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RESILIENCE ACTIONS OF LOWLAND RICE FARMERS IN RESPONSE TO CLIMATE CHANGE: A STUDY OF RICE FARMING IN THE URBAN AREA OF BENGKULU

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ABSTRACT

Lowland rice is highly dependent on climate, particularly water supply, as 45.7 percent of rice fields in Indonesia are rain-fed, making climate change a significant concern for rice farmers. The purpose of this study is to explore farmers' capital and resilience measures, as well as the correlation between capital ownership and resilience measures. This study uses a case study of rice farmers in Bengkulu City who have experienced and been affected by climate change. Data collection was conducted in September 2025 using a descriptive quantitative analysis approach. Interviews were conducted with 86 respondent farmers using the Slovin method and simple random sampling. The technique for determining livelihood capital mastery and resilience levels involved a scoring method using a Likert-scale instrument, a Bloom's cut-off, and Spearman's correlation to assess the relationship between livelihood capital and resilience. The results showed that buffer capacity resilience measures, namely providing food reserves and savings, as well as crop diversification, fell into the low category. Capacity of Learning, namely extension and training activities, was a form of resilience action with the highest score. Physical capital, namely road access and buildings, is the capital component with the highest score. In contrast, natural capital the capital component with the lowest score. The results of the correlation analysis show that all livelihood capital (social, physical, natural resources, human resources, financial) are positively and significantly related to the three resilience capacities; however, human resource capital has the strongest correlation with farmers' resilience actions in facing climate change.

INTRODUCTION

Climate change is a crucial issue, a concern, and a challenge for all sectors. The impacts of climate change are felt not only at the macro level but also at the micro level, affecting households and livelihoods (Aldi et al., 2021a). In the agricultural sector, climate change alters planting patterns and timing, harvest timing, and production volumes. This ultimately leads to production uncertainty, pest and disease outbreaks, and drought (Sumastuti & Pradono, 2016). Climate change, resulting from rising temperatures and rainfall, has significantly impacted agricultural land area, particularly yields, production, consumption, prices, and trade of key crop and livestock commodities (Cui, 2020), as well as its implications for food security (Wiebe et al., 2019). The immediate and long-term impacts of climate change lead to a decline in farmer welfare and poverty (Maganga et al., 2021).

Wetland rice crops, which largely require an adequate water supply, are under threat, as 45.7 percent of Indonesia's total rice fields are still rain-fed. Various constraints on rain-fed rice fields include low soil fertility, uncertain water availability, and susceptibility to drought (Wihardjaka et al., 2020). These conditions affect farming households, both in terms of income and in meeting household needs.

Climate change, in the form of increasing temperatures and rainfall, poses significant challenges to rice productivity (Firdaus et al., 2020), emphasizing the need for farmers' adaptive capacity. Furthermore, a study of traditional irrigated rice farming systems in Sri Lanka concluded that climate change shifts rice land suitability by up to 96 percent (Ratnayake et al., 2023), thus impacting productivity. Climate variability is a crucial factor in productivity, and interactions between temperature and rainfall can have detrimental effects. At the same time, farmers' adaptive capacity (education and access to extension services) also influences rice production (Pickson et al., 2022).

Farmers' responses to these conditions also vary. A study conducted in the Lake Toba area, Ismail et al., (2025) found that farmers tended to shift from traditional planting methods to practical strategies such as using water pumps in the fields, switching to climate-resistant seed varieties, and joining farmer groups. Furthermore, other measures, such as adjusting planting times, regulating chemical pesticide use, and managing land water, are still preferred by farmers (Arifah et al., 2022).

Bengkulu City, the capital of Bengkulu Province, is committed to continuously boosting rice production. This is due to the significant decline in harvested area, productivity, and rice production over the past five years (2020-2024), as illustrated in Figure 1 (BPS, 2024).

