



E-ISSN 2599-2872; P-ISSN 2549-8150

J-PEN Borneo: Jurnal Ilmu Pertanian

journal homepage: <https://jurnal.ubt.ac.id/index.php/jpen>



Research Paper 9(1) (2026) 22 - 26

Social capital and farmer-group institutional performance: The mediating role of member participation in Ponorogo Regency

Putri Nurmalita Sari*, Akbar Hariputra¹, and Dwi Laila Maulida¹

¹ Agribusiness Department, Faculty of Agriculture, Universitas Pembangunan Nasional "Veteran" Jawa Timur, Surabaya, Indonesia

* Corresponding author. E-mail address: putri.nurmalita.fp@upnjatim.ac.id

Submitted/Received: 16 March 2026; Accepted: 29 March 2026

ARTICLE INFO

Keywords:

Agricultural institutions
Farmer groups
Institutional performance
Member participation
Social capital
Structural equation modeling

ABSTRACT

Farmer groups are socio-economic institutions that can strengthen farmers' capacities, access to resources, and collective bargaining power, yet their performance often varies despite receiving similar material support. This study examined the direct effect of social capital on the institutional performance of rice farmer groups and the indirect effect transmitted through member participation in Ponorogo Regency, East Java, Indonesia. A quantitative explanatory design was applied to survey data from 80 active rice farmers selected by proportionate random sampling in Babadan, Kauman, and Balong sub-districts. The relationships among social capital, member participation, and institutional performance were estimated using partial least squares structural equation modeling. The measurement model met the prescribed reliability and convergent-validity criteria. The structural model explained 69.0% of the variance in institutional performance. Social capital had positive effects on member participation ($\beta = 0.781$, $p = 0.001$) and institutional performance ($\beta = 0.312$, $p = 0.012$), while member participation positively affected institutional performance ($\beta = 0.521$, $p = 0.003$). The indirect effect of social capital through participation was also significant ($\beta = 0.407$, $p = 0.005$), indicating partial mediation. Strengthening trust, communication, shared norms, and opportunities for meaningful participation can therefore improve the effectiveness and sustainability of farmer-group institutions.

INTRODUCTION

Agricultural institutions, particularly farmer groups, are strategic components of Indonesian agricultural development. For smallholders, these groups are not merely administrative units; they function as learning forums, channels for technical innovation, mechanisms for joint procurement, and collective bargaining bodies. Membership can help farmers overcome fragmented production, gain economies of scale, and improve productivity [1]. In practice, however, many farmer groups experience declining activity, weak accountability, and dependence on government support. When a group functions mainly as a conduit for external assistance, its organizational capacity and long-term viability remain limited [2,3]. These conditions indicate that physical inputs alone cannot explain why some farmer groups become self-reliant while others stagnate.

Ponorogo Regency in East Java has a strong agrarian tradition, and rice farming remains an important source of rural livelihoods. The region nevertheless displays differences in the capacity and performance of registered farmer groups. Local evidence shows that farmer welfare is associated not only with human and material capital but also with the quality of relationships among farmers [4]. This relational resource is commonly conceptualized as social capital: the trust, reciprocal norms, communication patterns, networks, and leadership arrangements that enable people to coordinate action. Reciprocity and dense social connections can reduce transaction costs, improve information exchange, and strengthen cooperation in rural development [5]. Social capital may therefore explain

institutional differences that are not captured by the availability of machinery, seed, fertilizer, or public subsidies.

Institutional performance in this setting is multidimensional. It includes organizational effectiveness, transparency, member services, program sustainability, member satisfaction, and the achievement of collective goals. Each outcome requires members to exchange information, comply with agreed rules, monitor group decisions, and contribute to activities over time. Material assistance may create an opportunity for a group, but it does not automatically create the coordination needed to manage that opportunity. Farmer organizations contribute to sustainable development when they combine economic functions with internal governance and member commitment [3]. Likewise, evidence from Ponorogo indicates that relational and human resources are intertwined with farmer welfare [4]. Examining institutional performance therefore requires a model that connects the quality of internal relationships with the behavioral engagement of members, rather than treating either factor as an isolated organizational attribute.

Social capital is expected to influence institutional performance partly by encouraging members to participate. Trust and cohesion can create psychological safety and a sense of ownership, which are expressed through meeting attendance, program involvement, mutual aid (gotong royong), the expression of opinions, and shared decision-making. Evidence from rural communities links trust with social cohesion [6], while organizational research shows that social capital can affect performance through behavioral pathways [7].

