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Research Article

Enabling Factor Dominance in Women Farmer Group Participation: Time Availability and Production Resource Access

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ABSTRACT

Purpose of the study: This study analyzed the simultaneous and partial influences of seven internal and external factors: age, education level, motivation, time availability, family support, access to production resources, and group management.

Methodology: A census-based quantitative survey enrolled all 40 KWT members as respondents. Structured Likert-scale (1–5) questionnaires were administered and validated through item-total correlation analysis (r-critical = 0.312) and Cronbach's alpha reliability testing (α = 0.897). Ordinal data were transformed to an interval scale using the Method of Successive Intervals (MSI). Data were analyzed using multiple linear regression in SPSS v.25, preceded by normality (Kolmogorov–Smirnov), multicollinearity (VIF), heteroscedasticity (Glejser), and autocorrelation (Durbin–Watson) assumption tests at α = 0.05.

Main Findings: All seven variables simultaneously and significantly influenced member participation ($F = 11.002$; $p = 0.000$; $R^2 = 70.6\%$). Partial analysis confirmed that only time availability ($\beta = 0.361$; $p = 0.005$) and production resource access ($\beta = 0.430$; $p = 0.007$) were significant predictors, with production resource access being the strongest. Age, education level, motivation, family support, and group management showed no significant partial effects, with group management exhibiting a negative coefficient attributable to the free-rider effect.

Novelty/Originality of this study: This study empirically demonstrates that enabling factors, time availability, and access to production resources dominate psychological, demographic, and managerial factors in determining actual KWT member participation. It simultaneously tests seven internal and external variables in a food-production-based empowerment context, reveals the intention-behavior gap mechanism, and proposes a structural-barrier-reduction framework for empowering agricultural women's groups.

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1. INTRODUCTION

Women Farmer Groups (KWT) function as strategic platforms for rural women's empowerment, playing a significant role in enhancing household food security and economic welfare [1]-[3]. Through empowerment programs, KWT are expected to promote active member involvement in food production,

agricultural product processing, and marketing activities [4]. Nevertheless, actual participation levels frequently remain suboptimal, impeding the achievement of empowerment objectives [5]. Participation thus constitutes a critical mediating mechanism between program design and development impact, making its determinants a central concern for both scholars and practitioners.

KWT Dewi Sri Kentungan, located in Condongcatur Village, Depok Sub-district, Sleman Regency, Yogyakarta Special Province, Indonesia, implements the Warsa Lan Mbak Desi Program a food-production-based empowerment initiative for the production and marketing of processed agricultural products, operational since October 2023. Despite structured management, transparent financial systems, and an organized weekly Saturday market stall system, participation data reveal that among 40 KWT members, only 11 (27.5%) had ever consigned products, and merely 4 (10%) maintained consistent weekly participation. This chronic low actual participation despite sound program infrastructure indicates multidimensional barriers requiring comprehensive empirical investigation.

Empirical literature identifies both internal and external determinants of agricultural group member participation. Internal factors encompass individual-level variables including motivation, time availability, and demographic characteristics such as age and education level [6], [7]. External factors comprise environmental variables including family support, access to production resources, and group management quality [6], [8]. According [9] found that motivation and resource access significantly affected KWT participation in home-garden programs. According [7] confirmed that effective group management positively contributes to participation intensity. According [8] established production resource access as the most decisive factor for actual KWT member involvement.

The theoretical grounding draws on the Theory of Planned Behavior [10], [11], which posits that participation intention does not automatically translate into actual behavior unless supported by enabling conditions specifically time availability, resource access, and behavioral capacity, termed enabling factors in this study [12]. This framework explains the intention-behavior gap [10]: high motivation fails to produce proportionate actual participation in the absence of enabling structural conditions, a phenomenon observable at KWT Dewi Sri Kentungan where members report high motivation (mean = 76.57%) yet maintain very low actual involvement (62.33%).

A critical gap remains in the literature: no prior study has simultaneously and comprehensively tested the relative dominance of seven internal and external factors covering psychological, demographic, managerial, and structural dimensions within the specific context of food-production-based KWT empowerment programs, nor empirically demonstrated which factor category most powerfully determines actual member participation. This study addresses the gap by analyzing the simultaneous and partial influences of internal factors (age, education level, motivation, and time availability) and external factors (family support, production resource access, and group management) on member participation in the Warsa Lan Mbak Desi Program. The research questions guiding this study are: (1) What is the level of member participation in the Warsa Lan Mbak Desi Program? (2) Which internal and external factors partially and significantly predict member participation? (3) Do the seven factors simultaneously and significantly influence member participation?

