Factors Influencing the Success of Sustainable Food Home Area (KRPL) in Tanjunganom Sub-District, East Java Province, Indonesia

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Abstract. Sustainable Food Home Area (KRPL) is a household-based food security initiative program. The use of yard land through KRPL activities has been carried out since 2010, encouraging the community to meet its food consumption needs independently and support household-scale food security. In some locations, KRPL activities have not reached their full potential, limiting the achievement of the program's objectives. This study was conducted to analyze the influence of internal and external factors on the success of KRPL activities among KRPL participants. Respondents were selected using a saturated sample, namely 22 women farmers who participated in KRPL activities in Getas Village, Tanjunganom District. Data analysis was conducted using ordinal logistic regression with the aid of SPSS 30 software. The study's results indicated that age in the range of \leq 40 years, a time expenditure of 1.5-3 hours/day, and POMOSDA support fall into the medium category, which affects the success of KRPL activities in Getas Village. Spending 1.5–3 hours/day is the factor with the strongest influence, with an opportunity ratio value of (-12,316) = 4,485. This research is beneficial for women farmers who participate in KRPL activities because women farmers can determine the success of KRPL activities, and further guidance needs to be provided to determine the sustainability and implementation of yard land management systems obtained from extension workers (the government) and POMOSDA (the private sector) to face food security challenges, especially at the household scale.

Keywords: agriculture extension services; home gardening; household food security; POMOSDA support; women farmers

INTRODUCTION

The state guarantees the availability of food for its citizens, which is a fundamental human right. In line with the increasing welfare of the population and the community, the demand for diverse and high-quality food products is also increasing (Bahar et al., 2020). On the other hand, the increase in demand for food per capita is also caused by an increase in a person's lifestyle (Bodirsky et al., 2015; Rozi et al., 2023). According to BPS data as of 2024, Indonesia's total 281,604,000 population is representing a 4.2% increase from the 2020 total population. In addition to the growing population, Indonesia's nominal expenditure per capita per month is expected to increase by 6.84% in 2023 compared to 2022. A large percentage of food spending came from the grain group 11.27%, fish 8.14% and vegetables 8.03% (Pusat Data dan Sistem Informasi Pertanian, 2024). This is in line with research conducted in the Democratic Republic of Congo

households rely heavily on vegetables to meet food needs, with an average consumption of six days per week (Manyong et al., 2024). Food demand that tends to increase faster than food availability raises concerns about the uncertainty of farmland in response to future increased demand for agricultural products (Bahar et al., 2020). The Food and Agriculture Organization (FAO) predicts that developing countries such as Indonesia will experience a 60% increase in food demand by 2030 and will double by 2050 (Rozi et al., 2023). Thus, the availability of food must be sufficient to meet or exceed the population's consumption needs to ensure community's nutritional However, the availability of food in an area or market does not necessarily guarantee access to food at the household level, because the availability of food at the household level is greatly influenced by the family's ability to obtain it, both in terms of physical aspects (reachability) and economic (purchasing power). Therefore, food security



plays a role in ensuring food availability at the individual level. Providing adequate, diverse, nutritious, and balanced food in terms of both quantity and quality is crucial for enhancing the quality of human resources and promoting country development (Rozi et al., 2023).

Facing the challenges of food security, many efforts have been made by the Indonesian government, the approach taken not only focuses on the availability of food stocks but also on strengthening the local food system, which is implemented through the Sustainable Food Home Area Program (KRPL) which has been running since 2010 as an effort to encourage food independence at the household level through the use of yard land. Home gardening techniques have regained attention as a means of food production and a way to increase household food security. Most countries practice home gardening, as seen in Cuba, where many households engage in home gardening due to a lack of food and agricultural inputs. Similarly, in Malaysia, Mexico, and India, home gardening is a common practice among households by growing vegetables, spices, and fruits to supplement their diet (Asante et al., 2024). Despite its potential, KRPL has not been fully optimized in some areas, which requires further analysis of success factors. In some areas, KRPL activities have not reached potential, limiting their full their effectiveness in achieving household food (Fitrianingrum, 2016; Kusnadi, security 2019; Kuspriyanto, 2020; Shadewa, 2024; Utari & Mayarni, 2023). Getas Village is one of the destination villages of the KRPL program in Tanjunganom District, which was chosen because it has high agricultural potential, a community with an active participation level in farming activities, and strong support from the government and the private sector in the development of sustainable agriculture. In addition, Getas Village also has prior experience in foodbased community empowerment programs, making it a strategic location for research. One of them, the Mekar Sari Farmer Women's

