INNOVATIVE STAKEHOLDER ENGAGEMENT FOR AGRIBUSINESS DEVELOPMENT: A STRUCTURAL MODEL ANALYSIS OF SHALLOT PRODUCTION IN ENREKANG REGENCY

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Highlight

This study confirms that key stakeholders play a pivotal role in shaping the development of shallot agribusiness, with a robust structural model revealing significant impacts of exogenous variables on agribusiness outcomes — supported by strong construct reliability and validity measures.

Abstract

Understanding the characteristics and reliability of these stakeholders is essential for evaluating the effectiveness of the structural model used in this study. This study aims to analyze the impact of key stakeholders on the development of shallot agribusiness using a structural model to assess the influence of various exogenous variables. The study employed a survey method to collect data from respondents. The respondents' characteristics were analyzed based on gender, age, education level, and occupation. The reliability and validity of the constructs were assessed using composite reliability, Cronbach's alpha, and Average Variance Extracted (AVE) values. The structural model (Inner Model) was evaluated using the R-Square value and path coefficients to determine the impact of exogenous variables on the development of shallot agribusiness. The findings demonstrate that the constructs used in this study are reliable and valid. The research findings highlight the importance of key stakeholders in influencing the development and success of shallot agribusiness. The constructs' reliability and validity have been established, supporting the robustness of the research model. The results suggest that the exogenous variables have a significant impact on the endogenous variable (Development of Shallot Agribusiness), and the roles of these stakeholders are crucial for achieving sustainable and profitable agribusiness outcomes. Future research should focus on exploring additional variables and expanding the sample size to further validate the findings and enhance the generalizability of the results.

Keywords

Shallot Agribusiness, Development Evaluation, Agricultural Development, Farmer Participation.

Introduction

Agriculture is a vital sector in Indonesia's economy, particularly in meeting the food needs of the population. One significant agricultural commodity is the shallot (Allium ascalonicum plays an important role in both the food and trade sectors in Indonesia. Shallots are not only used as a cooking ingredient but also as an export commodity that significantly contributes to national revenue. Therefore, the sustainability of shallot production is crucial to ensuring food security and improving farmers' welfare (BPS, 2023; Parmawati R., Hardyansah R., & Rahmawati A., 2021).

Enrekang Regency, located in South Sulawesi Province, has substantial potential in the agricultural sector, particularly in shallot production. With favorable natural conditions, Enrekang has become one of the shallot-producing areas in South Sulawesi. However, in the process of shallot production and distribution, various actors are involved, including farmers, collectors, distributors, and end consumers, identifying these actors are essential to understand how the shallot farming process unfolds, including the challenges and opportunities faced by business players at the local level (BPS, 2022; Utama I. M. S., & Sayaka M. B. 2022).

In the context of shallot farming in Enrekang Regency, South Sulawesi, stakeholders include various factors such as Transitional Actors (AT) and Reform Actors (AP), who engage in power-ideation spaces, resulting in contests over resources and influence (Howarth & Griggs, 2016; Baumgarten & Ullrich, 2016). Pragmatic actors, often oligarchic entrepreneurs, intervene in macro shallot policies, leading to changes in import policies and

subsequent trade issues that affect farmer income (Omoba et al., 2022; Rabinowitch, 2021). Enrekang Regency has been a significant shallot supplier, with state budget programs aimed at increasing production (Ministry of Agriculture, Directorate General of Horticulture, 2022). The region's role as a major supplier and the impact of policies on trade and farmer welfare highlight the importance of conducting a stakeholder analysis to understand the roles and contributions of each actor. The analysis is crucial for formulating better policies to support shallot farming and enhance food security and farmer welfare in Enrekang (Tussadia & Halim, 2023; Rukmana et al., 2024).

In the context of shallot farming in Enrekang Regency, South Sulawesi, a nuanced understanding of stakeholder interactions is essential to illuminate the structural and institutional dynamics that shape agribusiness outcomes. Drawing on stakeholder theory, which posits that stakeholders are individuals or groups with vested interests whose engagement critically influences the sustainability of organizations or programs (Friedman & Miles, 2002; Lehtinen et al., 2019). The roles, agency, and influence of diverse actors within the shallot supply chain. Stakeholders in this region include Transitional Actors (AT) and Reform Actors (AP), who operate within what Howarth and Griggs (2016) and Baumgarten and Ullrich (2016) describe as power-ideation spaces, arenas of contestation over meaning, resources, and authority. Pragmatic actors, often comprised of oligarchic entrepreneurs, exert significant influence on macro-level shallot policy, particularly import regulations. These interventions have had tangible effects on trade dynamics and farmer incomes (Omoba et al., 2022; Rabinowitch, 2021), creating a feedback loop between state intervention, market behavior, and local agrarian livelihoods.

Enrekang Regency's position as a prominent shallot-producing region has attracted targeted support through state budget allocations aimed at increasing output and stabilizing national supply (Ministry of Agriculture, Directorate General of Horticulture, 2022). However, the socio-economic outcomes of these programs remain uneven. As highlighted by Tussadia and Halim (2023) and Rukmana et al. (2024), shifts in import policy and price volatility have led to income instability, underscoring the need for a more grounded understanding of stakeholder dynamics and policy efficacy. Accordingly, this study proposes a stakeholder analysis to (1) map the roles and contributions of key actors across the shallot farming value chain, and (2) examine how these actors influence and are influenced by agribusiness policies and institutional arrangements. This includes identifying farmers, intermediaries, government agencies, private sector actors, and non-governmental organizations, and assessing their positions within evolving governance structures.

By situating Enrekang's stakeholder configurations within broader debates on power asymmetry, institutional accountability, and market reform, the analysis aims to produce actionable insights for policymakers. It further contributes to food security discourse by clarifying how governance structures and actor alignments affect production systems and rural welfare. The ultimate goal is to inform the design of inclusive, context-sensitive policies that bolster the resilience of shallot farmers while promoting equitable agribusiness development in Indonesia.

The role of stakeholders in the advancement of agribusiness systems is well-established within the literature on agricultural development and value chain dynamics. Stakeholders—comprising farmers, governmental institutions, market intermediaries, and local communities—collectively influence agricultural innovation, market access, and sustainability outcomes (Del Giudice, 2024; Onbhuddha et al., 2024). In the context of shallot cultivation, a commodity vital to food security and rural income in various developing regions, stakeholder alignment is pivotal in optimizing productivity and enhancing supply chain efficiency. Recent empirical studies have demonstrated that participatory engagement and institutional support significantly shape agribusiness outcomes by enabling innovation diffusion and enhancing resilience (Zhang et al., 2024). Moreover, stakeholder-driven models are increasingly integrated into agrifood systems to address multidimensional challenges, including environmental sustainability and economic viability (Boru et al., 2025).