2. RESEARCH METHOD

This study was conducted from December 2025 to March 2026 at KWT Dewi Sri Kentungan, Condongcatur Village, Depok Sub-district, Sleman Regency, Yogyakarta Special Province, Indonesia. The location was purposively selected based on: (1) the active implementation of the Warsa Lan Mbak Desi Program since October 2023; (2) recognition as an advanced-class farmer group (kelas lanjut) by the Sleman District Agriculture, Food, and Fisheries Office in October 2025; and (3) chronically low member participation despite structured program operations, making it an empirically relevant site for systematic investigation. A quantitative survey design with explanatory research orientation was applied, aimed at testing causal relationships among variables through hypothesis testing [13], [14]. The study population comprised all 40 KWT Dewi Sri Kentungan members. Census sampling (total sampling) was employed, enrolling all 40 members as respondents. This technique was selected due to the small, bounded population size, ensuring complete representation and minimizing sampling bias [15].

The study operationalized one dependent variable and seven independent variables. The dependent variable was member participation in the Warsa Lan Mbak Desi Program (Y), measured across four dimensions participation in decision-making, implementation, benefits utilization, and evaluation following Cohen and Uphoff's [12] participation framework. Independent variables were classified into two categories: (1) internal factors, comprising age (X1), measured in years and categorized into productive age groups per BPS (2024) classification; education level (X2), measured ordinally by highest formal education attained; motivation (X3), measured through seven items assessing intrinsic drivers (desire to learn, pride in contributing) and extrinsic drivers (income expectations, social recognition); and time availability (X4), measured through six items assessing capacity to allocate time for program activities amid domestic and occupational responsibilities; and

(2) external factors, comprising family support (X5), measured through seven items covering permission to participate, moral encouragement, practical production assistance, and financial support; production resource access (X6), measured through seven items assessing ease of accessing business capital, raw materials, production equipment, and production space; and group management and communication (X7), measured through eleven items assessing organizational management quality and communication effectiveness.

All variables except age were measured using structured Likert-scale (1–5) questionnaires. Content validity was assessed using item-total correlation analysis, with r-computed > r_{table} (r-critical = 0.312 for n = 40 at $\alpha = 0.05$) as the validity threshold; all items met this criterion. Instrument reliability was confirmed using Cronbach's alpha coefficient ($\alpha = 0.897$), indicating excellent internal consistency [16]. Prior to regression analysis, ordinal Likert-scale data were transformed to interval data using the Method of Successive Intervals (MSI) [16], as multiple linear regression requires interval- or ratio-level data [17].

Data were analyzed using multiple linear regression in SPSS version 25, selected for its capacity to simultaneously test the influence of multiple independent variables on a single dependent variable [16]. Classical assumption tests were conducted prior to hypothesis testing: normality (Kolmogorov–Smirnov test; normal if sig. > 0.05), multicollinearity (VIF < 10 and Tolerance > 0.10), heteroscedasticity (Glejser test; no heteroscedasticity if sig. > 0.05), and autocorrelation (Durbin–Watson test). Hypothesis testing was performed at a significance level of $\alpha = 0.05$. The multiple linear regression equation is expressed as:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 \ldots (1)$$

where Y = member participation score, a = constant, b_1–b_7 = regression coefficients, and X_1–X_7 = independent variables as defined above. Simultaneous significance was tested using the F-test; partial significance was tested using the t-test; and the proportion of variance explained was assessed using the coefficient of determination (R^2). Informed consent was obtained from all respondents prior to data collection, and participation was voluntary.

3. RESULTS AND DISCUSSION

3.1. Respondent Characteristics

The demographic profile of KWT Dewi Sri Kentungan members provides essential contextual background for interpreting participation determinants. As presented in Table 1, the majority of respondents were of productive age (15–64 years; 92.5%), female (90.0%), educated to senior secondary level (55.0%), working primarily as homemakers (60.0%), and members of small family units (1–3 members; 65.0%). Notably, 87.5% of members had belonged to the group for more than two years, indicating group stability. However, 77.5% had never consigned products for sale, and 60.0% had a low frequency of market stall attendance (1–4 times), empirically confirming the chronic low actual participation that motivated this study.