Group (KWT), is a recipient of the KRPL program and continues to actively carry out its activities. KWT Mekar Sari is considered successful in carrying out KRPL activities effectively, as evidenced by the skills of its members in utilizing yard land optimally by planting various types of plants, including food crops, horticulture, family medicinal plants (TOGA), and livestock. This is a skill that is indirectly assumed to be in line with the ability to meet household food needs. In addition, KWT Mekar Sari has also been able to process and sell its crops, as well as has its own marketing system that supports the sustainability of their KRPL activities. In addition, KWT Mekar Sari also won first place in the food and beautiful village competition, which was held from the subdistrict level to the district. This achievement enabled KWT Mekar Sari to represent the Nganjuk district in a similar competition at the provincial level, serving as proof of their success in implementing the KRPL program, which supports food self-sufficiency at the household level. Therefore, this study aims to analyze internal and external factors that affect the success of KRPL in Getas Village, East Java.

METHODS

This research employs an explanatory quantitative approach, utilizing a survey research design. The survey instrument, which is validated by experts and has undergone validity and reliability tests, is used for data collection. The responses of the research respondents were recorded by the interviewer for further analysis. This research was conducted in accordance with the ethical principles of social research. Prior to data collection, respondents were informed about the purpose of the study and asked to voluntarily participate. The data collected is kept confidential and used solely for academic purposes. Explanatory research seeks to explain causal relationships (causality research) or is called test research (verifiable research). This method aims to identify and confirm causal relationships

between variables and to determine/predict how one phenomenon will change or vary in relation to other variables. In addition, explanatory research aims to test a theory or hypothesis in order to strengthen or reject it, thereby refining existing knowledge (Sari et al., 2022).

 Table 1. Research Variables

Variables	Sub Variables	Operational Definition	Measurement Indicator
Success of KRPL (Y)	Skill enhancement	The ability of farm women to cultivate farming on yard land	 Cultivating the Processing products Marketing yard products
(1=Low, 2=Medium, 3=High)	Fulfillment of food needs	The ability of farm women to meet food needs through farming on yard land	 Availability Access Utilization of
	Development of economic activities productive	The ability of farm women to develop productive economic activities through farming on yard land	Measured based on the acquisition of family income through farming yard land
Age (X1) 1. Young (≤ 4 2. Mature (41 3. Old (≥ 55 y	- 54 years old)	The respondent's years of life were calculated from birth to the time of the study.	Age in years
2. Medium2,499,999/13. High (≥Rp	R 1,499,999/month), (IDR 1,500,000 - month), 2,500,000/month)	The amount/length respondent's family income	
Number of Fan 1. Few (1-3 Post) 2. Medium (4 3. Many (7-9)	-6 People)	The number of family members who are partially or fully supported by the respondent.	Number of family members in people
Time (Devotion 1. Little (<1.5	1 X4) hours/day) .5 - 3 hours/day)	The length of the KRPL activity process carried out by members of the farmer women's group, outside of their daily household activities.	Length of time used in KRPL activities in hours/day
Extension Performance (X5) (1=Low, 2=Medium,	Frequency of extension worker visits	Number of visits (face-to-face) with KWT Mekar Sari members conducted within a specified time period.	Number of face-to-face communications outside of regular group meetings Attendance at regular group meetings
3=High)	Service quality extension agent	Assessment of the KWT Mekar Sari members ' level of service received with the expected level of service	 Responsiveness Ease of communication Friendliness of officers
	Extension worker knowledge level	A person's cognitive construction of objects and experiences related to KRPL	 solving Frequency of idea submission skills Assessing profit and
POMOSDA	Education	Awareness-building activities, providing	Number of
(support	and training	information, teaching/training related to	2. Quality of training Level of
private sector)	S	farm management.	training suitability
(X6)	Assistance	The activity of providing advice,	1. Amount of mentoring
(1=Low,		consideration, input related to farm	2. level
2=Medium, 3=High)	north orahi-	management.	 resource contribution Partnership facilities
J IIIgii)	partnership	Activities provide cooperation related to farm management.	 Partnership facilities Partnership quality

To make measurements, each social phenomenon is described in several variables and indicators. Each specified variable is measured by assigning a different numerical symbol according to the category of information associated with the variable. By using these numerical symbols, quantitative mathematical calculation techniques can be employed to produce conclusions that are generally applicable to a specific parameter. There has been extensive research on the effectiveness of KRPL; however, no studies have examined the supporting factors of the private sector for the success of KRPL, specifically the At-Taqwa modern resource hut (POMOSDA).