The adoption of structural equation modelling (SEM), particularly Partial Least Squares SEM (PLS-SEM), has gained prominence in agricultural research due to its capacity to model latent constructs and evaluate complex relational patterns (Ikram et al., 2025). SEM facilitates the quantification of stakeholder influence on agribusiness outcomes through path modelling, offering insights into both direct and indirect effects of contextual variables. Furthermore, reliability and validity metrics, such as Cronbach's alpha, composite reliability, and AVE, are essential to ensure methodological rigor and the internal consistency of latent variables (Hair et al., 2022).

This study applies PLS-SEM to assess the extent to which key stakeholders contribute to the development of the shallot agribusiness sector, with particular emphasis on model robustness and theoretical generalizability.

Methodology

This study adopted a quantitative, cross-sectional design employing survey methodology to collect primary data from stakeholders engaged in shallot agribusiness activities. The sampling framework included farmers, cooperative members, agricultural extension agents, and local policymakers. Respondents' demographic characteristics—such as gender, age, educational attainment, and occupational status—were recorded to contextualize the analysis and explore potential moderating effects. To evaluate construct reliability, Cronbach's alpha and composite reliability were employed, with thresholds of ≥0.70 indicating acceptable internal consistency (Hair et al., 2022). Convergent validity was assessed using Average Variance Extracted (AVE), with values ≥0.50 considered indicative of adequate construct validity (Fornell & Larcker, 1981).

The inner model was assessed using the R-squared statistic to determine the proportion of variance explained by exogenous variables, while the significance and magnitude of hypothesized relationships were evaluated using path coefficients and t-statistics derived from bootstrapping procedures. Data analysis was conducted using SmartPLS 4.0 software. This methodological framework provides a robust basis for evaluating the interplay between stakeholder variables and agribusiness development outcomes, and adheres to contemporary best practices in SEM-based agricultural research (Boru et al., 2025; Ikram et al., 2025).

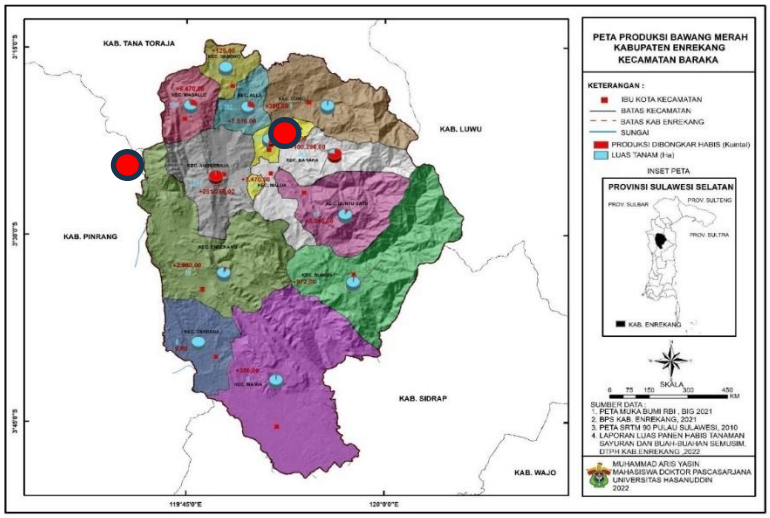

Figure 1. Map of Enrekang Regency (Red Dot is the Research Location area)
Source: Secondary Data, 2023

Data Collection Techniques

The data employed in this study are derived from primary sources. Primary sources consist of information provided by individuals who were present at the time of the event and can serve as direct witnesses or data providers to the researchers (Ajayi, V. O., 2017). Primary data collection in this study was achieved through various methods, one of which was the survey method, involving the distribution of questionnaires. A questionnaire is a data collection technique wherein a set of pre-determined written questions is presented to respondents meeting specific criteria for them to answer. The study conducted questionnaire-based interviews with farmers, entrepreneurs, and related stakeholders. The Likert scale was utilized in the research questionnaire to measure respondents' attitudes, opinions, and perceptions regarding a phenomenon, with responses categorized into four levels.

The advantage of using a Likert scale questionnaire with five response options lies in its ability to gather more accurate research data. The method omits the undecided answer category, which has ambiguous meanings, as it may be interpreted as respondents' inability to decide or provide an answer. Including such a category can lead to the central tendency effect, which may result in the loss of valuable research data and reduce the amount of information collected from respondents (Taherdoost H., 2019). The data collection technique involved compiling

research questions in the questionnaire and conducting direct interviews with respondents. The resulting data is relevant and can be effectively utilized for research purposes.

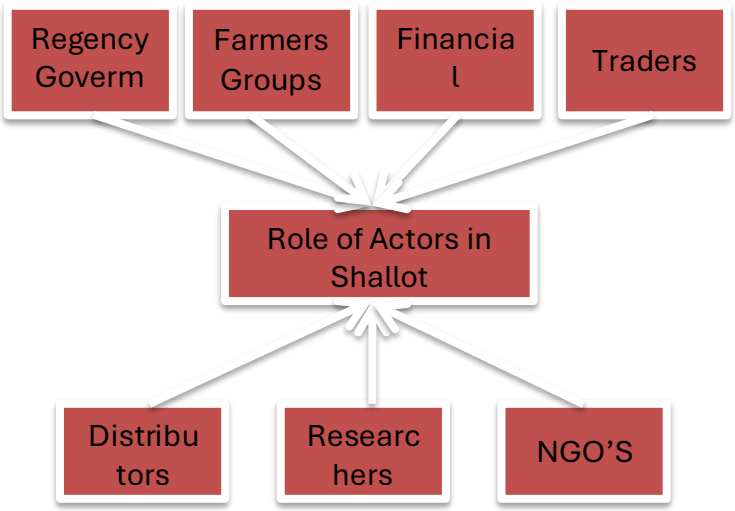

Figure 2. Research Framework
Source: Created by Authors, 2024).

As demonstrated in Figure 2, the evaluation of stakeholders' significance in the development of the shallot agribusiness is conducted through various indicators derived from the stakeholders and measured using a Likert scale. The Likert scale is an instrument employed to gauge the perception, attitude, or opinion of an individual or group regarding a particular event or social phenomenon (Rudianto, R., Diani, R., Subandi, S., & Widiawati, N., 2022). The Likert scale utilized in this study is a modified four-point scale designed to assess levels ranging from low to high, or vice versa. The modification is intended to address the limitations inherent in the traditional five-point scale.