The decrease in production of 2,551.84 tons was due to a significant decline in harvested area from 461.66 hectares in 2020 to 2024. This condition was influenced by several

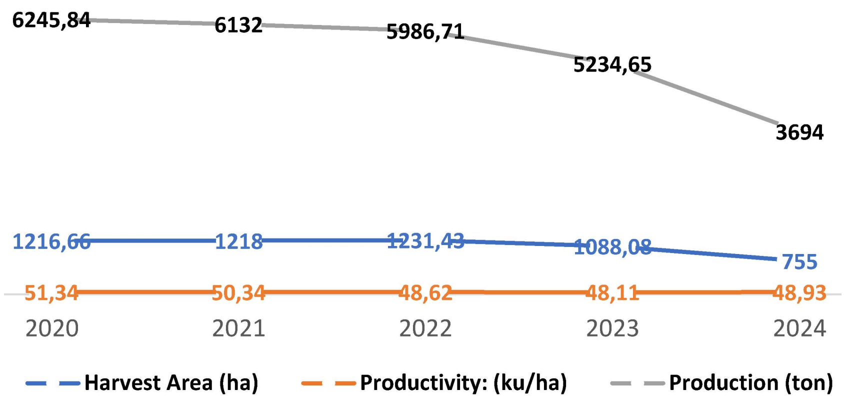

Figure 1. Harvested Area, Productivity and Rice Production in Bengkulu City (Source: Central Statistics Agency of Bengkulu City, 2024)

factors, namely low innovation adoption among farmers, land conversion to the industrial sector, and extreme climate change (Rozci, 2024; Serawai et al., 2025). The impact of climate change, resulting in decreased rice production in Bengkulu City, has caused uncertainty in the livelihoods of farming households. This result also has implications for the welfare of farming households, as Komalasari et al. (2024) state that they have the highest food insufficiency (PoU) rate of 11.16. The PoU value is an indicator used to assess the number of households experiencing hunger or chronic malnutrition. Meeting these needs requires a strategy for combining existing capital, including natural, physical, human, financial, and social capital, to maximize livelihoods. This is a resilience approach implemented by farmers to ensure household income is met (Ellis, 2000).

Resilience is the capacity to handle disruptions, such as climate change, fluctuations in agricultural prices, or natural disasters, and to adjust and reorganize life and resources to survive and operate effectively (Marseva et al., 2016). Farmers' resilience to climate change refers to their ability to adapt, recover, and succeed despite risks like drought, flooding, and increased weather variability. Farmers' resilience is closely tied to their capacity to adapt; higher resilience results in better adaptation, and vice versa. Additionally, various adaptation strategies are put into action because climate change impacts not only human health and the environment but also household behavior and livelihoods (Ali et al., 2021).

Climate change research has been a focus, mainly related to the environment, disease, and agriculture associated with cultivation and production. However, farmers' resilience to extreme climate change is still rarely studied. Several studies conducted in Indonesia show that climate change can decrease production by up to 12 percent (Sekaranom et al., 2021a), reduce agricultural added value, and affect crop yields (Aris Prasetya et al., 2025). Most farmers recognize that changes in rainfall and temperature impact their farming operations, but only 13 percent attribute these changes to human activity, preferring to see them as natural phenomena (Sekaranom et al., 2021b).

Based on this background, there is a need to understand how rice farmers demonstrate resilience in facing climate change, so that by understanding these conditions, strategic problem-solving efforts can be formulated as recommendations for increasing the resilience of rice farmers' household livelihoods and contributing to national food security.

METHODS

Study Area

The research locations were selected purposively in Singaran Pati and Muara Bangkahulu Districts in Bengkulu City. These two districts contribute 88.78 percent of total rice production in Bengkulu City. This area also experienced a severe drought in 2023, resulting in 363 hectares of rice fields being rendered unproductive (Mayasari, 2023). The specific research locations are shown in Figure 2.

Sampling Method

The number of respondents in this study was determined using a simple random sampling technique supported by the Slovin formula. The calculation results obtained the following sample size.