Participation is thus the mechanism that converts a latent social resource into observable organizational activity. Although social capital and participation have been studied separately, their simultaneous relationship with farmer-group performance has received less attention in Indonesian rice-farming settings. Research on social capital and organizational performance also suggests that the mediating mechanism should be tested explicitly rather than inferred from separate associations [8].

Partial least squares structural equation modeling (PLS-SEM) is appropriate for assessing this mechanism because it can estimate direct and indirect relationships among latent constructs within a single predictive model [9]. Accordingly, this study examined whether social capital directly improves institutional performance and whether member participation mediates that relationship among rice farmer groups in Ponorogo Regency. Four hypotheses were tested: social capital positively affects member participation (H1); social capital positively affects institutional performance (H2); member participation positively affects institutional performance (H3); and social capital has a positive indirect effect on institutional performance through member participation (H4). The study contributes evidence for extension agents, policymakers, and group leaders seeking to complement material assistance with institution-building strategies rooted in trust, communication, and collective action.

MATERIALS AND METHODS

Research Site and Time

The study was conducted from March to June 2025 in Ponorogo Regency, East Java, Indonesia. Babadan, Kauman, and Balong sub-districts were selected purposively because they contained a high concentration of active rice farmer groups and provided variation in village and group characteristics. The unit of analysis was the individual active rice farmer registered in a local farmer group. The study used a quantitative, cross-sectional, causal-explanatory design to estimate relationships among social capital, member participation, and institutional performance.

Materials, Tools, and Research Design

The primary research instrument was a structured questionnaire containing statements for three latent constructs. Social capital (X) was represented by trust (MS1), cooperation (MS2), group norms (MS3), social networks (MS4), communication (MS5), and leadership (MS6). Member participation (Z) was represented by meeting attendance (PA1), program involvement (PA2), expression of opinions (PA3), mutual aid or gotong royong (PA4), and participation in decision-making (PA5). Institutional performance (Y) was represented by organizational effectiveness (KK1), transparency (KK2), member services (KK3), program sustainability (KK4), member satisfaction (KK5), and goal achievement (KK6). All indicators were measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Microsoft Excel was used for data management and SmartPLS 4 version 4.0.9.6 was used for analysis.

Research Procedures

The sampling frame consisted of active rice farmers listed in the farmer-group networks of the three selected sub-districts. A total of

80 respondents was selected by proportionate random sampling so that villages and farmer groups with different membership sizes were represented. The questionnaire was developed from established concepts in agricultural sociology and cooperative studies. Its content and wording were reviewed before field use, followed by a pilot assessment to confirm that the items were understandable and suitable for measuring the intended constructs. The use of systematic measurement and clearly defined institutional indicators is important when examining cooperative performance [10].

Trained enumerators conducted structured, face-to-face interviews with the selected farmers. Respondents were informed about the purpose of the survey and answered the questionnaire based on their experience in the farmer group. Field observations were recorded to provide contextual information, while demographic profiles and group-activity records were obtained from respondents and the local agricultural office. Completed questionnaires were checked for consistency before coding. The data were then entered into a spreadsheet, screened, and imported into SmartPLS for measurement- and structural-model evaluation.

Observed Parameters and Data Analysis

The measurement model was evaluated using indicator loadings, internal-consistency reliability, convergent validity, and discriminant validity. Indicator loadings above 0.70 were considered satisfactory. Cronbach's alpha and composite reliability values above 0.70 indicated acceptable reliability, and an average variance extracted (AVE) above 0.50 indicated convergent validity. Discriminant validity was assessed using the heterotrait-monotrait ratio with a threshold below 0.85. These criteria are consistent with applications of PLS-SEM to validated behavioral measurement scales [11].

After the measurement model had met the prescribed criteria, the structural model was assessed using the coefficient of determination (R-squared), standardized path coefficients (beta), t-statistics, p-values, and the standardized root mean square residual (SRMR). Hypothesis significance was evaluated through bootstrapping with 5,000 resamples. A path was considered statistically significant when $p < 0.05$ or the absolute t-statistic exceeded 1.96. An SRMR value below 0.08 was used as an indication of acceptable overall model fit. The indirect path from social capital to institutional performance through member participation was estimated to determine whether participation mediated the relationship.

RESULTS

Measurement Model Evaluation

The measurement model was first examined to determine whether the observed indicators represented social capital, member participation, and institutional performance reliably. All 17 indicators achieved loadings above 0.70. Loadings for social capital ranged from 0.791 to 0.888, those for member participation ranged from 0.745 to 0.892, and those for institutional performance ranged from 0.764 to 0.902. Table 1 presents the complete indicator loadings together with the construct-level reliability and convergent-validity statistics.