Table 1. Respondent Characteristics of KWT Dewi Sri Kentungan Members

Characteristic	Category	n	%
Age	0 - 14 years (Adolescent)	3	7.5
	15–64 years (Productive)	37	92.5
	≥ 64 years (Elderly)	0	0.0
Gender	Female	36	90.0
	Male	4	10.0
Education Level	Elementary/equivalent	2	5.0
	Junior Secondary/equivalent	8	20.0
	Senior Secondary/equivalent	22	55.0
	Diploma/Bachelor	8	20.0
Employment Status	Homemaker	24	60.0
	Entrepreneur	4	10.0
	Self-employed	3	7.5
	Other	9	22.5
Family Size	Small (1–3 members)	26	65.0
	Moderate (4–5 members)	13	32.5
	Large (≥6 members)	1	2.5
Product Consignment Frequency	Never	31	77.5
	1–4 times	7	17.5
	≥ 5 times	2	5.0

This profile characterizes the group as dominated by productive-age women carrying dual domestic and economic roles, consistent with profiles documented in KWT research across peri-urban Java [3], [18], [19]. Research on urban agriculture confirms that homemakers face dual burdens that constrain productive participation [19], providing contextual grounding for the enabling factor dominance confirmed in this study.

3.2. Member Participation Level

Member participation was measured across four dimensions following [12] Framework: decision-making, implementation, benefits utilization, and evaluation. As shown in Table 2, the overall participation score was 2,992 out of a maximum of 4,800, yielding an achievement percentage of 62.33% and classifying overall participation in the moderate category.

Table 2. Member Participation Level Distribution

Category	Score Range	n	%
High	89-120	13	32.5
Moderate	57-88	18	45.0
Low	24-56	9	22.5
Total	-	40	100

The highest-scoring indicator was orderly market stall scheduling (84.50%), while the lowest was profit-sharing from stall attendance (43.50%). This pattern indicates that participation is strongest in administratively structured activities while weakest in activities requiring direct economic contribution, reflecting the structural barriers particularly production resource constraints identified in the regression analysis. The moderate overall participation level despite 87.5% long-term membership underscores that temporal familiarity with the group is insufficient to drive active program involvement without supporting enabling conditions.

3.3. Internal Factor Analysis

Age and Education Level

Age distribution showed that 92.5% of members belong to the productive age category (15–64 years), indicating very high homogeneity in this variable. The predominant education level was senior secondary school (55.0%), followed by equal proportions of junior secondary and diploma/bachelor levels (20.0% each). This relatively uniform educational profile suggests that all members possess comparable foundational capacities for understanding and participating in program activities.

Regression analysis revealed that neither age (sig. = 0.573) nor education level (sig. = 0.571) significantly predicted participation (see table 7). The non-significance of age is attributable to age homogeneity (92.5% in productive age), which creates insufficient variance to generate meaningful participation differences [6]. These findings are consistent with Dayat and Anwarudin [20], who established that educational variation fails to create significant capacity gaps in homogeneous groups engaged in food processing activities. Both findings positively indicate that the Warsa Lan Mbak Desi Program is inherently inclusive and non-discriminatory on the basis of age or educational background, supporting [12] argument that demographic factors are less determinative than structural enabling conditions for actual participation.

Motivation

Motivation was measured through seven items covering intrinsic drivers (desire to learn, pride in contributing) and extrinsic drivers (expectations of additional income, social recognition) using a five-point Likert scale. As shown in Table 3, the majority of members (67.5%) exhibited high motivation, with a mean achievement score of 76.57%. The highest-scoring items were pride in contributing to the KWT (85.0%) and enjoyment of sharing experiences (82.0%).

Table 3. Motivation Level Distribution of KWT Members

Category	Score Range	n (respondents)	Percentage (%)
High	27–35	27	67.50
Moderate	17–26	10	25.00
Low	7–16	3	7.50
Total	–	40	100.00

Note: Mean achievement score = 76.57% (Moderate-High)

Despite this high motivational profile, regression analysis revealed that motivation did not significantly predict actual participation (sig. = 0.268). This constitutes a clear manifestation of the intention-behavior gap [10]: members possess strong intentions but these fail to materialize into action because of time and resource

constraints. As confirmed by [21], motivation functions as a necessary but insufficient precondition for participation it requires supporting enabling factors to manifest as actual behavior. This finding is particularly significant as it challenges common assumptions in agricultural extension that motivation enhancement alone is sufficient to drive participation [9], [22].

Time Availability

Time availability, reflecting members' capacity to allocate time for program activities including production, market stall management, and group meetings, showed that 57.5% of members scored in the high category; yet the mean achievement was only 69.75%, corresponding to a moderate level (Table 4). The lowest-scoring items were the ability to produce goods amid daily activities (60.0%) and the ability to adjust personal schedules for KWT activities (67.0%).

Table 4. Time Availability Level Distribution of KWT Members

Category	Score Range	n (respondents)	Percentage (%)
High	23–30	23	57.50
Moderate	15–22	9	22.50
Low	6–14	8	20.00
Total	-	40	100.00

Note: Mean achievement score = 69.75% (Moderate)

These results are contextualized by the dual burden borne by 60.0% of members who are homemakers: high domestic responsibilities significantly constrain time allocation for productive activities [6], [5]. The critical challenge is not attendance at group meetings but the time required to prepare and produce products for consignment a dimension that directly translates motivation into actual program contribution.