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{618}{1 + Ne^2}$$

$$n = \frac{618}{1 + 618.0{,}01}$$

$$n = \frac{618}{1 + 6{,}18}$$

$$n = \frac{618}{7{,}18} = 86$$

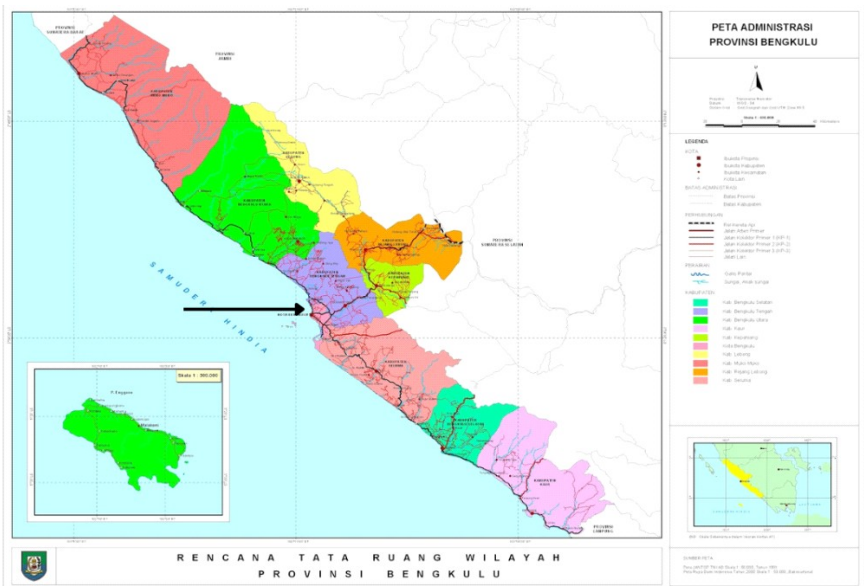

Figure 2. Study Area of Bengkulu

The number of research samples was 86 respondents consisting of 40 respondents in Singaran Pati and 46 respondents in Muara Bangkahulu, Bengkulu City.

This study collected primary data through structured interviews with selected respondents. The interviews were conducted using a questionnaire that included questions about the value components of the capital used by farmers and identified their resilience measures. In the final stage, to confirm the theoretically developed resilience action model based on field findings, a Focus Group Discussion was conducted. This simulation aimed to refine the model that will be proposed as the final research outcome.

Methods of Analysis

To address farmer resilience measures, an analysis of livelihood capital and resilience was used, adapted from Speranza (2013). The components that constitute resilience criteria are buffer capacity, self-organization, and learning capacity. First, each indicator is evaluated and assigned a score using a Likert scale, where respondents indicate their level of agreement or presence for each indicator. Then, the scores for all indicators are totaled using the equation described by Puspitawati & Herawati (2013).

$$Y = \left(\frac{\text{X} - \text{Min Value n}}{\text{Max Value} - \text{Min Value}}\right) x\ 100\%$$

Notes :

Y = Index value in percent

X = The average Likert scale of household resilience measures

The results of the index (Y) calculation are categorized using Bloom's cut-off, where values < 60 percent are classified as low, values ranging from 60-80 percent are classified as medium, and values > 80 percent are classified as high (Aldi et al., 2021b). The capital measurement instruments and resilience measures are presented in Table 1.

Correlation analysis was conducted between farmers' livelihood capital and their resilience measures. This analysis was conducted to provide an overview of the relationship between livelihood capital and resilience measures undertaken by rice farmers in Bengkulu City. All Research variables were tested for data quality through validity and reliability tests. Furthermore, data processing and analysis were carried out using SPSS version 24.0 for Windows software. To determine the relationship between marketing mix elements and purchasing decisions, the Spearman's rank correlation test was used. Interpretation of correlation values refers to Schober et al., (2018), with the interpretation values presented in Table 2.