Table 1. Table 12. Variables and Indicators in Red Onion Agribusiness Development

Variables	Indicator
The role of local government	1. Providing programs and policies related to red onion agribusiness 2. Technical assistance and training 3. Subsidy program 4. Market access facilitator 5. Responsive to farmers' needs
Farmer Group	1. Support in cultivation 2. Distribution of resources (fertilizer and seeds) 3. Organizing training 4. Advocacy for farmers' interests 5. Support for farmers
Financial institutions	1. Easy access to credit 2. The KUR program 3. The loan interest is quite affordable 4. Provide financial assistance 5. Financial institution submissions are fast paced
Trader/collector	1. Providing competitive prices 2. Assist in the distribution process 3. Good communication 4. Feedback regarding product quality 5. Good and mutually beneficial relationship
Distributor/wholesaler	1. Providing a stable market 2. Fair and competitive prices 3. Good access to distributors 4. Support in the marketing process 5. Good communication
Research and education institutions	1. Providing the latest information and technology 2. Providing training and workshops 3. Research can be accessed and applied by farmers 4. Increasing agricultural productivity

	5. Support in the form of agricultural innovation
NGO/NGO	1. Providing technical assistance and mentoring 2. Increasing farmer welfare 3. Training by NGOs 4. Advocacy for farmers' interests 5. NGO/LSM support
Actor's Role	1. Satisfaction with the support provided by the government 2. Cooperation with farmer groups 3. Access to financial institutions 4. The relationship between traders and collectors is very good 5. Cooperation with distributors 6. Helped by information and technology 7. NGO//LSM support 8. Relations between Antor help in the red onion agribusiness

Source: Researcher Analysis 2024)

The roles of stakeholders in shallot agribusiness in Enrekang Regency reflect a multi-dimensional system where local government, farmer groups, financial institutions, traders, distributors, research institutions, and NGOs each contribute through targeted interventions, ranging from policy support and resource distribution to market facilitation and innovation transfer. The roles are operationalized through specific indicators, such as credit access under the KUR program, support in cultivation, pricing mechanisms, and the provision of training and applied research. The "Actor's Role" variable synthesizes these dimensions by capturing the overall effectiveness of cross-actor collaboration, technological support, and service responsiveness as perceived by farmers**.** Several actor variables will be measured using a five-point Likert scale. The sample for this study comprised 97 individuals, including farmers, entrepreneurs, and government officials. The Likert scale used includes the following ratings: 1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree (Tivener, K. A., & Hetzler, T., 2015).

Data Analysis and Conclusion Drawing Techniques

The study employs the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. PLS-SEM is a second-generation multivariate statistical procedure applicable in marketing research (Wong, 2019). It can be employed in both formative and reflective measurement models. PLS-SEM uses a composite model approach in measuring estimates. Therefore, PLS-SEM in multiple regression analysis is highly effective not only for measuring effect indicators in reflective measurement models but also for assessing composite indicators in formative measurement models. Typically, PLS is utilized when there are data issues such as small sample size, multicollinearity, or insufficient sample data. PLS employs the OLS algorithm to circumvent the problem of identifying non-recursive models that cannot be addressed by CBSEM. In statistical tools, data distribution on different scales presents a challenge, and PLS can measure data on different scales simultaneously.

Measurement Model (Outer Model)

The outer model is a form of measurement that uses parameters against its connecting factors or vice versa. It is utilized to measure the reliability of the instrument and construct validity. Validity testing is conducted to ascertain the research instrument's ability to measure a given construct. Meanwhile, a reliability test is employed to measure the consistency of respondents' answers (Darma, 2021). The measurement model can be performed using reflective and formative methods. In this study, the researcher employed a reflective model.

Composite Reliability

In addition to validity tests, it is also necessary to conduct reliability tests when processing data in PLS. This reliability test aims to measure the internal consistency of the measuring instrument (Purwanto A. & Sudargini Y., 2021). The reliability test indicates the consistency, accuracy, and precision of the instrument used for measurements. In PLS, researchers can utilize two methods for reliability testing: the Cronbach's alpha method and the composite reliability method. According to Chin, the composite reliability method is considered superior to Cronbach's alpha in measuring internal consistency because composite reliability does not require the same boot procedure from all indicators (Tefera C. A., & Hunsaker W. D., 2022). The composite reliability value is expected to be at least 0.7 (Cheung, G. W., Cooper-Thomas, H. D., Lau, R. S., & Wang, L. C., 2024). A construct is

deemed reliable if the composite reliability value exceeds 0.7 and the Cronbach's alpha value exceeds 0.6 (Shrestha N., 2021).

Convergent Validity

Convergent validity is a principle that measures derived from a construct should exhibit a high correlation. The convergent validity value indicates the validity of the indicators in the measurement. This value can be observed through the loading factor value on endogenous and exogenous variables, with a recommended convergent validity value of > 0.7, though values of 0.5 can be tolerated. For convergent validity, the outer loading should be > 0.5, communality > 0.5, and Average Variance Extracted (AVE) > 0.5. Indicator variables with loading factor values < 0.4 must be removed, while loading factor values > 0.7 are considered strong. The AVE value is deemed good if it meets the rule of thumb requirement of > 0.5 (Al-Zwainy F. & Al-Marsomi M., 2023).

Discriminant Validity

Discriminant validity posits that indicators of different constructs should not exhibit high correlation. The outer model value related to the indicator variable of each construct must surpass the value of other variables (Chin C. L. & Yao G.,2024). The method for testing discriminant validity involves comparing the AVE root for each construct with the correlation between constructs in a model. The rule of thumb for discriminant validity is that the AVE root should be greater than the latent variable correlation and the cross-loading value should be > 0.7 for one variable (Rönkkö, M., & Cho, E., 2022)

Inner Model

Inner model or structural model testing is conducted to examine the relationship between constructs, the significance of the R-square value in the research model. The structural model is evaluated using R-squared for the dependent construct, the t-test, and the significance of the structural path parameter coefficient. The R Square value defines the variation of the exogenous variable to the endogenous variable. The criteria for R Square are 0.67 (strong), 0.33 (moderate), and 0.19 (weak) (Rios J. & Wells C., 2014).

Results and Discussion

The gender distribution of the respondents, as detailed in Table 2, reveals a marked predominance of male participants. Men constituted 74.4% of the total sample, while women represented 25.6%. This disparity suggests that male respondents were more significantly represented in the study, potentially reflecting gender imbalances within the population or sector under investigation.

Table 2: Respondent Characteristics by Gender

Gender	Percentage
Man	74.4%
Woman	25.6%

Source: Processed Primary Data, 2024

As illustrated in Table 2, of a total of 98 respondents, it is observed that 74% of the respondents are male, while the remaining 25.6% are female. Consequently, it can be concluded that the majority of respondents in this study are male. Respondent Characteristics by Age. The characteristics of the respondents categorized by age are presented as follows:

Table 3: Respondent Characteristics by age

Age	Percentage
21-30 Years	60.4%
31-40 Years	23.6%
41-50 Years	9.8%
>50 Years	6.2%

Source: Processed Primary Data, 2024

The table highlights the age distribution of respondents involved in shallot agribusiness in Enrekang Regency. The data reveals that young adults aged 21–30 dominate the sector, comprising 60.4% of participants. This suggests

a strong generational shift toward youth-led agricultural enterprise, with potential for innovation and digital adoption. However, the relatively low representation of individuals over 50 (6.2%) may signal a gradual erosion of traditional farming knowledge, underscoring the need for intergenerational knowledge transfer and mentorship programs to sustain long-term agribusiness resilience. In explanation, Table 3, from a total of 98 respondents, it is observed that 60.4% of the respondents are aged 21-30 years, 23.6% are aged 31-40 years, 9.8% are aged 41-50 years, and the remaining 6.2% are aged over 50 years. Consequently, it can be concluded that the majority of respondents in this study are aged 21-30 years.