1. Research location

This research will be conducted in Getas Village, Tanjunganom District, Nganjuk Regency, which was deliberately selected. The consideration of location selection stems from the fact that Getas Village is one of the destination villages of the KRPL program in Nganjuk Regency, which is the largest recipient of the KRPL program in East Java Province. Getas Village was chosen because high agricultural potential, has community with an active level participation in farming activities, and strong support from the government and the private sector in the development of sustainable agriculture. In addition, Getas Village also has previous experience in food-based community empowerment programs, so it is a strategic location to be researched.

2. Sampling method

The population in this study consisted of women farmers from KWT Mekar Sari in Getas Village, Tanjunganom Sub-district, Nganjuk Regency. The sampling technique uses saturated samples. According to Suryani et al. (2023), the saturated sample determination technique is a sampling method that utilizes all members of the population as a sample, resulting in a sample of 22 people. The variables in this study as shown in Table 1.

<u>Table 1</u> explains that this study identified six predictor variables related to age, family

income, number of family dependents, time devotion, extension worker performance, and POMOSDA support for one response variable, which is the success of KRPL.

3. Data analysis method

The data obtained were first analyzed descriptively and then tested using ordinal regression analysis to reveal simultaneous and partial effects on the response variable, namely the success of KRPL, which is a polycotomous variable. Data with polycotomous characteristics are categorical data with more than two categories; in this case, the response variable data (KRPL success) consists of three-level categories (low, medium, and high) (Habibi et al., 2023). The estimation method used to estimate parameters is maximum likelihood estimation (MLE), which maximizes the probability of observed data obtained using a likelihood function (Dewi & Budyanra, 2021)

Data analysis was conducted using SPSS 30 software. The stages of data analysis conducted in this study are explained as follows (Udil et al., 2023). First, read and process the data descriptively. Second, estimating the parameters of the ordinal logistic regression model. Third, conduct hypothesis testing simultaneously. Fourth, conduct partial hypothesis testing. Fifth, determining the ordinal logistic regression model. Sixth, interpreting the model and making decisions.

RESULTS AND DISCUSSION

1. Description of Research Results

The success of the sustainable food house area (KRPL) in Getas Village is presented in <u>Figure 1</u>. Based on these data, it can be seen that of the 22 women farmers who were the research sample, most were identified as having a high success rate in the KRPL category (59%), while members with medium and low levels in the KRPL category, respectively, were 32% and 9%.

The distribution of KRPL success achievements in Getas Village is based on factors such as age, family income, number

of family dependents, time expenditure, extension worker performance, and POMOSDA support, as shown in <u>Table 2</u>.

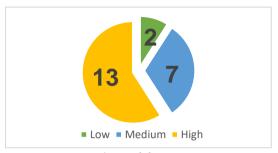


Figure 1. Number of farm women per KRPL success category

The data in <u>Table 2</u> shows the distribution of KRPL success in Getas Village based on internal and external factors of women farmers. From the data, it can be seen that the age of all women farmers is 22 people (100%), including in the young category (≤ 40 years). It can be seen that the percentage of women farmers with the success of KRPL in the high category is very dominant and larger than the low and middle categories.

The distribution of KRPL success achievements can also be seen based on family income. It is known that all women farmers, a total of 22 (100%) people, are included in the high category ≥ with a monthly income of Rp 2,500,000/month, and it can be seen that the percentage of women farmers with success in the high category is more dominant, with a percentage of 59%.

When viewed from the number of family dependents, it is known that out of 22 women farmers, 12 (55%) people are included in the middle category, which is having a total of 4-6 family dependents, and this is higher than the low category of 10 (45%) people. Of the 12 women farmers in the medium category, namely having a total of 4-6 family dependents, 2 (17%) people with KRPL success in the low category, 9 (75%) people with KRPL success in the middle category, and 9 (75%) people with KRPL success in the high category. Meanwhile, of the 10 women farmers in the low category, namely having a family dependency of 1-3 people, there is 1

(10%) person with the achievement of KRPL success in the low category, 5 (50%) people in the medium category, and 4 (40%) people in the high category.