Table 1. Research Instruments

Aspects measured	Indicators	Assessment Components	Measurement Techniques
Livelihood capital	Availability of access and ease of access in utilizing public and private capital	a. Physical capital (roads, buildings, agricultural products (stocks), fisheries, livestock) b. Natural capital (coastal areas, gardens, rice fields, fish ponds) c. Social capital (income groups, household relationships) d. Human capital (training, education level) e. Financial capital (access to credit, savings, legal assets)	Likert Scale (1-5)
Resilience Action (Ability to maintain and improve household resilience)	1. Buffer Capacity (the ability to maintain basic functions while tolerating disturbances and adapting; Ifejika Speranza, 2013)	a. Having food reserves and savings (Natural and Financial Capital) b. Using rice varieties and technology (Ability to adopt) c. Diversifying crops (Skill)	Likert scale (1-5)
	2. Self-Organization (farmers' ability to independently shape, change, and manage in response to pressures or opportunities; Fischer et al., 2021)	a. Joining farmer groups and community-based activities (Cooperation and Network) b. Actively participating in group activities (Reciprocity)	Likert scale (1-5)
	3. Learning Capacity (farmers' ability to generate, absorb, share, and transform knowledge into behavioral changes to address climate change; Slijper et al., 2022)	a. Participate in agricultural training and extension (Participation to access information) b. Willing to discuss and learn to improve the next planting season (Commitment to Learning) c. Willing to adopt agricultural technology (Experimentation)	Likert scale (1-5)

Tabel 2. Interpretation of Correlation Values

Correlation Coefficient	Interpretation
0.00-0.10	Very Weak Correlation
0.10-0.39	Weak Correlation
0.40-0.69	Moderate Correlation
0.70-0.89	Strong Correlation
0.90-1.00	Very Strong Correlation

RESULT AND DISCUSSIONS

Respondent Characteristics

Figure 1 shows the characteristics of respondents at two research locations, which include six components: age, last education, farming experience, number of family members, land area owned, and land ownership status.