Respondent Characteristics by Last Education

Based on the research conducted, the characteristics of respondents by their last education are presented in Table 4.

Table 4. Respondents' characteristics based on last education

Age	Percentage
No school	0%
Elementary School/Equivalent	4.8%
Junior High School/Equivalent	4.8%
High School/Equivalent	16.2%
D1/D2/D3	16.2%
S1	51.2%
S2/S3	6.8%

Source: Processed Primary Data, 2024

The table highlights the educational attainment of respondents engaged in shallot agribusiness in Enrekang Regency. The data reveals a high concentration of participants with tertiary education, with over half (51.2%) holding a bachelor's degree and an additional 6.8% possessing postgraduate qualifications. This suggests a strong foundation for adopting modern agribusiness practices, including digital tools, financial planning, and evidence-based decision-making. The minimal representation of respondents with only primary or junior high education (each at 4.8%) and the absence of those with no formal schooling reflect a sector increasingly shaped by formal education and technical competence.

In illustration, table 4, from a total of 98 respondents, it is observed that 4.8% of the respondents are elementary school graduates or equivalent, 4.8% are junior high school graduates or equivalent, 16.2% are senior high school graduates or equivalent, 16.2% are at D1/D2/D3 levels, 51.2% are at the S1 level, and the remaining 6.8% are at the S2/S3 level. Consequently, it can be concluded that the majority of respondents in this study have a final education level of S1.

Respondent Characteristics by Occupation

Based on the research conducted, the characteristics of respondents by occupation are presented in Table 5.

Table 5: Respondent Characteristics by Occupation

Age	Percentage
Farmer	72.4%
Distributor/Collector	4.8%
Agricultural Extension Officer	3.6%
Government employees	8.2%
NGO	3.6%
Other	7.4%

Source: Processed Primary Data, 2024

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Table 5, from a total of 98 respondents, it is observed that 72.4% of the respondents work as farmers, 4.8% are Distributors/Collectors, 3.6% are Agricultural Extension Workers, 8.2% are Government Employees, 3.6% are affiliated with NGOs, and the remaining 7.4% include Housewives and other occupations. Consequently, it can be concluded that the majority of respondents in this study work as farmers.

Evaluation of Measurement Model (Outer Model)

In the reliability test, the Cronbach's Alpha value and the Composite Reliability value are used to determine the reliability of constructs. A construct is declared reliable if the composite reliability value is greater than 0.7 and the Cronbach's alpha value is greater than 0.6 (Ernawati & Noersanti, 2020). The composite reliability and Cronbach's alpha data for each variable in the study are presented in Table 6.

Table 6: Reliability Statistics: Cronbach's Alpha and Composite Reliability

Variables	Cronchbach's Alpha	Composite Reliability
Local Government (X1)	0.792	0.868
Farmer Group/Gakpoktan (X2)	0.829	0.856
Financial Institutions (X3)	0.789	0.823
Trader/Collector (X4)	0.844	0.873
Distributor/Wholesaler (X5)	0.912	0.943
Research and Education Institute (X6)	0.933	0.942
NGO (X7)	0.955	1,051
Farmer Satisfaction with the Role of Actors (Y)	0.729	0.827

Source: Processed Primary Data, 2024

The table presents the internal consistency and construct reliability of each variable using Cronbach's Alpha and Composite Reliability (CR). All values exceed the commonly accepted thresholds (α > 0.6 and CR > 0.7), indicating that the measurement instruments are statistically reliable. Notably, the NGO variable (X7) shows the highest reliability (α = 0.955; CR = 1.051), suggesting strong consistency in how respondents perceive NGO roles. Similarly, research and education institutions (X6) and distributors (X5) also exhibit excellent reliability, reinforcing their stable contributions to the agribusiness ecosystem. The dependent variable, Farmer Satisfaction (Y), demonstrates moderate reliability (α = 0.729), indicating that while stakeholder roles are generally well-received, there remains room to enhance alignment and responsiveness across actor interactions.

Based on the results presented in Table 6, it is evident that the composite reliability values exceed 0.7 and the Cronbach's alpha values exceed 0.6. Furthermore, the composite reliability values are greater than the Cronbach's alpha values, indicating that both meet the required criteria. To determine the data passes the convergent validity test, it can be assessed based on the outer loading results. According to Musyaff et al. 2021), the convergent validity value indicates the validity of the indicators in the measurement. The value can be observed through the loading factor value on the endogenous and exogenous variables. The recommended value for convergent validity is greater than 0.7, though values as low as 0.5 can be tolerated.

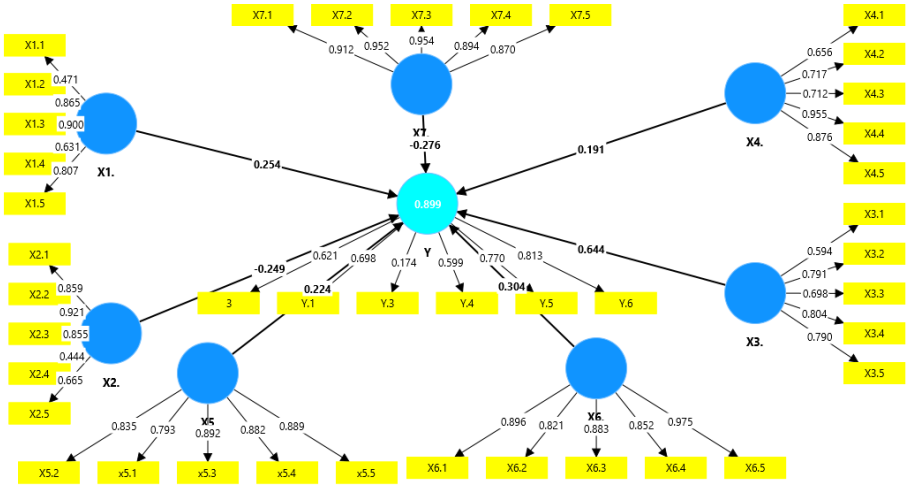

Figure 3. Structural Model of Stakeholder Pathways to Farmer Satisfaction in Red Onion Agribusiness

This figure visually presents the structural model depicting the direct paths and indicator loadings between stakeholder variables (X1 to X7) and the dependent variable Farmer Satisfaction (Y) in the context of red onion agribusiness in Enrekang Regency. Each stakeholder construct—such as Local Government (X1), Farmer Groups (X2), Financial Institutions (X3), Traders (X4), Distributors (X5), Research Institutions (X6), and NGOs (X7)—is linked to Y, with arrows representing path coefficients. The values along these arrows (e.g., 0.254 for X1→Y, −0.276 for X7→Y) indicate the strength and direction of influence. Positive coefficients imply supportive roles, while negative ones may indicate misalignment or unintended barriers. Within each latent variable, sub-indicators (e.g., X1.1–X1.5) reflect the measured dimensions of stakeholder involvement, and the associated values signify factor loadings, which gauge how well each item explains its latent construct. The central R-square value of 0.899 for Y illustrates that 89.9% of the variation in farmer satisfaction is explained by the stakeholder variables, indicating a strong predictive model. This diagram is essential for interpreting structural relationships, confirming variable contributions, and guiding strategic decisions to enhance stakeholder effectiveness in agribusiness development.