Table 1. Indicator loadings, reliability, and convergent validity of the measurement model

Construct	Indicator	Outer loading	Cronbach's alpha	Composite reliability	AVE
Social capital	MS1	0.852	0.912	0.931	0.712
	MS2	0.874			
	MS3	0.791			
	MS4	0.815			
	MS5	0.888			
	MS6	0.841			
Member participation	PA1	0.823	0.878	0.908	0.665

Construct	Indicator	Outer loading	Cronbach's alpha	Composite reliability	AVE
	PA2	0.745			
	PA3	0.892			
	PA4	0.811			
	PA5	0.864			
Institutional performance	KK1	0.835	0.921	0.938	0.718
	KK2	0.872			
	KK3	0.764			
	KK4	0.902			
	KK5	0.819			
	KK6	0.855			

Note: Loadings above 0.70, reliability values above 0.70, and AVE values above 0.50 meet the specified criteria.

Cronbach's alpha values were 0.912 for social capital, 0.878 for member participation, and 0.921 for institutional performance. Composite reliability values ranged from 0.908 to 0.938, while AVE values ranged from 0.665 to 0.718. Therefore, every construct exceeded the reliability threshold of 0.70 and the AVE threshold of 0.50. The results indicate that the items shared sufficient variance with their respective constructs and had adequate internal consistency. The measurement model was consequently retained for structural-model testing. These results also follow recommended practice for reporting and interpreting PLS-SEM measurement quality [12].

Figure 1. Measurement model and standardized indicator loadings estimated with PLS-SEM

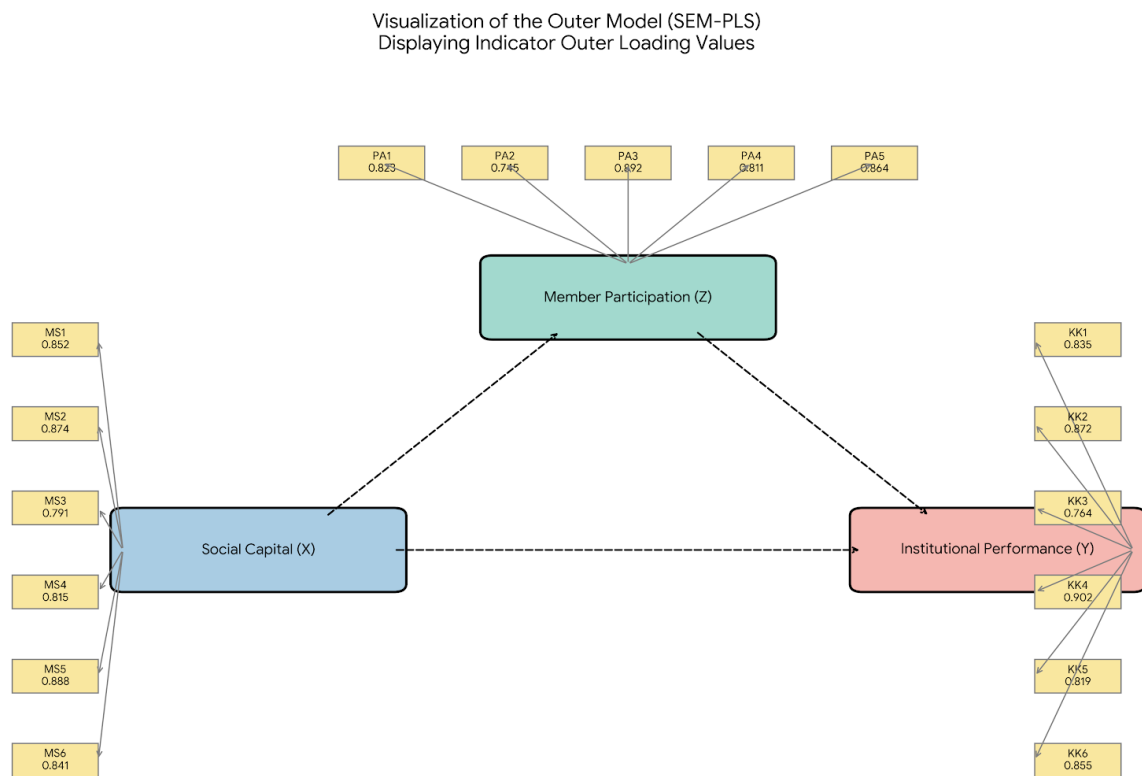


Figure 1 displays the estimated measurement model. The pattern of loadings confirms that each indicator contributes positively to its designated construct. Within social capital, communication (MS5 = 0.888) had the largest loading, while group norms (MS3 = 0.791) had the smallest. Expression of opinions (PA3 = 0.892) was the strongest participation indicator, whereas program involvement (PA2 = 0.745) was the weakest. Program sustainability (KK4 = 0.902) had the largest loading for institutional performance, indicating its prominent contribution to the construct.