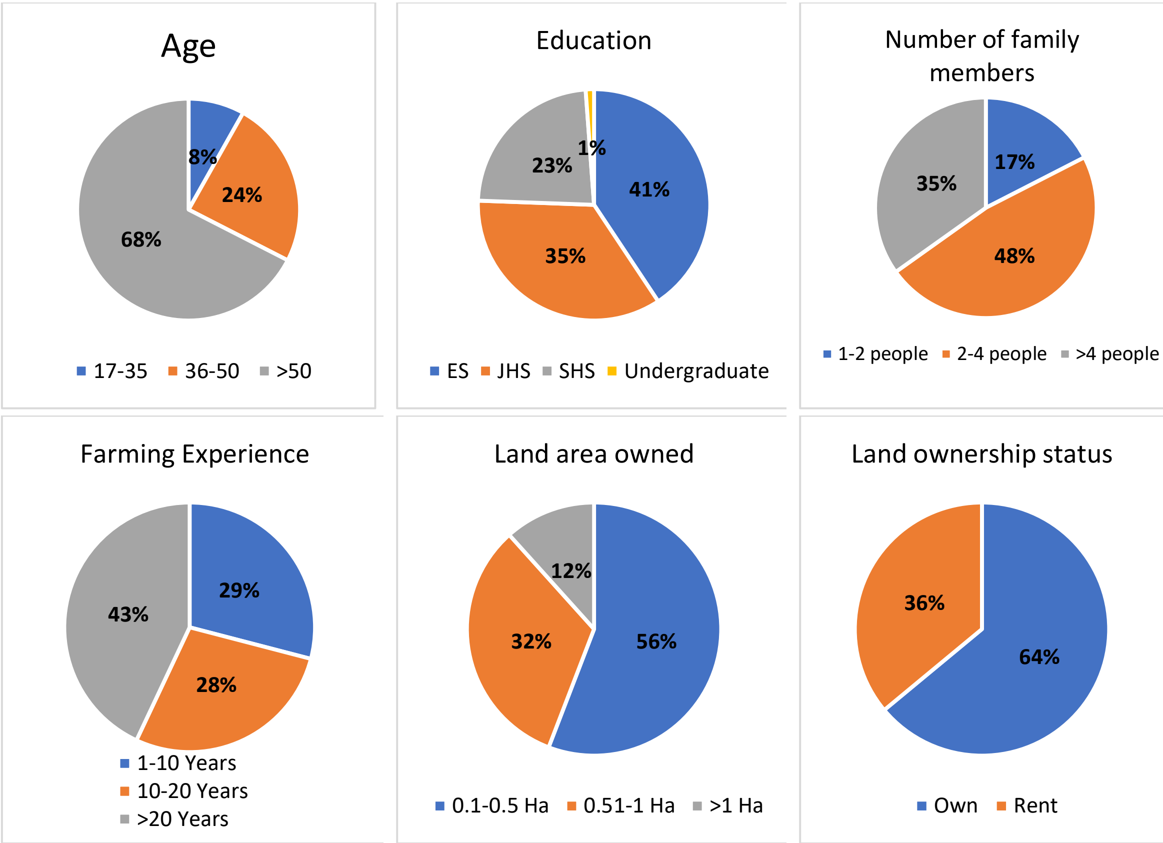

Figure 3. Respondent Characteritics

Most respondents at the research site were over 50 years old and considered quite elderly. A meta-analysis revealed that younger farmers tend to be more adaptable and adopt innovations, including both technological advancements and those addressing climate change, whereas older farmers tend to hold back and adopt traditional farming patterns (Arslan et al., 2022). This creates vulnerability, making farmers less resilient to climate change, as seen in the 2023 drought in Bengkulu City (Mayasari, 2023). Therefore, efforts are needed to regenerate farmers in urban areas to maintain land and rice production in Bengkulu City.

In terms of education, the majority of farmers in Bengkulu City have completed at least six years of formal education, typically up to the elementary school level. Studies show that formal education provides insight and a tendency to be open to participating in extension activities, thereby increasing the opportunity to adopt innovations. Longer education also fosters responsiveness to changes in the environment, including climate change (Arslan et al., 2022).

Households are predominantly comprised of two to four members, and the number of members influences livelihood strategies and labor allocation. The greater the number of household members, the more informed decisions can be made about managing existing resources and continuing to work in both on-farm and off farm sectors. Furthermore, farming experience indicates a relatively mature environment. The majority of farmers have been farming rice for more than 20 years, indicating that their cultivation is technically not hindered. However, technological advances and extreme climate change require farmers to adapt better to ensure continued production and household well-being. Research findings indicate that 56 percent of farmers in Bengkulu City own land ranging from 0.1 to 0.5 hectares, which is consistent with the overall condition of farmers in Indonesia (Suhartono et al., 2023). This situation correlates with meeting household needs. Farmers with small land areas often combine crops with commercial enterprises to meet their food needs (Duffy et al., 2021).

In general, the characteristics of farmer respondents in agricultural areas are not significantly different from those of most farmers in Indonesia. Small landholdings, older age, extensive farming experience, and a large number of dependents contribute to why farmers in Indonesia often live below the poverty line. A study of Moeis et al., (2020) showed that 49.38 percent of poor Indonesian households are from the primary sector, with a poverty rate of 14.35 percent among agricultural households the highest among sectors. Understanding these conditions emphasizes the importance of efforts to assess farmers' capabilities and resilience to build a resilient environment that helps farmers adapt to all types of changes.

Rice Farmers' Livelihood Capital in the Face of Climate Change

In the face of climate change, farmers have a range of livelihood assets, both public and private. Public livelihood assets are available not just to individual farmers but also to other farmers to support their living needs, while private livelihood assets are limited to individual farmers or specific communities (Aldi et al., 2021a). The results of the study analyzing rice farmers' livelihood assets in response to climate change are shown in Figure 4.

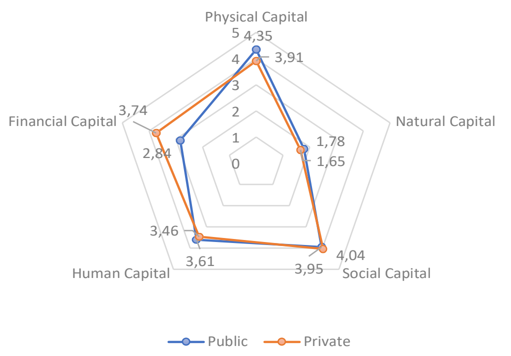

Figure 4. Farmers' livelihood capital in the face of climate change

Physical capital, both public and private, dominates farmers' ownership of capital. In this study, physical capital refers to access to resources such as roads, buildings, and agricultural products that support farming activities. This indicates that farmers encounter few obstacles when accessing agricultural infrastructure and selling their crops. The proximity of agricultural land in urban areas contributes to the relative ease of infrastructure access. Social capital, however, is a part of livelihood capital that affects farmers' ability to cope with climate change. This shows that social relationships and kinship among farmers are vital in managing various challenges.