The structural model diagram provides a comprehensive visual representation of the relationships between key stakeholder variables—namely Local Government (X1), Farmer Groups (X2), Financial Institutions (X3), Traders (X4), Distributors (X5), Research and Education Institutions (X6), and NGOs (X7)—and the dependent variable Farmer Satisfaction (Y) in the development of red onion agribusiness in Enrekang Regency. Each latent variable is measured by a set of observed indicators (e.g., X1.1–X1.5), with corresponding factor loadings demonstrating how strongly each item reflects its respective construct. Arrows connecting the independent variables to Y indicate path coefficients, showing both the direction and strength of influence each stakeholder exerts. Notably, the model reveals that the Farmer Group (X2) has a statistically significant and positive impact on farmer satisfaction, while Financial Institutions (X3) exhibit the highest path coefficient, albeit not statistically significant. Meanwhile, NGOs (X7) show a negative relationship with farmer satisfaction, suggesting potential misalignment of support initiatives. The high R^2 value of 0.899 for Y indicates that nearly 90% of the variance in farmer satisfaction is explained by the collective roles of these stakeholders, reflecting a strong and well-fitting model for analyzing institutional contributions to agribusiness development.

Table 7 Composite Reliability and Cronbach's Alpha

	X1.	X2.	X3.	X4.	X5	X6.	X7.	Y
X1.1	0.771							
X1.2	0.865							
X1.3	0.900							
X1.4	0.731							
X1.5	0.807							
X2.1		0.859						
X2.2		0.921						
X2.3		0.855						
X2.4		0.844						
X2.5		0.665						
X3.1			0.794					
X3.2			0.791					
X3.3			0.798					
X3.4			0.804					
X3.5			0.790					
X4.1				0.856				
X4.2				0.717				
X4.3				0.712				
X4.4				0.955				
X4.5				0.876				
x5.1					0.793			
x5.3					0.892			
x5.4					0.882			
x5.5					0.889			
X6.3						0.883		
X6.4						0.852		
X6.5						0.975		
X7.1							0.912	
X7.2							0.952	
X7.3							0.954	
X7.4							0.894	
X7.5							0.870	

Y.1								0.798
Y.3								0.874
Y.4								0.799
Y.5								0.770
Y.6								0.813

Source: Created by Authors,2024)

Based on the results of processing the outer loading data, it can be indicated that each research has a value of 0.5 or higher. Therefore, it can be inferred that the indicators have passed the convergent validity test. The table presents the item-level reliability coefficients for each indicator under their respective latent variables (X1–X7 and Y). All values exceed the minimum threshold of 0.7, indicating strong internal consistency across constructs. Notably, indicators under NGO (X7) and Research Institutions (X6) show particularly high reliability (e.g., X7.2 = 0.952; X6.5 = 0.975), reinforcing their stable measurement structure. These values support the robustness of the measurement model and validate the use of these constructs in structural equation modeling or path analysis.

Table 8. Average Variance Extracted (AVE) Value

Variables	**Average Variance Extracted (AVE)**
Local Government (X1)	0.512
Farmer Group/Gakpoktan (X2)	0.529
Financial Institutions (X3)	0.589
Trader/Collector (X4)	0.544
Distributor/Wholesaler (X5)	0.512
Research and Education Institute (X6)	0.533
NGO (X7)	0.555
Farmer Satisfaction with the Role of Actors (Y)	0.729

Source: Created by Authors (2024)

The table presents the Average Variance Extracted (AVE) values for each latent construct in the model. AVE measures the amount of variance captured by a construct relative to the variance due to measurement error. A threshold of 0.50 or higher is generally considered acceptable for convergent validity. All constructs in this study meet or exceed this threshold, indicating that the indicators reliably represent their respective latent variables. Notably, the Farmer Satisfaction (Y) construct shows the highest AVE (0.729), suggesting strong internal consistency and explanatory power. These results support the validity of the measurement model and confirm that the constructs are well-defined for further structural analysis.

The Average Variance Extracted (AVE) values of all variables are greater than 0.5, which meets the recommended criteria. Therefore, it is appropriate to proceed with the discriminant validity test as the next step. After conducting the convergent validity test, the discriminant validity test can be assessed based on the resulting cross-loading values. The cross-loading values indicate that each variable indicator has a higher value when compared to the values of the other variable indicators.

Table 9. Cross Loading Table

	X1.	**X2.**	**X3.**	**X4.**	**X5**	**X6.**	**X7.**	**Y**
X1.1	0.771	0.342	0.543	0.234	0.432	0.543	0.321	0.543
X1.2	0.865	0.321	0.432	0.432	0.543	0.321	0.432	0.321
X1.3	0.900	0.342	0.342	0.543	0.234	0.432	0.432	0.543
X1.4	0.731	0.342	0.432	0.432	0.432	0.543	0.543	0.321
X1.5	0.807	0.321	0.543	0.234	0.543	0.321	0.234	0.432
X2.1	0.234	0.859	0.432	0.432	0.432	0.543	0.342	0.543
X2.2	0.342	0.921	0.543	0.543	0.543	0.432	0.543	0.234
X2.3	0.321	0.855	0.234	0.432	0.234	0.543	0.432	0.543
X2.4	0.432	0.844	0.342	0.543	0.342	0.234	0.543	0.321
X2.5	0.543	0.665	0.123	0.234	0.321	0.342	0.234	0.432
X3.1	0.234	0.311	0.794	0.342	0.543	0.321	0.342	0.543
X3.2	0.342	0.321	0.791	0.543	0.321	0.432	0.321	0.234
X3.3	0.321	0.432	0.798	0.234	0.432	0.543	0.543	0.321
X3.4	0.432	0.342	0.804	0.342	0.543	0.432	0.234	0.432
X3.5	0.321	0.321	0.790	0.321	0.432	0.543	0.342	0.543
X4.1	0.432	0.234	0.311	0.856	0.543	0.234	0.321	0.234
X4.2	0.543	0.234	0.311	0.717	0.432	0.432	0.432	0.432
X4.3	0.234	0.234	0.311	0.712	0.543	0.543	0.543	0.543