The distribution of the success of KRPL when viewed based on time expenditure, it is known that out of 22 women farmers, 18 (82%) people are included in the medium category, namely having time to carry out KRPL activities as much as 1.5 - 3 hours/day and this value is higher than the time expenditure with a small category of 4 (18%) people. Of the 18 women farmers in the medium category, namely those with a time expenditure of 1.5-3 hours/day, there are 6 (33%) who have achieved KRPL success in the moderate category, and 12 (67%) who are in the high category. Meanwhile, 4 women farmers had a small category of time service, namely time service < 1.5 hours/day, including 2 (50%) people in the low category, 1 (25%) people in the medium category, and 1 (25%) people in the high category.

In addition, the data in Table 2 also shows that of the 22 women farmers analyzed, when viewed from the acquisition of the performance score of extension agents, as many as 15 (68%) of the women farmers are included in the medium category, namely getting a score between 18-27 and this is a higher value than the performance measure of extension agents with a low category, 1 (5%) people and a high category of 6 (27%) people. The acquisition value of the 15 women farmers in the medium category, namely with a score of 18-27, there were 2 (14%) people with KRPL success achievements in the low category, 5 (33%) people in the middle category, and 8 (53%) people in the high category. Meanwhile, there is 1 (5%) woman farmer in the low category, namely with a score of 9-17, and 1 (100%) of them achieve the KRPL success in the middle category. Meanwhile, 6 (27%) other women farmers obtained scores in the range of 28-36, who were included in the high category, including 1 (17%) person with KRPL success in the medium category, and 5 (83%) in the high category.

Table 2. Distribution of KRPL success in Getas Village

		Perce	Percentage per Factor and Category of KRPL Success								
Factor	Category	Tot	Total		Low		Medium		High		
		N	%	n	%	n	%	n	%		
	Young (≤ 40 years old)	22	100	2	9	7	32	13	59		
X1	Mature (41 - 54 years old)	0	0	0	0	0	0	0	0		
	Old (≥ 55 old years)	0	0	0	0	0	0	0	0		
	Low (≤ IDR 1,499,999/month)	0	0	0	0	0	0	0	0		
X2	Medium (IDR 1,500,000 - 2,499,999/month)	0	0	0	0	0	0	0	0		
	High (≥Rp 2,500,000/month)	22	100	2	9	7	32	13	59		
	Few (1-3 People)	10	45	1	10	5	50	4	40		
X3	Medium (4-6 People)	12	55	1	8	2	17	9	75		
	Many (7-9 People)	0	0	0	0	0	0	0	0		
	Little (<1.5 hours/day)	4	18	2	50	1	25	1	25		
X4	Medium (1.5 - 3 hours/day)	18	82	0	0	6	33	12	67		
	A lot (> 3 hours/day)	0	0	0	0	0	0	0	0		
	Low (9-17)	1	5	0	0	1	100	0	0		
X5	Medium (18-27)	15	68	2	14	5	33	8	53		
	High (28-36)	6	27	0	0	1	17	5	83		
	Low (8-15)	1	5	0	0	0	0	1	100		
X6	Medium (16-24)	12	55	1	8	7	58	4	34		
	High (25-32)	9	40	1	11	0	0	8	89		

If viewed based on POMOSDA's supporting factors, it is known that out of 22 women farmers, there are 12 (55%) people in the middle category, namely with a score of 16-24, 9 (40%) people in the high category with a score of 25-32, and 1 (5%) people in the low category with a score of 8-15. Of the 12 (55%) women farmers in the middle category, there is 1 (8%) person with the achievement of KRPL in the low category, 7 (58%) people in the middle category, and 4 (34%) people in the high category. Meanwhile, of the 9 (40%) women farmers in the high category, there is 1 (11%) who has achieved low KRPL success, and 8 (89%) who are in the high category. Meanwhile, 1 (5%) of the other women farmers are in the low category, with scores between 8 and 15, while the KRPL success is in the high category.

Based on the data above, it appears that, overall and when viewed by each factor, the percentage of women farmers with KRPL success in the high category is significantly

larger than in other categories. Furthermore, further analysis was conducted using ordinal logistic regression to determine the influence of each of these factors, either simultaneously or partially, on the success of KRPL in Getas Village. The results of data analysis using SPSS 30 are explained as follows.