3.4. External Factor Analysis

Family Support

Family support encompassing permission, moral encouragement, practical assistance in product making, and provision of business capital achieved a mean score of 69.29% (moderate level). The lowest-scoring items were assistance in product production processes (58.5%) and provision of business capital (59.5%), indicating that support received by members remains predominantly limited to psychological dimensions without extending to practical support that directly facilitates production and marketing activities.

Regression analysis confirmed that family support did not significantly predict participation (sig. = 0.546 see table 7). According to [5] established that family support confined to moral dimensions is insufficient to overcome the simultaneous practical barriers of capital limitations and time constraints a pattern fully consistent with the present findings. This suggests that intervention strategies targeting family involvement should specifically address practical support dimensions rather than simply awareness or permission.

Production Resource Access

Production resource access measuring members' ease of accessing capital, equipment, raw materials, and production space recorded the lowest mean score among all study variables at 64.36% (moderate level). The lowest-scoring items were availability of home production space (58.0%) and ease of accessing business capital (61.5%). As shown in Table 5, 20.0% of members scored in the low category, indicating a substantive proportion facing severe structural barriers.

Table 5. Production Resource Access Level Distribution

Category	Score Range	n (respondents)	Percentage (%)
High	28-35	13	32.50
Moderate	19-27	19	47.50
Low	7-18	8	20.00
Total	-	40	100

These limitations reflect structural constraints embedded in the urban-fringe context of Kentungan, where residential plot sizes are extremely small, compelling members to depend on the collective KWT land area of 300 m² as their primary production space. Only 11 of 40 members (27.5%) had ever consigned products for sale, with capital and space limitations being the primary obstacles to translating motivation into product creation. According to [1] and [9] confirmed that limited capital and land access constitute primary structural barriers to small-scale farmer participation.

Group Management and Communication

Group management and communication achieved the highest mean score among all study variables at 88.23%, with 90.0% of members rating management quality in the high category. The highest-scoring items included satisfaction with financial transparency and positive evaluation of leadership quality. This high achievement reflects strong managerial capacity and robust social capital within the group [2].

However, regression analysis revealed an intriguing finding: the variable with the highest mean score did not significantly predict and indeed showed a negative coefficient toward actual participation (sig. = 0.212; B = −0.339). This negative coefficient is interpretable through the free-rider effect [23]: when a program is excellently managed, some members may infer that the program operates effectively without their individual contribution, reducing the perceived urgency of personal involvement. According to [23]documented similar dynamics in fishery group contexts, wherein high management quality paradoxically reduced individual contribution motivation. This finding underscores that managerial excellence alone is insufficient to sustain participation; complementary individual incentive mechanisms are required to ensure each member perceives their contribution as indispensable. Research on group-based activities has consistently demonstrated that the quality of group management shapes individual contribution behavior, yet this relationship is non-linear and context-dependent [24]-[29].

3.5. Variable Achievement Summary

Table 6 presents a consolidated comparison of achievement levels across all study variables, illustrating the pronounced contrast between psychologically and managerially oriented variables and structurally enabling variables.

Table 6. Summary of Variable Achievement Levels

Variable	Achievement (%)	Score / Max Score	Category
Member Participation (Y)	62.33	2,992 / 4,800	Moderate
Motivation (X3)	76.57	1,072 / 1,400	Moderate-High
Time Availability (X4)	69.75	837 / 1,200	Moderate
Family Support (X5)	69.29	970 / 1,400	Moderate
Production Resource Access (X6)	64.36	901 / 1,400	Moderate
Group Management & Communication (X7)	88.23	1,941 / 2,200	High

Note: Achievement categories: Low < 56%; Moderate 56%–75%; High > 75%

The most critical observation is the inverse relationship between variable achievement scores and predictive significance in the regression model. Group management (88.23%) and motivation (76.57%) achieved the highest scores yet showed no significant partial effect on participation. Conversely, production resource access (64.36%) recorded the lowest achievement yet emerged as the strongest predictor (β = 0.430). This pattern empirically substantiates the enabling factor dominance hypothesis central to this study.

3.6. Regression Analysis: Influence of Internal and External Factors on Member Participation

Classical assumption tests confirmed data compliance with all parametric regression requirements: normality (Kolmogorov–Smirnov sig. = 0.200 > 0.05), no multicollinearity (VIF < 10 for all variables), no heteroscedasticity (Glejser test sig. > 0.05 for all variables), and no autocorrelation (Durbin–Watson = 1.876). These results confirm that the model meets all prerequisites for valid multiple linear regression inference.