Structural Model Assessment

After the adequacy of the measurement model had been established, the hypothesized relationships were tested. The model explained 69.0% of the variance in institutional performance (R -squared = 0.690), indicating substantial predictive power for the focal organizational outcome. Table 2 reports the standardized path coefficients, bootstrapped t -statistics, p -values, and decisions for the four hypotheses.

Table 2. Structural path coefficients and hypothesis testing

Hypothesis	Structural path	Path coefficient (beta)	t-statistic	p-value	Decision
H1	Social capital -> Member participation	0.781	116.85	0.001	Supported
H2	Social capital -> Institutional performance	0.312	3.84	0.012	Supported
H3	Member participation -> Institutional performance	0.521	6.97	0.003	Supported
H4	Social capital -> Member participation -> Institutional performance	0.407	5.92	0.005	Supported

Note: Hypotheses were tested by bootstrapping with 5,000 resamples; significance was determined at $p < 0.05$.

All four hypotheses were supported at $p < 0.05$. Social capital had a strong positive effect on member participation (H1: $\beta = 0.781$, $t = 116.85$, $p = 0.001$), indicating that stronger trust, norms, networks, communication, and leadership were associated with greater member engagement. Social capital also had a positive direct effect on institutional performance (H2: $\beta = 0.312$, $t = 3.84$, $p = 0.012$). Member participation had a larger positive direct effect on institutional performance (H3: $\beta = 0.521$, $t = 6.97$, $p = 0.003$).

The indirect path from social capital through member participation to institutional performance was positive and significant (H4: $\beta = 0.407$, $t = 5.92$, $p = 0.005$). Because the direct path from social capital to institutional performance remained significant when participation was included, the mediation was partial rather than complete. The pattern shows that social capital contributes to performance in two ways: directly through stronger internal relationships and indirectly by encouraging members to translate those relationships into active organizational behavior. The size of the indirect effect further indicates that participation is an important operational channel linking social resources to institutional outcomes, consistent with cooperative evidence connecting social capital, participation, and performance [13].

DISCUSSION

The findings establish social capital as a central driver of participation and institutional performance among rice farmer groups in Ponorogo Regency. The strong path from social capital to participation supports the proposition that trust, reciprocity, communication, shared norms, networks, and leadership lower the social costs of collective action. When members believe that leaders and peers will act predictably and fairly, they are more willing to attend meetings, express views, contribute labor, and participate in decisions. This interpretation is consistent with wider evidence that social groups support sustainable agriculture by enabling cooperation, peer learning, and collective resource management [14]. It also explains why two farmer groups with similar material resources may produce different institutional outcomes: the difference can lie in whether members possess the relationships needed to use those resources collectively. The magnitude of the social-capital-to-participation coefficient also shows that relational conditions were closely connected to day-to-day engagement in the sampled groups, although its cross-sectional interpretation remains associative rather than causal.

The measurement results provide additional insight into this mechanism. Communication was the strongest indicator of social capital, expression of opinions was the strongest indicator of participation, and program sustainability was the strongest indicator of performance. Together, these results suggest a sequence in which effective communication enables members to voice perspectives, and such involvement helps sustain programs beyond short-term external assistance. The acceptable reliability and validity statistics strengthen confidence in this interpretation and conform to current PLS-SEM reporting guidance [15]. The finding does not imply that other dimensions are unimportant. Rather, trust, norms, networks, and leadership provide the setting in which communication and voice can influence organizational practice.

The significant indirect effect is the study's main theoretical contribution. Social capital was necessary but not sufficient for strong institutional performance; its effect increased when members converted relational assets into concrete participation. This pattern supports research showing that human and social capital are integral to rural institutional development [16] and that agricultural innovation systems depend on effective linkages among actors rather than the mere presence of organizations [17]. In Ponorogo, regular attendance, mutual aid, the expression of opinions, program involvement, and shared decisions are not secondary activities. They are the organizational processes through which social cohesion becomes effective service delivery, transparency, goal achievement, satisfaction, and program continuity.

