contributions of each IMIP factor to the level of mushroom industry inclusivity, thereby

identifying which dimensions are most dominant to serve as the basis for formulating strategies for inclusive and sustainable mushroom industry development

RESULTS AND DISCUSSION

Descriptive Analysis

Descriptive analysis provides a general overview of the inclusivity conditions in the mushroom industry in Mojokerto Regency. The data indicate that the level of mushroom farmers' participation is high, while institutional connectivity and access to resources remain limited.

Table 1. descriptive statistical results for IMIP

Dimensi	*Rata-rata*	*Kategori*
Partisipasi	3.8	Baik
Keadilan Akses	3.5	Cukup
Distribusi Manfaat	3.7	Baik
Kapabilitas & Inovasi	3.6	Cukup
Konektivitas Kelembagaan	3.4	Cukup

Source: Data Processing Results, 2025

The descriptive statistical results for IMIP in Table 1 show that the participation of business actors is categorized as good, as most respondents actively participate in farmer groups, discussion forums, and are involved in decision-making. The benefit distribution dimension is also in the good category, indicating that business outcomes are relatively shared, although not yet fully equitable. However, the average values for institutional connectivity (3.4) and equitable access (3.5) suggest that institutional networks, access to capital, technology, and market information remain key challenges. These findings form the basis for further analysis of the relationships and influences among variables.

Correlation Analysis

Pearson correlation was used to examine the relationship between the IMIP dimensions and the level of inclusivity. All variables showed a positive and significant relationship.

Table 2. Pearson Correlation between IMIP Dimensions and Inclusivity

Variabel	*r*	*Sig.*
Partisipasi	0.72	0.000
Keadilan Akses	0.61	0.000
Distribusi Manfaat	0.57	0.000
Kapabilitas & Inovasi	0.55	0.000
Konektivitas Kelembagaan	0.70	0.000

Source: Data Processing Results, 2025

All IMIP dimensions demonstrated a significant positive relationship with the level of inclusivity. The strongest relationships were found in participation (r=0.72) and institutional connectivity (r=0.70). This means that higher participation and better institutional networks lead to a more inclusive mushroom industry system. This correlation supports previous

study results that participation and institutional arrangements are two main pillars of inclusive agribusiness development

Multiple Linear Regression Analysis

The results of the multiple linear regression analysis indicate that participation, equitable access, benefit distribution, and institutional connectivity significantly influence the inclusivity of the mushroom industry. Capability and innovation were not significant.

Table 3. Model Summary

R	R^2
0.825	0.681

Source: Data Processing Results, 2025

To determine the influence of the dimensions of the Agricultural Industry Inclusivity Management (IMIP) Model on the inclusivity level of the mushroom industry in Mojokerto Regency, a multiple linear regression analysis was conducted. Five independent variables (participation, equitable access, benefit distribution, capability and innovation, and institutional connectivity) were tested against the dependent variable, inclusivity. The results of the analysis, shown in the Model Summary Table, indicate that the coefficient of determination (R^2) value is 0.681. It can be concluded that 68.1% of the variation in mushroom industry inclusivity can be explained by the five independent variables. The remaining 31.9% is influenced by other factors outside the research model. An R value of 0.825 indicates a very strong relationship between the independent and dependent variables.

Table 4. ANOVA

Sumber	*F*	*Sig.*
Regresi	25.32	0.00001
Residual		
Total		
Sumber		
Regresi		

Source: Data Processing Results, 2025

The model's feasibility was demonstrated through the ANOVA results (Table 4), which yielded an F-statistic of 25.32 with a significance of 0.000 ($p < 0.001$). This means that the constructed regression model is significant and suitable for predicting inclusivity based on the IMIP dimensions. Thus, simultaneously, the five independent variables influence the inclusivity level of the mushroom industry in Mojokerto.

Table 5. Coefisien of Regression

Variabel	***B***	***β***	***t***	***Sig.***
(Konstanta)	0.421		1.255	0.215
Partisipasi	0.276	0.28	3.123	0.003
Keadilan Akses	0.198	0.21	2.439	0.019
Distribusi Manfaat	0.174	0.18	2.087	0.042
Kapabilitas & Inovasi	0.147	0.15	1.875	0.065

Konektivitas Kelembagaan	0.303	0.31	3.497	0.001

Source: Data Processing Results, 2025

Furthermore, partial testing (Table 5) was conducted to observe the contribution of each independent variable. The regression coefficient results show that:

Participation (β = 0,28; p = 0,003) has a positive and significant effect. This means that the higher the involvement of mushroom industry actors in groups, forums, and decision-making processes, the higher the level of inclusivity.