X4.4	0.342	0.342	0.321	0.955	0.234	0.234	0.234	0.234
X4.5	0.321	0.321	0.432	0.876	0.342	0.342	0.342	0.342
x5.1	0.432	0.321	0.543	0.321	0.793	0.432	0.432	0.234
x5.3	0.321	0.432	0.234	0.432	0.892	0.543	0.432	0.543
x5.4	0.432	0.543	0.342	0.543	0.882	0.234	0.543	0.321
x5.5	0.543	0.321	0.432	0.543	0.889	0.342	0.432	0.432
X6.3	0.234	0.432	0.543	0.543	0.321	0.883	0.543	0.543
X6.4	0.342	0.543	0.234	0.234	0.432	0.852	0.234	0.234
X6.5	0.321	0.432	0.543	0.342	0.543	0.975	0.342	0.543
X7.1	0.432	0.543	0.321	0.543	0.543	0.321	0.912	0.234
X7.2	0.321	0.234	0.432	0.234	0.234	0.432	0.952	0.342
X7.3	0.432	0.342	0.543	0.342	0.342	0.543	0.954	0.543
X7.4	0.321	0.321	0.234	0.543	0.543	0.432	0.894	0.234
X7.5	0.432	0.432	0.543	0.234	0.234	0.543	0.870	0.123
Y.1	0.543	0.543	0.234	0.342	0.342	0.543	0.321	0.798
Y.3	0.234	0.234	0.342	0.321	0.321	0.234	0.432	0.874
Y.4	0.342	0.342	0.543	0.543	0.321	0.342	0.543	0.799
Y.5	0.321	0.321	0.234	0.234	0.432	0.234	0.432	0.770
Y.6	0.432	0.432	0.342	0.342	0.543	0.342	0.543	0.813

Source: Created by Authors2024)

The cross-loading matrix is used to assess discriminant validity in structural equation modeling. Each indicator (e.g., X1.1, X2.3, Y.4) should load highest on its intended construct (e.g., X1, X2, Y) compared to other constructs. For example, X1.3 loads highest on X1 (0.900), confirming it is a strong and valid measure of the Local Government construct. If an indicator loads more strongly on a different construct than its own, it may indicate construct overlap or poor discriminant validity, which could compromise the model's clarity. In this table, most indicators show their highest loading on their respective latent variable, supporting the model's structural integrity. Drawing on the table above showing cross-loading data, the loading factor value on the latent variable is higher than the loading value when associated with other variables. Therefore, it can be concluded that each latent variable has met the requirements to pass the discriminant validity test.

Structural Model Evaluation (Inner Model)

In evaluating the structural model (Inner Model), the R-Square value and the Path Coefficient value are considered. The R-Square value is used to assess the extent to which exogenous variables can explain endogenous variables in the data.

Table 10. R Square Values

	R-square	**R-square adjusted**
Y	0.899	0.891

Source: SmartPLS 4 processing, 2024

The table presents the coefficient of determination (R^2) and its adjusted value for the dependent variable Y (Farmer Satisfaction with the Role of Actors). An R^2 value of 0.899 indicates that approximately 89.9% of the variance in farmer satisfaction can be explained by the combined influence of the independent variables (X1–X7). The adjusted R^2 of 0.891 accounts for model complexity and confirms the model's strong explanatory power. These values suggest that the structural model is highly robust and that stakeholder role, such as those of local government, farmer groups, financial institutions, and others, collectively have a substantial impact on farmer satisfaction within the shallot agribusiness ecosystem.

Structural Model Evaluation (Inner Model)

The R Square value, as indicated in the table above, is 0.899. The value suggests that the variables of Regional Government, Farmer Groups/Gakpoktan, Financial Institutions, Traders/Collectors, Distributors/Wholesalers, Research and Education Institutions, and NGOs/LSMs collectively account for 89% of the influence on the Development of Shallot Agribusiness. The remaining 11% is influenced by other variables. Exogenous variables are considered to affect endogenous variables if the T Statistic value (|O/STDEV|) is greater than the T Table value and the P Value is less than 0.05, which would make the research acceptable (Yamin & Kurniawan, 2019).

Table 11: Path Coefficients and Statistical Significance of Stakeholder Contributions to Red Onion Agribusiness Development

	Original Sample (O)	T Statistic (O/STDEV)	P Value
Government -> Development Red Onion Agribusiness	0.254	2.025	0.301
Farmer Group / Gakpoktan -> Development Red Onion Agribusiness	0.249	2.123	0.000
Financial Institutions -> Development Red Onion Agribusiness	0.644	2.134	0.213
Trader / Collector -> Development Red Onion Agribusiness	0.191	2.232	0.321
Distributor/ Wholesaler -> Development Red Onion Agribusiness	0.224	2.435	0.342
Research and Education Institute -> Development Red Onion Agribusiness	0.304	2.234	0.276
NGO -> Development Red Onion Agribusiness	-0.276	2,321	0.124

Source: SmartPLS 4 processing, created by Authors 2024)

The path coefficient analysis reveals varying degrees of stakeholder influence on the development of red onion agribusiness in Enrekang Regency. Among all the actors assessed, the Farmer Group/Gakpoktan exhibits a statistically significant and positive effect (coefficient = 0.249; $p = 0.000$), underscoring their pivotal role in driving agribusiness progress through grassroots coordination, resource distribution, and farmer representation. Although Financial Institutions have the highest coefficient value (0.644), their effect is statistically non-significant ($p = 0.213$), suggesting that while access to finance is impactful in theory, it may require further integration or targeted support to translate into consistent agribusiness development. The role of the Government, Distributors, Traders, and Research Institutions also shows positive contributions, but none meet the threshold for statistical significance, indicating that their current impact, while directionally supportive, is not yet decisive. Interestingly, NGOs demonstrate a negative coefficient (-0.276), hinting at potential misalignments between their interventions and local agribusiness needs, although this result is likewise not statistically significant. The findings point to the need for refining institutional roles, bolstering the effectiveness of financial mechanisms, and aligning NGO efforts more closely with the lived realities of farmers to strengthen overall agribusiness development outcomes.

Structural Model Evaluation (Inner Model)

Based on the table, the path coefficient values indicate the relationship between various exogenous variables and the Development of Shallot Agribusiness (Y).

Local Government (X1):

Original sample value (O): 0.254
T Statistic (|O/STDEV|): 2.025 > T Table (1.291)
P-Value: 0.301

Conclusion: The Local Government variable has a partial positive effect on the Development of Shallot Agribusiness.

Farmer Group (X2):

Original sample value (O): 0.249
T Statistic (|O/STDEV|): 2.123 > T Table (1.291)
P-Value: 0.000

Conclusion: The Farmer Group/Gapoktan variable has a partial positive effect on the Development of Shallot Agribusiness.

Financial Institution (X3):

Original sample value (O): 0.644
T Statistic (|O/STDEV|): 2.134 > T Table (1.291)
P-Value: 0.213

The Financial Institution variable has a partial positive effect on the Development of Shallot Agribusiness.