The findings also have practical implications for extension and development policy. Farmer-group strengthening should not be

evaluated solely by the amount of machinery, seed, fertilizer, or financial assistance distributed. Studies of farmer-group empowerment have noted that formal institutional establishment without sustained facilitation can leave groups weak [2,18]. Extension programs should therefore create regular forums for inclusive dialogue, establish transparent decision rules, rotate responsibilities, strengthen leadership accountability, and connect groups to broader learning and market networks. Such measures can help groups move from passive aid receipt to collaborative problem solving. Evidence that trust supports coordinated action and resilience [19] and that cooperatives can stimulate collective action within socio-ecological systems [20] reinforces this policy direction.

This study has several limitations. Its cross-sectional design identifies statistically supported relationships but cannot fully establish changes over time. The sample was limited to 80 active rice farmers in three sub-districts, so the magnitude of the relationships should not be generalized automatically to other commodities or regions. The model emphasized internal social and participatory factors and did not include market access, group age, extension intensity, leadership tenure, or the value of external assistance. Future research should use larger multi-region samples, longitudinal designs, and comparisons among active and inactive groups. Mixed-method research could also clarify how specific leadership and communication practices create or erode trust. Despite these limitations, the model offers a coherent explanation of how member participation translates social capital into measurable institutional performance.

CONCLUSION

Institutional performance among rice farmer groups in Ponorogo Regency was strongly associated with the quality of their internal social relationships and with members' active involvement. Social capital positively influenced member participation and institutional performance, while participation also had a positive effect on performance. The significant indirect effect confirmed that member participation partially mediated the relationship between social capital and institutional performance. Thus, trust, communication, shared norms, networks, cooperation, and leadership generate stronger institutional outcomes when they are translated into meeting attendance, program involvement, mutual aid, voice, and shared decision-making. Agricultural extension agencies and farmer-group leaders should complement material support with transparent leadership, inclusive communication, and sustained opportunities for collective action. These measures can strengthen organizational effectiveness, member services, program continuity, satisfaction, and goal achievement.

AUTHOR CONTRIBUTIONS

Putri Nurmalita Sari: conceptualization, methodology, investigation, data curation, and writing - original draft. Akbar Hariputra and Dwi Laila Maulida: formal analysis, supervision, and writing - review and editing. All authors read and approved the final manuscript.

FUNDING

This research received no external funding.

COMPETING INTERESTS

The authors declare that they have no competing interests.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES

During manuscript preparation, the authors used AI-assisted language tools to support English translation, language editing, and document formatting. The authors reviewed and edited the resulting text and take full responsibility for the content of the publication.

ACKNOWLEDGMENT

The authors thank the Agribusiness Department, Faculty of Agriculture, Universitas Pembangunan Nasional "Veteran" Jawa Timur, for its academic support. They are grateful to the leaders and members of farmer groups in Babadan, Kauman, and Balong for their time and participation, and to the field enumerators and colleagues who provided technical assistance and constructive feedback during the study.