Equitable access (β = 0,21; p = 0,019) has a positive significant effect. Equitable access to capital, market information, and technology is proven to support inclusivity.

Benefit distribution (β = 0,18; p = 0,042) also has a positive significant effect, indicating that a fair distribution of business outcomes can increase collective motivation and a sense of justice.

Institutional connectivity (β = 0,31; p = 0,001) has the largest positive significant effect, confirming that strong institutional networks (partnerships with cooperatives, government, financial institutions, and markets) are critical factors in strengthening inclusivity.

Meanwhile, capability and innovation (β = 0,15; p = 0,065) do not have a significant effect on inclusivity. This indicates that although technical capabilities and innovation are important, in the context of this study, these factors are not yet primary drivers due to limited access and implementation of innovation among mushroom business actors.

Partially, through multiple linear regression, an overview of the role of each IMIP dimension on the inclusivity level of the mushroom industry in Mojokerto Regency is provided. From Hypothesis 1 (H1): Participation has a positive effect on inclusivity, the research findings prove that the participation variable has a positive significant effect (p = 0.003) on the inclusivity level. This result shows that the active involvement of mushroom business actors in farmer groups, discussion forums, consultations, and decision-making processes is very important for creating an inclusive business ecosystem. High participation encourages a sense of shared ownership, strengthens communication among actors, and increases collective ability to face market challenges. Hypothesis 2 (H2): Equitable access has a positive effect on inclusivity, where the analysis shows that equitable access also has a positive significant effect (p = 0.019). This indicates that ease of access to capital, market information, technology, and production facilities equitably among mushroom industry actors is an important factor in reducing disparities and increasing equal opportunities. Equitable access provides broader opportunities for small farmers to develop.

Hypothesis 3 (H3): Benefit distribution has a positive effect on inclusivity. The analysis of the research results reveals that benefit distribution has a positive significant effect (p = 0.042) on inclusivity. When business outcomes, profits, and other benefits are shared fairly, it creates a sense of justice, strengthens solidarity, and motivates members to contribute more actively to the development of the mushroom industry. Hypothesis 4 (H4): Capability and innovation have a positive effect on inclusivity. Unlike the previous three hypotheses, capability and innovation do not show a significant effect (p = 0.065). Although the direction of the effect is positive, this factor is not yet a primary driver of inclusivity. This result is suspected because the application of technological innovation in

the mushroom sector is still limited and mostly enjoyed by relatively large business actors, so its impact on overall inclusivity is still low. Hypothesis 5 (H5): Institutional connectivity has a positive effect on inclusivity. The regression test results show that institutional connectivity has a positive significant effect (p = 0.001) with the largest influence coefficient compared to other variables. Strong institutions through partnerships with cooperatives, government agencies, financial institutions, and market networks play a central role in increasing inclusivity. This strengthens the bargaining position of mushroom farmers, facilitates access to resources, and expands market networks.

Overall, the hypothesis testing results indicate that participation, equitable access, benefit distribution, and institutional connectivity are key factors forming an inclusive mushroom industry system. These findings are in line with various previous literature stating that inclusive development in the agricultural sector heavily depends on the role of institutions, equitable access, and active participation of actors. Meanwhile, technological innovation still requires mentoring strategies to contribute more concretely to increasing inclusivity in the future.

CONCLUSION

Based on the research findings regarding the Agricultural Industry Inclusivity Management (IMIP) Model in the Mushroom Industry in Mojokerto Regency, several conclusions can be drawn: The inclusivity level of the mushroom industry in Mojokerto is categorized as fairly good. The dimensions of participation and benefit distribution showed good categories, while equitable access, capability and innovation, and institutional connectivity were in the fair category. This indicates significant potential for improvement, particularly in aspects of institutional connectivity and equitable access to resources. Correlation analysis results show that all IMIP dimensions have a significant positive relationship with the inclusivity level. The strongest relationships were found in the variables of participation (r=0.72) and institutional connectivity (r=0.70). Multiple linear regression analysis proved that four dimensions significantly influence inclusivity: participation, equitable access, benefit distribution, and institutional connectivity. Meanwhile, the dimension of capability and innovation, despite showing a positive direction of influence, was not statistically significant. Institutional connectivity and participation are dominant factors in building an inclusive mushroom industry. Strong institutional connectivity enables access to markets, capital, and policy support, while active participation strengthens collective cooperation among mushroom business actors. The implication of these research findings is the need for policy strategies and programs to strengthen institutions, enhance equitable access, and provide innovation technology assistance so that the mushroom industry in Mojokerto can grow to be more inclusive, competitive, and sustainable positive word of mouth.

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