The research findings show that rice farmers in Bengkulu City rely heavily on physical and social capital to maintain their household livelihoods amid climate change. The availability of public physical capital, such as road access, housing conditions, and transportation ownership, are factors that affect farmers' access to livelihood resources. Additionally, social capital like membership in farmer groups, strong social ties, and active participation in community meetings enhances farmers' role within the community. This demonstrates that there are no barriers preventing farmers from accessing economic resources. The study's results agree with findings Abdullah & Ridwan (2025), which indicated that physical and social capital are the key components that most strongly influence farmers' livelihoods. This suggests that access to natural resources, physical infrastructure, and robust social support are crucial for farmers' well-being.

Human capital is crucial for farmers. Access to education and training impacts their knowledge of climate change. Farmers who have easy access to and are sensitive to education and training will be more resilient than farmers who are not involved in education and training. Human capital, such as education level, access to training, and extension services, is crucial in encouraging farmers to improve their understanding of the farming business they run. Research findings Supatminingsih (2022) indicate that achieving superior agriculture requires human resources that foster agricultural excellence in Indonesia. The quality of human resources is also a determining factor in the success of agricultural development. In addition, human capital practices have been proven to have an impact on farmer welfare as assessed by increased production and income (Fahrullah et al., 2024; Kharisma & Nababan, 2019).

Natural capital is the lowest-value capital component, driven by limited natural capital in the form of rice paddy fields. In terms of land area, 56 percen t of farmers in Bengkulu City own land ranging from 0.1 to 0.5 hectares, the only natural resource most farmers possess. Access to coastal and river areas within public natural resource capital is also low, reflecting a lack of access and skills in utilizing existing public natural resources. The condition of natural resource capital indicates that farmers face obstacles and inability to access other natural resource capital. The lack of diversification in the research location is due to various factors such as farmer education, active membership in farmer groups, and the number of household members. These results align with research findings (Wirakusuma, 2020), which show that income diversification is influenced by the number of household members, land area, obstacles to obtaining agricultural inputs, the education of the head of the household, and supporting activities such as extension services and farmer group membership.

Private financial capital dominates over public financial capital, which includes savings and legal assets. This indicates that farmers rely on savings and assets to cope with climate change. Furthermore, farmers' ability to access loans from financial institutions such as banks and cooperatives is relatively low, indicating that the ratio of income received and asset ownership is insufficient to meet legal lending requirements. Private financial capital is closely related to farm income; the higher the private financial capital, the higher the farmer's income. This condition is influenced by the farmer's obligation to repay their debts. When accessing loans, farmers are bound by the obligation to repay the loan, which will affect their income (Bakari & Lusiana, 2025).

Rice Farmers' Resilience in the Face of Climate Change

Farmer resilience actions are defined as efforts to adapt to the climate to reduce negative impacts and capitalize on opportunities (Mensah et al., 2026).

Accordingg Table 3, resilience measures with the buffer capacity indicator have a percentage of 55.7 percent, or in low category, and the highest value for food reserves and savings. The assessment components with significant contributions are farmers' savings reserves and their use of technology to address climate change. The results indicate that farmers rely on savings and food reserves to cope with climate change. Crop diversification is not an option for farmers in response to climate change due to land conditions and a lack of understanding of other crops. Although research Ifejika (2013) shows that buffer capacity through diversification, soil protection, and crop intensification practices

Table 3. Buffer capacity resilience action values

Indicator	Assessment Components	Value (%)	Category
Buffer Capacity	Have food reserves and savings (Natural and Financial Capital)	74.6	Medium
	Using rice varieties and technology (Ability to adopt)	59.9	Low
	Diversifying crops (Skill)	32.7	Low
	Average	**55.7**	**Low**

can increase farmer productivity and income, this is not reflected in current practices due to differences in farmers' socioeconomic factors. Furthermore, this condition requires specific follow-up, as buffer capacity is a key instrument in mitigating and adapting to climate change (Hessen & Vandvik, 2022).