REFERENCES

- [1] Baga, L. M., Utami, A. D., & Wahyudi, A. F. (2023). Exploring the relation between farmer group membership and agricultural productivity: Evidence from Indonesian rice farming. *Agraris*, 9(1), 65-78. <https://doi.org/10.18196/agraris.v9i1.115>
- [2] Aminah, S., Sahab, A., & Roikan, R. (2024). Political economy of farmer group empowerment policy to support the achievement of SDGs. *Jurnal Sosiologi Dialektika*, 19(1), 23-38. <https://doi.org/10.20473/jsd.v19i1.2024.23-38>
- [3] Ma, W., Marini, M. A., & Rahut, D. B. (2023). Farmers' organizations and sustainable development: An introduction. *Annals of Public and Cooperative Economics*, 94(3), 683-700. <https://doi.org/10.1111/apce.12449>
- [4] Nugraha, A. T., Fikriyah, F., Hidayana, I. I., Najid, S. A., & Prayitno, G. (2023). The relationship between social capital, human capital, and the level of welfare of farmers in Ponorogo, Indonesia. *Khazanah Sosial*, 5(3), 453-467. <https://doi.org/10.15575/ks.v5i3.28736>
- [5] Ari, I. R. D., Prayitno, G., Fikriyah, F., Dinanti, D., Usman, F., Prasetyo, N. E., Nugraha, A. T., & Onishi, M. (2024). Reciprocity and social capital for sustainable rural development. *Societies*, 14(2), 14. <https://doi.org/10.3390/soc14020014>
- [6] Khaile, F. T., Roman, N. V., October, K. R., van Staden, M., & Balogun, T. V. (2022). Perceptions of trust in the context of social cohesion in selected rural communities of South Africa. *Social Sciences*, 11(8), 359. <https://doi.org/10.3390/socsci11080359>
- [7] Cao, Q., Chen, C. F., Hu, H. L., & Hsiao, Y. C. (2025). Social capital and job performance: A moderated mediation model of organizational citizenship behaviors and psychological capital. *Behavioral Sciences*, 15(6), 714. <https://doi.org/10.3390/bs15060714>
- [8] Zhang, S., Madni, G. R., & Yasin, I. (2022). Exploring the mutual nexus of social capital, social innovations and organizational performance. *Sustainability*, 14(19), 11858. <https://doi.org/10.3390/su141911858>
- [9] Sarstedt, M., Hair, J. F., Nitzl, C., Ringle, C. M., & Howard, M. C. (2020). Beyond a tandem analysis of SEM and PROCESS: Use of PLS-SEM for mediation analyses. *International Journal of Market Research*, 62(3), 288-299. <https://doi.org/10.1177/1470785320915686>
- [10] Mamo, Y. A. (2021). Challenges of agricultural cooperatives and their impact on profitability of potato growers in Eastern Ethiopia. *Review of Agricultural and Applied Economics*, 24(2), 62-77. <https://doi.org/10.15414/raae.2021.24.02.62-77>
- [11] Mohd Dzin, N. H., & Lay, Y. F. (2021). Validity and reliability of adapted self-efficacy scales in Malaysian context using PLS-SEM approach. *Education Sciences*, 11(11), 676. <https://doi.org/10.3390/educsci11110676>
- [12] Guenther, P., Guenther, M., Ringle, C. M., Zaefarian, G., & Cartwright, S. (2023). Improving PLS-SEM use for business marketing research. *Industrial Marketing Management*, 111, 127-142. <https://doi.org/10.1016/j.indmarman.2023.03.010>
- [13] Liang, Q., Huang, Z., Lu, H., & Wang, X. (2015). Social capital, member participation, and cooperative performance: Evidence from China's Zhejiang. *International Food and Agribusiness Management Review*, 18(1), 1-30. <https://doi.org/10.22004/ag.econ.197768>
- [14] Pretty, J., Attwood, S., Bawden, R., van den Berg, H., Bharucha, Z. P., Dixon, J., et al. (2020). Assessment of the growth in social groups for sustainable agriculture and land management. *Global Sustainability*, 3. <https://doi.org/10.1017/sus.2020.19>
- [15] Becker, J. M., Cheah, J. H., Gholamzade, R., Ringle, C. M., & Sarstedt, M. (2023). PLS-SEM's most wanted guidance. *International Journal of Contemporary Hospitality Management*, 35(1), 321-346. <https://doi.org/10.1108/IJCHM-04-2022-0474>
- [16] Oktarina, S., Zainal, A. G., Kuswanti, A., & Purwanto, E. (2022). The role of human capital and social capital in agricultural institutional development in rural areas. *Agricultural Social Economic Journal*, 22(2), 77-85. <https://doi.org/10.21776/ub.agrise.2022.022.2.1>
- [17] Kamara, L. I., Lalani, B., & Dorward, P. (2023). Towards agricultural innovation systems: Actors, roles, linkages and constraints in the system of rice intensification in Sierra Leone. *Scientific African*, 19, e01576. <https://doi.org/10.1016/j.sciaf.2023.e01576>
- [18] Cahyanto, G. D., Azizi, U. H. K., Naat, A. A., Putri, W. S. H., Anantanyu, S., & Murdhianto, J. (2025). The role of the agricultural extension center in supporting institutional development in Jenawi District, Karanganyar Regency. *Progress in Social Development*, 6(2), 324-332. <https://doi.org/10.30872/psd.v6i2.131>
- [19] Yang, J., Liu, Y., & Kholaif, M. M. N. H. K. (2023). Trust relationship with suppliers, collaborative action, and manufacturer resilience in the COVID-19 crisis. *Behavioral Sciences*, 13(1), 33. <https://doi.org/10.3390/bs13010033>
- [20] Zhu, X., & Wang, G. (2024). Impact of agricultural cooperatives on farmers' collective action: A study based on the socio-ecological system framework. *Agriculture*, 14(1), 96. <https://doi.org/10.3390/agriculture14010096>