The coefficient of determination $R^2 = 0.706$ and Adjusted $R^2 = 0.642$ indicate that 70.6% of variance in member participation is explained by the seven independent variables, while the remaining 29.4% is attributable to factors beyond this study's scope potentially including members' self-efficacy, perceived program benefits, interpersonal trust dynamics, and residential distance from the program site. The F-statistic of 11.002 (sig. = 0.000 < 0.05) confirms that all variables simultaneously and significantly influence member participation, answering Research Question 3. Partial regression results (t-test), addressing Research Questions 1 and 2, are presented in Table 7.

Table 7. Partial Regression Results: Influence of Internal and External Factors on Member Participation

Variable	B	Std. Error	Beta (β)	t-value	Sig.	Remark
(Constant)	11.801	19.792	–	0.596	0.556	–
X1 – Age	−0.139	0.244	−0.072	−0.569	0.573	Not Significant
X2 – Education Level	1.217	2.127	0.052	0.572	0.571	Not Significant
X3 – Motivation	0.567	0.503	0.167	1.127	0.268	Not Significant
X4 – Time Availability	1.120	0.373	0.361	2.998	0.005	Significant
X5 – Family Support	0.362	0.594	0.105	0.610	0.546	Not Significant
X6 – Production Resource Access	1.249	0.435	0.430	2.875	0.007	Significant
X7 – Group Management	−0.339	0.266	−0.153	−1.274	0.212	Not Significant

Note: ** significant at $\alpha = 0.05$; Regression equation: $Y = 11.801 - 0.139X_1 + 1.217X_2 + 0.567X_3 + 1.120X_4 + 0.362X_5 + 1.249X_6 - 0.339X_7$

Time Availability (X4) positively and significantly predicted participation (sig. = 0.005; β = 0.361; B = 1.120), representing the first confirmed enabling factor: each one-point increase in time availability score corresponds to a 1.120-point increase in participation. The dual burden of 60.0% of members as homemakers, combined with low scores on production time (60.0%) and schedule adjustment (67.0%), explains the critical role of time availability in determining actual participation. Documented analogous patterns in urban agriculture contexts, finding that domestic responsibilities significantly constrained women's participation in productive agricultural activities, with time availability emerging as a primary predictor of sustained involvement [30]-[35]. According to [6] confirmed that homemakers with high domestic responsibilities tend to participate at lower levels due to difficulty allocating time for productive activities.

Production Resource Access (X6) emerged as the strongest predictor (sig. = 0.007; β = 0.430; B = 1.249), representing the second confirmed enabling factor: each one-point increase in resource access score corresponds to a 1.249-point increase in participation. Structural limitations in home production space (58.0%) and business capital access (61.5%) reflect genuine structural barriers in the urban-fringe Kentungan environment. According to [9] confirmed that capital and equipment access are the most influential factors for KWT participation. Recommended structural interventions include: (1) development of group credit schemes with low or zero interest; (2) optimization of the collective 300 m² land as a shared production center; (3) rotating equipment procurement arrangements; and (4) partnerships with local raw material suppliers to reduce procurement costs and barriers.

In aggregate, these findings confirm that enabling factors (time availability and production resource access) exert greater influence on actual participation than psychological (motivation), demographic (age, education), or managerial (group management) factors. According to [28] established that genuine participation requires not only willingness but also ability and opportunity dimensions sourced from enabling structural factors. Sustainable community behavior emerges from the interaction between awareness, knowledge, and structural conditions a pattern consistent with the present study's finding that structural enabling factors outweigh psychological readiness in determining actual participation [36]-[41]. According to [26] found analogous patterns wherein enabling factors were more determinative of actual participation than motivational aspects in agricultural group contexts. According to [27] similarly confirmed in a KWT extension context that environmental support encompassing family environment, social environment, accessibility, and government support significantly influences actual participation, independent of individual motivation levels. Theoretical grounding for this pattern, demonstrating that behavioral change in agricultural communities requires enabling structural conditions beyond motivational interventions [42]-[47].

Limitations of this study should be noted. First, the census sampling of a single KWT limits generalizability to other KWT contexts, particularly those with different socioeconomic profiles or program types. Second, the cross-sectional design precludes causal inference over time. Third, with $R^2 = 70.6\%$, approximately 29.4% of variance remains unexplained, suggesting additional variables such as self-efficacy, social capital [2], or digital technology access warrant inclusion in future models [48]-[51]. Future studies are recommended to employ longitudinal designs, incorporate additional enabling variables such as technology access and activity location distance, and conduct comparative studies across diverse KWT settings and program types.