2. Model fit test

Test the suitability of the ordinal logistic regression equation model with the Deviance test. In this case, the test is conducted to determine whether the ordinal logistic regression equation model obtained is appropriate or not, with the following hypothesis.

H₀: Model fit $(D < \chi 2, p - \text{value} > \alpha = 0.05)$ H₁: Model does not fit $(D > \chi 2, p - \text{value} < \alpha = 0.05)$

The results of the test ordinal logistic regression equation model fit using SPSS 30 as shown in Table 3.

Based on the results of <u>Table 3</u>, it can be seen that the acquisition of the value $D = 7.722 < \chi 2_{(0.05; 30)} = 43.773$ and the *value of P*

= 1.000 > 0.05. Thus, it can be concluded that the ordinal logistic regression model formed is suitable/suitable for the observation data or there is no significant difference between the observation results and the predicted possible model, so that the decision to accept H0 is obtained.

Table 3. Goodness of Fit Output

	Chi-Square	df	Sig.
Pearson	10.569	30	1.000
Deviance	7.722	30	1.000

Link function: Logit.

3. Concurrent test

A simultaneous test was conducted to assess the suitability of the model, comparing it with both the model including predictor variables and the model excluding predictor variables. The test is conducted using the *likelihood ratio-test* with the following hypothesis.

H₀:
$$\beta_1 = \beta_2 = 0$$
 ($G^2 < \chi^2_{table}$, p -value > $\alpha = 0.05$)

H₁: At least one $\beta_i \neq 0$, i = 1,2 ($G^2 > \chi^2_{table}$, $p-value < \alpha = 0.05$)

The test results using SPSS 30 as shown in Table 4.

Table 4. Model Fitting Information Output

	-2 Log	Chi-		
Model	Likelihood	Square	df	Sig.
Intercept	37.916			
Only				
Final	9.108	28.807	8	<,001

Link function: Logit.

 Table 5. Parameter Estimates Output

		Estimate	Std. Error	Wald	df	Sig.	Odd Ratio Exp (β)
Threshold	[Y=1]	-138.379	64.706	4.574	1	.032	
	[Y=2]	-131.515	62.344	4.450	1	.035	
Location	[X1]	-4.339	2.090	4.311	1	.038	0.013
	[X2]	1.012E-5	5.586E-6	3.285	1	.070	
	[X3]	2.572	4.443	.335	1	.563	
	[X4=1]	-12.316	5.829	4.463	1	.035	4.485
	[X4=2]	0^{a}			0		
	[X5=1]	16.502	11.127	2.199	1	.138	
	[X5=2]	-10.301	5.647	3.328	1	.068	
	[X5=3]	0^a			0		
	[X6=1]	4.823	.000		1		
	[X6=2]	-18.984	9.603	3.908	1	.048	5.704
	[X6=3]	0^{a}			0		

Link function: Logit.

Based on the results of the above test, it can be seen that there is a decrease in the -2 Log Likelihood value from the intercept-only model (without predictor variables) to the final model (including predictor variables), namely 37.916 to 9.108. The table also informs that the statistic test value $G^2 = 28.807 > \chi^2_{(0.05;8)} = 15.507$ and p-value = 0.001 < 0.05. Thus, reject H0, meaning that the model with predictor variables is better than the model with intercept only (without predictor variables), and this result indicates that there is at least one significant parameter, so further partial testing is needed.

4. Partial test

The test statistic used for the partial test is the Wald (W) test. This test is used to determine which predictor variables are significant. The hypothesis used can be as follows.

H0 : β j=0

H1: $\beta j \neq 0$ with j = 1,2

Partial test results using SPSS 30 as shown in <u>Table 5</u>. Based on the results presented in the *Parameter Estimates Output table*, it can be seen that the predictor variables X1, X4.1, and X6.2 have *a p*< value of 0.05, while the other variables have *a p*> value of 0.05. The results of this test show that the variables X1, X4.1, and X6.2 have a significant influence in part on the success of KRPL in Getas Village.

Furthermore, a logit model equation can be formed by including significant predictor variables. In this case, because the response variable consists of 3 categories, 2 logit model equations can be formed as shown in Equation 1.