Table 4 shows that resilience measures, with the self-organization indicator, are in the moderate category. This indicator shows that farmers recognize that joining groups and participating in community-based activities will improve their understanding of climate change. Networking within a group is expected to facilitate easier understanding of agricultural information, including climate change, among rice farmers in Bengkulu City. By joining a farmer group, farmers can share and access information related to their farming operations. Farmer groups, as a forum for learning and information sharing, have an impact on improving social status and farm productivity (Eda et al., 2023) and (Hidayat et al., 2022).

Table 5 shows that resilience measures, including the capacity of learning indicator, are in the moderate category, but this indicator is the highest among the indicators. These results indicate that farmers are open and receptive to information that helps improve their own capacity. Openness to information relevant to farming impacts decisions to adopt agricultural technologies, thus effectively managing climate change.

The analysis of resilience measures, as presented in Tables 2, 3, and 4, shows that the resilience measure in the capacity of learning aspect has the highest analysis value at 71.9 percent, which falls within the moderate category. The main assessment

Table 4. Self Organization resilience action values

Indicator	Assessment Components	Value (%)	Category
Self Organization	Joining farmer groups and community based activities (Cooperation and Network)	71.5	Medium
	Actively involved in group activities (Reciprocity)	56.7	Low
	Average	**64.1**	**Medium**

Table 5. Value of resilience action capacity of learning

Indicator	Assessment Components	Value (%)	Category
Capacity of Learning	Participation in agricultural training and extension (Participation to access information)	62.4	Medium
	Willing to discuss and learn to improve the next planting season (Commitment to Learning)	78.8	Medium
	Want to adopt agricultural technology (Experimentation)	74.6	Medium
	Average	**71.9**	Medium

components in this category include farmer participation in agricultural training and extension (participation to access information) with a value of 62.4 percent (moderate category), commitment to discussion and learning to improve the next planting season (commitment to learning) at 78.8 percent (moderate category), and readiness to adopt agricultural technology (experimentation) with a value of 74.6 percent (moderate category). Overall, these results indicate that farmers have a moderate level of learning capacity to address climate change, although there is room for improvement through greater access to information, innovation and cultivation technology. These results align with findings by Samantha et al., (2025), which showed that the adoption of cultivation technology has a positive effect on agricultural success. Cultivation technology directly contributes 10.2 percent to agricultural performance.

Learning capacity will impact farmers' understanding and sensitivity to technology adoption. A study of Thein et al., (2025) highlighted that limited access to information on smart agricultural practices will impact climate change resilience. Therefore, adaptive capacity through education and training is crucial for mitigating the impacts of climate change on livelihoods.

Overall, the Research findings indicate that the roles of farmer groups and the learning process are the most crucial factors for farmers in addressing climate change. Therefore, increased training and learning sessions are needed to build knowledge that can enhance farmers' ability to manage the impacts of climate change. Furthermore, buffering capacity requires serious attention, given that understanding land use diversification, livelihood diversity, and technology adoption are other factors that can mitigate the impacts of climate change.

Correlation between Livelihood Capital and Farmers' Resilience Measures

A correlation test was conducted to assess the relationship between livelihood capital and farmer resilience measures. Before the analysis, the research variables underwent validity and reliability testing. Validity testing ensured that the questionnaire items accurately represented the concepts being studied, while reliability testing verified the stability of the measurement results. Both types of testing are essential prerequisites for producing credible and scientifically sound findings (Susanto et al., 2024). The results of the validity and reliability tests are presented in Table 6.

The validity test results for the livelihood capital instrument indicate that all statements are valid. The calculated r-values range from 0.439 to 0.889, all exceeding the table r-value of 0.212 at the 5 percent significance level. This finding demonstrates that the instrument is highly accurate in measuring the dimensions of physical, natural, social, human, and financial capital, particularly in the context of farmer resilience measures related to climate change.