4. CONCLUSION

This study analyzed the simultaneous and partial influences of seven internal and external factors on member participation in the Warsa Lan Mbak Desi Program at KWT Dewi Sri Kentungan, Sleman, Indonesia. Three principal conclusions are drawn. First, member participation in the Warsa Lan Mbak Desi Program was at a moderate level overall (62.33%), with 45.0% of members in the moderate category and 22.5% in the low category. Participation was most constrained in activities requiring direct economic contribution, particularly product consignment, where 77.5% of members had never participated. Second, partial analysis confirmed that

only two variables significantly and positively influenced member participation: time availability (β = 0.361; p = 0.005) and production resource access (β = 0.430; p = 0.007), with production resource access as the strongest predictor. Age, education level, motivation, family support, and group management showed no significant partial effects. Notably, motivation did not significantly predict participation despite achieving a high mean score (76.57%), confirming the intention-behavior gap phenomenon. Group management, despite achieving the highest mean score (88.23%), showed a negative regression coefficient, attributable to the free-rider effect. Third, the simultaneous analysis confirmed that all seven variables collectively and significantly influenced member participation (F = 11.002; p = 0.000; R^2 = 70.6%), with the model explaining 70.6% of participation variance. These findings provide empirical evidence that enabling factors time availability and production resource access exert greater influence on actual KWT member participation than psychological (motivation), demographic (age, education), and managerial (group management) factors. The simultaneous testing of seven factors across internal and external dimensions in this specific context represents a novel empirical contribution that advances understanding of the intention-behavior gap mechanism in agricultural women's group participation. For KWT Dewi Sri Kentungan management, priority interventions should focus on enabling factor strengthening through: (1) development of group credit schemes with low or zero interest to reduce capital barriers; (2) optimization of the collective 300 m^2 land as a shared production center accessible to all members; (3) flexible program scheduling that accommodates domestic responsibilities, including advance scheduling and shared production shifts; and (4) creation of individual incentive mechanisms such as priority credit access and performance bonuses for active members to address free-rider dynamics. For government programs, KWT development support should integrate microenterprise financing and production facility assistance alongside conventional extension services.

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AUTHOR CONTRIBUTIONS

INAZ: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Writing – Original Draft Preparation. SM: Conceptualization, Supervision, Validation, Writing – Review & Editing. EP: Supervision, Validation, Writing – Review & Editing.

CONFLICTS OF INTEREST

The author(s) declare no conflict of interest.

USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

The authors declare that no artificial intelligence (AI) tools were used in the generation, analysis, or writing of this manuscript. All aspects of the research, including data collection, interpretation, and manuscript preparation, were carried out entirely by the authors without the assistance of AI-based technologies.

REFERENCES

[1] H. Hermanto and D. K. S. Swastika, "Penguatan kelompok tani: Langkah awal peningkatan kesejahteraan petani [Strengthening farmer groups: The first step to improving farmer welfare]," *Analsis Kebijak. Pertan.*, vol. 9, no. 4, pp. 371–390, 2011, doi: 10.21082/akp.v9n4.2011.371-390.

[2] R. Al Nido, R. Windiasih, A. I. Sulaiman, K. Muatip, and L. K. Sari, "Model pemberdayaan kelompok wanita tani (KWT) melalui modal sosial untuk menjaga kohesivitas kelompok: Indonesia [Empowerment model of women farmer groups (KWT) through social capital to maintain group cohesiveness: Indonesia]," *Agrivet: Jurnal Ilmu-Ilmu Pertanian Dan Peternakan (Journal of Agricultural Sciences and Veteriner)*, vol. 12, no. 1, pp. 117-132, 2024, doi: 10.31949/agrivet.v12i1.10088.

[3] A. Abdu, G. S. Marquis, E. K. Colecraft, N. D. Dodoo, and F. Grimard, "The association of women's participation in farmer-based organizations with female and male empowerment and its implication for nutrition-sensitive agriculture interventions in rural Ghana," *Current Developments in Nutrition*, vol. 6, no. 9, pp. 1–11, 2022, doi: 10.1093/cdn/nzac121.

[4] A. E. A. Widiastuti, S. Sugihardjo, and S. Anantanyu, "Partisipasi anggota kelompok wanita tani (kwt) dalam mewujudkan ketahanan pangan rumah tangga di Kecamatan Colomadu Kabupaten Karanganyar [Participation of women farmers' group members (KWT) in realizing household food security in Colomadu District, Karanganyar Regency]," *J. Indones. Sos. Sains*, vol. 3, no. 7, 2022, doi: 10.36418/jiss.v3i7.644.

[5] D. Prawiranegara, Sumardjo, D. P. Lubis, and S. Harijati, "Strengthening role of farmer institution in enhance of innovation capability based on ICT in West Java Province, Indonesia," *Int. J. Humanit. Soc. Sci.*, vol. 5, no. 12, 2015, doi: 10.36418/jiss.v3i7.644.