The logit model equation above shows that there are 3 variables that affect the success of KRPL in Getas Village, namely age, time expenditure and POMOSDA support. The results of the study also showed that other variables, such as family income, the number of family dependents, and the influence on the performance of extension workers, did not significantly succeed in KRPL in Getas Village.

The above interpretation of the model refers to the $Exp(\beta)$ value or the opportunity ratio value given in *the Parameter Estimation table*. Participants who had \leq age of 40 years (young) were 0.013 times more likely to achieve KRPL success than the adult and elderly categories. Participants who spent more than 1.5 hours per day on KRPL were 4.5 times more likely to achieve high success than those who spent less time. POMOSDA's support in the medium category has a greater chance of achieving success in KRPL activities, which is 5.7 times more likely.

Family income did not significantly affect the success of KRPL, as participants had relatively high incomes, reducing variability in the dataset. The number of dependents of families participating in KRPL has a range of 3-4 family members; this number tends to be within the ideal limit for household management and does not cause an excessive burden in the use of the yard.

Unlike previous research, in Bangladesh, extension services play an important role; farmers who access extension more frequently experience statistically higher yields and profits (Rahman & Connor, 2022). This study did not find a significant impact.

This is because, in its implementation, KRPL participants reported receiving more direct support from POMOSDA, which led them to assess that POMOSDA had a more intensive involvement role compared to agricultural extension workers.

The results of the above study show that, descriptively, the success of the sustainable food house area (KRPL) in Getas Village can be categorized as high. This refers to the high percentage of women farmers identified in the high category of KRPL success. The results of the study related to the influence of predictor variables (age, family income, number of family dependents, time service, worker performance, extension POMOSDA support) on the response variable (KRPL success) are partly known that the factors of age, time service, and POMOSDA support have a significant influence on the success of KRPL.

Descriptively, the age factor of farm women falls into the young category, namely \leq 40 years, and this is one of the factors that significantly affects the success of KRPL. which is in line with research conducted (Antika et al., 2022; Ngonta et al., 2024; Oka et al., 2016) farmers younger tend to be faster in adopting innovations, this is also in line with research by (Masti et al., 2024) where farmers with working age have a high curiosity about objects that they can observe in their environment, so that they actively information and try to innovations, so that age will affect a person's mindset behavior towards and environment, including influencing his behavior in implementing the KRPL program. Furthermore, the descriptive time devotion factor of farm women falls into the medium category, namely having a time devotion of 1.5 - 3 hours/day, and this factor significant effect on the success of KRPL, which is in line with research conducted (Masti et al., 2024; Suryani et al., 2017) and reinforced by the view (Belem, 2022) that women farmers can utilize their agricultural land for approximately 2 hours per day. With sufficient time to manage the yard, it will be

well-maintained, which will have a positive impact on achieving the objectives of the KRPL activities. Furthermore, it is said by Asante et al. (2024) that inadequate time is the main obstacle that limits the adoption of home gardening techniques so that this becomes one of the crucial factors in achieving the success of KRPL. Furthermore, one of the factors that also significantly influences the success of KRPL is the is support of POMOSDA or Pondok Modern Sumber Daya At-Taqwa, the acquisition of scores in the range 16-24 with the medium category more dominant when compared to the low and high categories, meaning that farm women feel the support provided by POMOSDA is good enough and this has an impact on the success of their KRPL. This research is in line with research conducted by (Arga et al., 2021; Khairunnisa et al., 2019; Ruhimat, 2017) and according to (Foe & Sunaryanto, 2020), countries that are still developing, like Indonesia, really need a lot of encouragement from various parties, both government and private to provide adequate agricultural infrastructure, technology-based agricultural science, and sustainable production, as well as injections of funds for agricultural development and training of farmers, especially in the village. Furthermore, Marpaung et al. (2024) stated that the involvement and role of the private sector in government programs are very important, as resources, knowledge, and experience from various parties can create strong synergies in developing better KRPL programs.

CONCLUSION

The study offers valuable insights for policymakers and stakeholders, highlighting the need for stronger public-private partnerships to enhance the sustainability of KRPL. To strengthen KRPL, the government should introduce structured training programs, increase access to financial resources for women farmers, and build mentorship networks between experienced and new KRPL participants. This study has a

major limitation, namely its small sample size and focus on one location.

Future research should be extended to different regions to improve generalization. Future studies should investigate the long-term sustainability of the KRPL program and explore additional factors, such as cultural influences and access to agricultural technologies.

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