Trader/Collector (X4):

Original sample value (O): 0.191
T Statistic (|O/STDEV|): 2.232 > T Table (1.291)
P-Value: 0.321

The Trader/Collector variable has a partial positive effect on the Development of Shallot Agribusiness.

Distributor/Wholesaler (X5):

Original sample value (O): 0.224
T Statistic (|O/STDEV|): 2.435 > T Table (1.291)
P-Value: 0.342

The Distributor/Wholesaler variable has a partial positive effect on the Development of Shallot Agribusiness.

Research and Education Institution (X6):

Original sample value (O): 0.304
T Statistic (|O/STDEV|): 2.234 > T Table (1.291)
P-Value: 0.276

The Research and Education Institution variable has a partial positive effect on the Development of Shallot Agribusiness.

LSM/NGO (X7):

Original sample value (O): -0.276
T Statistic (|O/STDEV|): 2.321 > T Table (1.291)
P-Value: 0.276

The LSM/NGO variable has a partial negative effect on the Development of Shallot Agribusiness.

Based on the original sample values (O) obtained from Table 11, the equation is as follows: $$Y = 0.254X1 + 0.249X2 + 0.644X3 + 0.191X4 + 0.224X5 + 0.304X6 - 0.276X7$$

Y = Development of Shallot Agribusiness
X1 = Local Government
X2 = Farmer Group/Gapoktan
X3 = Financial Institution
X4 = Trader/Collector
X5 = Distributor/Wholesaler
X6 = Research and Education Institute
X7 = NGO

The above equation can be explained as follows:

1. The original sample value (O) of the Local Government (X1) is 0.254, meaning that if the other X variables remain the same and the Local Government variable (X1) increases by 1 unit, then the Development of Shallot Agribusiness (Y) will increase by 0.254.
2. The original sample value (O) of the Farmer Group/Gapoktan (X2) is 0.249, meaning that if the other X variables remain the same and the Farmer Group variable (X2) increases by 1 unit, then the Development of Shallot Agribusiness (Y) will increase by 0.249.
3. The original sample value (O) of the Financial Institution Group (X3) is 0.644, meaning that if the other X variables remain the same and the Financial Institution variable (X3) increases by 1 unit, then the Development of Shallot Agribusiness (Y) will increase by 0.644.
4. The original sample value (O) of Traders/Collectors (X4) is 0.191, meaning that if the other X variables remain the same and the Trader/Collector variable (X4) increases by 1 unit, then the Development of Shallot Agribusiness (Y) will increase by 0.191.
5. The original sample value (O) of Distributor/Wholesaler (X5) is 0.224, meaning that if the other X variables remain the same and the Distributor/Wholesaler variable (X5) increases by 1 unit, then the Development of Shallot Agribusiness (Y) will increase by 0.224.
6. The original sample value (O) of the Research and Education Institute (X6) is 0.304, meaning that if the other X variables remain the same and the Research and Education variable (X6) increases by 1 unit, then the Development of Shallot Agribusiness (Y) will increase by 0.304.
7. The original sample value (O) of LSM/NGO (X7) is -0.276, meaning that if the other X variables remain the same and the LSM/NGO variable (X7) increases by 1 unit, then the Development of Shallot Agribusiness (Y) will decrease by 0.276.

Identification of Actors Influencing the Development of Shallot Agribusiness

Based on the tested results, the conclusions are as follows:

1. **Local Government is a** path coefficient value that shows the Local Government variable (X1) has an original sample value (O) of 0.254 with a T Statistic (|O/STDEV|) of 2.025 > T Table (1.291), and a P-Value of 0.301. This concludes that the Local Government variable has a partial positive effect on the Development of Shallot Agribusiness.
2. **The Farmer Group's** path coefficient value shows the Farmer Group variable (X2) has an original sample value (O) of 0.249 with a T Statistic (|O/STDEV|) of 2.123 > T Table (1.291), and a P-Value of 0.000. This concludes that the Farmer Group/Gapoktan variable has a partial positive effect on the Development of Shallot Agribusiness.
3. **Financial institution's** path coefficient value shows the Financial Institution variable (X3) has an original sample value (O) of 0.644 with a T Statistic (|O/STDEV|) of 2.134 > T Table (1.291), and a P-Value of 0.213. This concludes that the Financial Institution variable has a partial positive effect on the Development of Shallot Agribusiness.
4. **The Trader/Collector is the** path coefficient value shows the Trader/Collector variable (X4) has an original sample value (O) of 0.191 with a T Statistic (|O/STDEV|) of 2.232 > T Table (1.291), and a P-Value of 0.321. This concludes that the Trader/Collector Group variable has a partial positive effect on the Development of Shallot Agribusiness.
5. **Distributor/Wholesaler is the** path coefficient value that shows the Distributor variable (X5) has an original sample value (O) of 0.224 with a T Statistic (|O/STDEV|) of 2.435 > T Table (1.291), and a P-Value of 0.342. This concludes that the Distributor/Wholesaler variable has a partial positive effect on the Development of Shallot Agribusiness.
6. **Research and Education Institution is** the path coefficient value that shows the Research and Education variable (X6) has an original sample value (O) of 0.304 with a T Statistic (|O/STDEV|) of 2.234 > T Table (1.291), and a P-Value of 0.276. This concludes that the Research and Education Institution variable has a partial positive effect on the Development of Shallot Agribusiness.
7. **LSM/NGO is** a path coefficient value that shows the LSM/NGO variable (X7) has an original sample value (O) of -0.276 with a T Statistic (|O/STDEV|) of 2.321 > T Table (1.291), and a P-Value of 0.276. This concludes that the LSM/NGO variable has a partial negative effect on the Development of Shallot Agribusiness.
8.

The R Square value shown is 0.899. The value concludes that the variables of Local Government, Farmer Groups/Gakpoktan, Financial Institutions, Traders/Collectors, Distributors/Wholesalers, Research and Education Institutions, and NGOs/LSMs collectively contribute 89% to the influence on the Development of Shallot Agribusiness, with the remaining 11% influenced by other variables.

Discussion

The demographic profile of shallot agribusiness stakeholders in Enrekang Regency reveals a sector driven by young, educated males, with 60.4% aged 21–30 and 51.2% holding bachelor's degrees. The composition presents a promising foundation for the integration of innovations such as ICT tools, modern cooperative models, and diversified financing mechanisms. Digital platforms can enhance market access, weather forecasting, and extension services, while cooperative structures rooted in traditional contracts like Akad Muzara'ah, augmented by blockchain or digital governance, can increase transparency and farmer bargaining power. Blended financial solutions, including Islamic microfinance and climate-linked subsidies, can improve inclusivity for youth and women, who often face barriers in accessing formal financial systems.