[6] S. C. Siburian, D. Padmaningrum, and S. Suwarto, "Hubungan dinamika kelompok dengan tingkat partisipasi anggota

kelompok wanita tani dalam program kawasan rumah pangan lestari (KRPL) di Kecamatan Ampel, Kabupaten Boyolali [The relationship between group dynamics and the level of participation of women farmer group members in the sustainable food house area (KRPL) program in Ampel District, Boyolali Regency],” *J. Integr. Agric. Socio-Economics Entrep. Res.*, vol. 2, no. 1, pp. 27, 2023, doi: 10.26714/jiasee.2.1.2023.27-34.

[7] D. A. S. Sipakar, S. Nurlaela, and S. Sujono, “Faktor-faktor yang mempengaruhi motivasi petani dalam pemanfaatan lahan pekarangan [Factors that influence farmers' motivation in utilizing yard land],” *J-Dinamika J. Pengabdi. Masy.*, vol. 7, no. 3, pp. 519–525, 2022, doi: 10.25047/j-dinamika.v7i3.3375.

[8] A. A. Mulema, W. Jogo, E. Damtew, K. Mekonnen, and P. Thorne, “Women farmers’ participation in the agricultural research process: implications for agricultural sustainability in Ethiopia,” *International Journal of Agricultural Sustainability*, vol. 17, no. 2, pp. 127-145, 2019, doi: 10.1080/14735903.2019.1569578.

[9] N. A. Widyasari, R. Nalinda, and Ds. Astuti, “Faktor-faktor yang mempengaruhi partisipasi kelompok wanita tani dalam pemanfaatan lahan pekarangan (Studi Kasus di Desa Trihanggo, Kecamatan Gamping, Kabupaten Sleman, Daerah Istimewa Yogyakarta) [Factors influencing the participation of women farmers' groups in the utilization of yard land (Case Study in Trihanggo Village, Gamping District, Sleman Regency, Special Region of Yogyakarta)],” *Pros. Semin. Nas. Kefarmasian Ke-3*, vol. 4, pp. 75–80, 2022.

[10] M. Bosnjak, I. Ajzen, and P. Schmidt, “Editorial the theory of planned behavior: Selected recent advances and applications,” *Eur. J. Psychol.*, vol. 16, no. 3, pp. 352–356, 2020, doi: 10.5964/ejop.v16i3.3107.

[11] S. Sun, X. Wen, S. Jie, Q. Gao, Y. Zhu, and S. Wen, “Drivers of farmers’ intention to use the digital agricultural management system: Integrating theory of planned behavior and behavioral economics,” *Frontiers in Psychology*, vol. 13, pp. 1–8, 2022, doi: 10.3389/fpsyg.2022.901169.

[12] J. M. Cohen and N. T. Uphoff, “Participation’s place in rural development: Seeking clarity through specificity,” *World Dev.*, vol. 8, no. 3, pp. 213–235, 1980, doi: 10.1016/0305-750X(80)90011-X.

[13] J. W. Creswell, *Research Design: Qualitative, Quantitative, And Mixed Methods Approaches*, in *Thousand Oaks, CA: SAGE Publication*, 2014.

[14] W. L. Neuman, *Social Research Methods: Qualitative And Quantitative Approaches*, Essex: Pearson Education Limited, 2014.

[15] S. Sugiyono, *Metode Penelitian Kuantitatif, Kualitatif, dan R&D [Quantitative, Qualitative, and R&D Research Methods]*, Bandung: Alfabeta, 2017.

[16] I. Ghozali, *Aplikasi analisis multivariate dengan program IBM SPSS 25 [Multivariate analysis application with IBM SPSS 25 program]*, Badan Penerbit Universitas Diponegoro, 2018.

[17] R. Riduan and E. A. Kuncoro, *Cara Menggunakan dan Memakai Path Analysis (Analisis Jalur) [How to Use and Apply Path Analysis]*. Alfabeta, 2007.

[18] T. D. Nath, and D. Athinuwat, “Key factors of women empowerment in organic farming,” *GeoJournal*, vol. 86, no. 6, pp. 2501-2520, 2021, doi: 10.1007/s10708-020-10211-6.

[19] T. Lemma and M. Sharma, “Motivations for women’s participation in urban agriculture: A multivariate probit model analysis,” *Int. J. Agric. Sustain.*, vol. 22, no. 1, pp. 1–15, 2024, doi: 10.1080/14735903.2024.2379893.

[20] M. N. Asadullah, and U. Kambhampati, “Feminization of farming, food security and female empowerment,” *Global Food Security*, vol. 29, pp. 100532, 2021, doi: 10.1016/j.gfs.2021.100532.