Table 6. Validity Test

Questions	r-values	r table (α 5%)	Criteria
F.1	0.626**	0.212	Valid
F.2	0.548**	0.212	Valid
F.3	0.457**	0.212	Valid
F.4	0.706**	0.212	Valid
F.5	0.439**	0.212	Valid
F.6	0.675**	0.212	Valid
A.1	0.788**	0.212	Valid
A.2	0.778**	0.212	Valid
A.3	0.812**	0.212	Valid
A.4	0.697**	0.212	Valid
S.1	0.790**	0.212	Valid
S.2	0.648**	0.212	Valid
S.3	0.530**	0.212	Valid
S.4	0.805**	0.212	Valid
M.1	0.847**	0.212	Valid
M.2	0.613**	0.212	Valid
M.3	0.848**	0.212	Valid
M.4	0.889**	0.212	Valid
P.1	0.864**	0.212	Valid
P.2	0.771**	0.212	Valid
P.3	0.825**	0.212	Valid
P.4	0.538**	0.212	Valid

Table 7. Reliability Test

Variables	Alpha (α)	Coefficient (r-table)	Criteria
Physical Capital	0.578	0.212	reliable
Natural Resources Capital	0.761	0.212	reliable
Social Capital	0.615	0.212	reliable
Human Resources Capital	0.811	0.212	reliable
Financial Capital	0.754	0.212	reliable

The results of the reliability tests indicated that all research variables physical, natural, social, human, and financial capital demonstrated reliability, with alpha (α) values exceeding the established comparison coefficient. Among these, human resources capital had the highest reliability at 0.811, suggesting that the indicators of human resources capital effectively explain the resilience of rice farmers to climate change.

Previous studies have shown that physical livelihood capital is the most crucial asset for farmers. This section will explore the relationship between this capital and resilience measures. The results of the correlation analysis are presented in Table 8.

The results of the correlation analysis indicate that all forms of livelihood capital—social, physical, natural, human, and financial—are positively and significantly associated with the three resilience capacities. This suggests that the greater the ownership of livelihood capital, the better rice-farming households in Bengkulu City can absorb, adapt to, and learn from the impacts of climate change.

Human capital exhibits the strongest correlation among all resilience measures. This finding implies that education, skills, and cognitive capacity play a crucial role in determining farmers' ability to adapt to and endure the increasing uncertainties posed by climate change. Supporting this notion, research by Black et al. (2021) highlights that human capital is an essential element of resilience and long-term development. The significance of human capital lies in its contribution to knowledge and adaptive capacity, which are fundamental to enhancing adaptability (Lyng et al., 2022).

Financial and physical capital show a moderate association with buffer capacity and self-organization, but only a weak connection with learning capacity. These findings highlight the importance of assets, infrastructure, savings, and access to credit for farmers in confronting the challenges posed by climate change. In contrast, self-organization is primarily influenced by human resources.

Social capital exhibits a moderate correlation with resilience indicators, particularly self-organization and buffer capacity. Relationships within households and collaboration among farmers are pivotal in encouraging participation in farmer groups, thereby strengthening the link between household capabilities and collective resilience. In line with this, recent reviews of community resilience (Hall et al., 2023; Ma et al., 2023) have identified social capital and local networks as fundamental elements essential for communities to withstand disasters, including those exacerbated by climate change.

Natural resource capital contributes to buffer capacity and self organization, with a moderate to weak correlation with capacity for learning. Existing resources, such as land ownership, access to coastal areas, fishponds, and gardens, form the basis for Material ownership and household food needs in the face of climate change. However, human resources remain crucial in relation to learning capacity. In line with these findings, research results of Asmamaw et al., (2019) show that access to and use of livelihood resources, such as land, livestock, and infrastructure, are determinants of the resilience of farming households.

CONCLUSIONS

Physical capital, including access to agricultural land, building and agricultural product stocks, is the livelihood capital that farmers in Bengkulu City rely on most in the face of climate change. Capacity for Learning is a form of resilience needed by rice farmers in Bengkulu City, indicating that farmers are willing and open to information related to self-development, are committed to learning, and are willing to access information. The results of the correlation analysis show that all livelihood capital (social, physical, natural resources, human resources, financial) are positively and significantly related to the three resilience capacities. However, human capital shows the strongest correlation across all resilience actions in addressing climate change. Based on these findings, the policy implications include increasing agricultural entrepreneurship training and extension programs for farmers and further enhancing climate change mitigation practices to equip rice farmers in urban area of Bengkulu City with the understanding and ability to manage the impacts of climate change.

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