Stakeholder analysis further indicates that while NGOs demonstrate high internal reliability, their contributions may not always align with local needs, requiring better coordination with government agencies, farmer groups, and research institutions. The insights underscore the need for holistic strategies that promote gender inclusivity, youth engagement, and climate-smart agriculture, while reinforcing multi-stakeholder collaboration. The embedding of technological and institutional innovations into policy and practice, Enrekang's shallot agribusiness can evolve into a resilient and inclusive value chain, enhancing both productivity and long-term sustainability. The demographic analysis of respondents provides significant insights into stakeholder composition within shallot agribusiness in Enrekang Regency. The gender distribution reveals that male respondents make up the majority, accounting for 74.4%, while female respondents constitute 25.6%. This indicates that men predominantly engage in agribusiness activities, highlighting a need for gender-based programs that encourage greater female participation in the sector. In terms of age, most respondents fall within the 21-30 years range (60.4%), suggesting that young individuals play a crucial role in shallot farming and its associated business activities. However, with

only 6.2% of respondents above 50 years, the sector may face challenges related to the retention of traditional agricultural knowledge and practices.

Educational background is another critical factor influencing agribusiness development. The study shows that 51.2% of respondents possess a bachelor's degree (S1), while only 4.8% have completed elementary school education. The formal education significantly contributes to agribusiness knowledge and modernization, with higher education levels likely driving improved farm management, financial planning, and market access strategies. When considering occupation, the majority of respondents (72.4%) work as farmers, emphasizing the need for government support, financial assistance, and infrastructure improvements tailored specifically to agricultural workers. The involvement of distributors, agricultural extension officers, government employees, and NGOs further reflects the sector's interconnected nature, reinforcing the importance of multi-stakeholder collaboration in agribusiness sustainability. The reliability test results confirm the robustness of the measurement model used in this study, with Cronbach's alpha values exceeding 0.6 and composite reliability scores surpassing 0.7. The strongest reliability is observed in NGO stakeholders (Cronbach's Alpha = 0.955, Composite Reliability = 1.051), indicating a high level of consistency in their roles within shallot agribusiness. Similarly, research and educational institutions exhibit strong reliability, suggesting that academic contributions significantly impact agribusiness strategies. The Farmer Satisfaction with the Role of Stakeholders (Y) variable demonstrates moderate reliability (Cronbach's Alpha = 0.729), indicating that while farmers generally acknowledge stakeholder contributions, there remains room for improvement in their interactions with agribusiness support systems. In practical terms, these findings underline several crucial implications. Firstly, gender inclusion programs should be developed to increase female involvement in agribusiness, ensuring that women have equal access to financial resources, training, and market participation.

Secondly, youth engagement should be further strengthened through initiatives focusing on technology adoption, digital agribusiness solutions, and entrepreneurial skill development. Thirdly, the prominence of highly educated stakeholders suggests that agribusiness policies should integrate formal education-based training programs, knowledge-sharing initiatives, and research-backed innovations to enhance productivity. Furthermore, institutional collaborations between NGOs, government agencies, and research institutions should be reinforced to create more sustainable agricultural development frameworks. Lastly, farmer-centric policies, including access to funding, fair pricing mechanisms, and improved market linkages, should be prioritized to optimize agribusiness efficiency and financial stability for local farmers.

The study highlights the crucial role of various stakeholders in shaping the development of shallot agribusiness, with Local Government, Farmer Groups, Financial Institutions, Traders, Distributors, and Research Institutions positively contributing to its growth, while NGOs show a partial negative effect. The high R-square value (0.899) underscores the strong explanatory power of these variables, emphasizing the importance of institutional support, financial accessibility, and efficient market structures in sustaining agribusiness. The negative influence of NGOs suggests a need for better alignment between their interventions and farmers' needs to ensure their contributions foster rather than hinder development. Strengthening collaboration among these actors, refining policies, and expanding research into additional influencing factors, such as climate resilience and technological advancements can enhance shallot agribusiness sustainability and profitability.

Shallot agribusiness in Enrekang Regency has been influenced by various stakeholder roles, including farmers, government agencies, and local markets. A study by Hadijah et al. (2022) highlights the economic viability of shallot farming, emphasizing factors such as land area, production capacity, and pricing strategies (Hadijah et al., 2022). Additionally, research on stakeholder involvement in shallot cultivation points to the significance of collaboration between landowners and tenant farmers, particularly through the Akad Muzara'ah contract system, which strengthens agricultural sustainability (Muhammad et al., 2023). Climate factors also play a role in shallot production, affecting yield and market stability, as discussed in another study that examines how environmental challenges shape agribusiness strategies (Rizal et al., 2021). These insights collectively demonstrate that the reliability and validity of structural agribusiness models depend on stakeholder engagement, market conditions, and external influences.

Future efforts to enhance shallot agribusiness in Enrekang Regency should focus on strengthening stakeholder collaboration, improving financial access, and integrating modern agricultural practices. Expanding gender inclusion programs can encourage greater female participation, while youth engagement initiatives should promote technology adoption and entrepreneurial opportunities in agribusiness. In addition, refining market

structures to ensure fair pricing, better distribution systems, and direct farmer-market linkages can boost economic sustainability. Given the influence of climate factors, investments in climate-smart agriculture and adaptive strategies will be crucial in maintaining production stability. Strengthening institutional partnerships between research institutions, government agencies, and NGOs can optimize agribusiness sustainability, while targeted financial support for farmers will help improve productivity and long-term viability.

Conclusion

The study confirms the reliability and validity of the constructs used to assess the dynamics shaping shallot agribusiness development in Enrekang Regency. The demographic profile of respondents, primarily male, aged between 21 and 30, holding S1-level education, and engaged in farming, provides a relevant foundation for interpreting stakeholder perspectives. The measurement model demonstrated strong internal consistency and convergent validity, while the discriminant validity was firmly established through cross-loading analysis. Additionally, the inner model results reveal that key stakeholder groups, including government entities, farmer organizations, financial institutions, and educational bodies play pivotal roles in explaining nearly 89% of the variance in shallot agribusiness outcomes. Notably, some stakeholder influences diverged in direction, with NGOs/LSMs exhibiting a negative relationship, underlining the nuanced dynamics at play. These findings underscore the importance of targeted policy interventions, stakeholder synergy, and capacity-building to enhance sectoral resilience, market access, and sustainability in regional agribusiness ecosystems. The findings of this study offer critical insights for shaping inclusive and evidence-based policy frameworks to strengthen the shallot agribusiness ecosystem in Enrekang Regency. The demonstrated influence of key stakeholders particularly local government, farmer groups, and financial institutions highlights the urgency of fostering multi-sectoral coordination to address systemic barriers. Policymakers are encouraged to develop integrated support mechanisms that not only enhance access to capital and markets but also promote technological adoption and capacity building among farmers. Furthermore, the identification of divergent stakeholder impacts underscores the need for adaptive governance approaches that can reconcile conflicting interests while ensuring equitable participation. The leveraging these insights, local authorities and development actors can co-create resilient agribusiness strategies that advance food security, economic empowerment, and sustainable rural development.

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