[21] Y. Yusriadin, A. Mas’uf, R. H. Purwanti, P. Syarni, N. B. Pandangaran, T. Buana, and M. Mardin, “Hubungan dan pengaruh motivasi, partisipasi dan adopsi teknologi petani terhadap produktivitas lahan usaha tani jagung Di Kabupaten Konawe Selatan [The relationship and influence of farmer motivation, participation and technology adoption on the productivity of corn farming land in South Konawe Regency],” *J. Ilm. Penyul. dan Pengemb. Masy.*, vol. 4, no. 4, pp. 352–360, 2024, doi: 10.56189/jippm.v4i4.46.

[22] O. Anwarudin, S. Sumardjo, A. Satria, and A. Fatchiya, “Peranan Penyuluh Pertanian Dalam Mendukung Keberlanjutan Agribisnis Petani Muda Di Kabupaten Majalengka,” *J. Agribisnis Terpadu*, vol. 13, no. 1, pp. 17–36, 2020, doi: 10.33512/jat.v13i1.7984.

[23] B. Salcinovic, M. Drew, P. Dijkstra, G. Waddington, and B. G. Serpell, “Factors influencing team performance: What can support teams in high-performance sport learn from other industries? A systematic scoping review,” *Sports Medicine-Open*, vol. 8, no. 1, pp. 25, 2022, doi: 10.1186/s40798-021-00406-7.

[24] A. I. Almonia, “Effectiveness of collaborative and individualized learning on the learners’ achievement in science among pupils,” *In. Sci. Ed. J*, vol. 5, no. 2, pp. 115–124, 2024, doi: 10.37251/isej.v5i2.482.

[25] M. M. Morshed, “An integrative model of green sustainable science, environmental awareness, and eco-friendly practices in community life,” *In. Sci. Ed. J.*, vol. 7, no. 1, pp. 25–32, 2026, doi: 10.37251/isej.v7i1.2134.

[26] F. D. Untari, D. Sadono, and E. Lukman, “Partisipasi anggota kelompok tani dalam pengembangan usahatani hortikultura [Participation of farmer group members in developing horticultural farming businesses],” *J. Penyul.*, vol. 18, no. 01, pp. 87–104, 2022, doi: 10.25015/18202236031.

[27] S. Syafruddin and M. Risal, “Factors influencing the participation of women farmer groups in agricultural extension in Luwu Regency, South Sulawesi,” vol. 15, no. 1, pp. 90–99, 2024, doi: 10.35891/agx.v15i1.4026.

[28] S. H. Hamilton *et al.*, “Affecting behavioural change through empowerment: Conceptual insights from theory and agricultural case studies in South Asia,” *Reg. Environ. Chang.*, 2022, doi: 10.1007/s10113-022-01939-7.

[29] M. M. Jackson, A. Abdallah, and O. Alfaki, “Advancing sustainable development goal 6: Innovations, challenges, and pathways for clean water and sanitation,” *In. Sci. Ed. J*, vol. 6, no. 3, 2025, doi: 10.37251/isej.v6i3.2114.

[30] T. Lemma, and M. Sharma, “Motivations for women’s participation in urban agriculture: A multivariate probit model analysis,” *International Journal of Agricultural Sustainability*, vol. 22, no. 1, pp. 2379893, 2024, doi: 10.1080/14735903.2024.2379893.

[31] N. B. A. Yousif, S. A. R. Mohammed, E. Youssef, and S. Behari, “The influence of female farmers in digital urban agriculture in khartoum state: Examining gender challenges and opportunities,” *Sustainability*, vol. 17, no. 22, pp.

10083, 2025, doi: 10.3390/su172210083.
[32] L. Sanjuan-Agudelo, F. Parada-Molina, A. Nadal, C. López-Eccher, E. Muñoz, and J. Rieradevall, "Urban agriculture: The role of female practitioners in a Latin American city model," *Urban Forestry & Urban Greening*, vol. 112, pp. 128911, 2025, doi: 10.1016/j.ufug.2025.128911.
[33] C. C. Olumba, and J. O. Alimba, "An assessment of discriminatory factors contributing to gender inequality among farmers participating in urban agriculture in Southeast Nigeria," *SN Social Sciences*, vol. 2, no. 4, pp. 44, 2022, doi: 10.1007/s43545-022-00348-1.
[34] C. Doss, and C. Gottlieb, "Gendered patterns of labor in agriculture," *Agricultural Economics*, vol. 56, no. 3, pp. 431-445, 2025, doi: 10.1111/agec.70012.
[35] K. L. Maharjan, and C. M. Gonzalvo, "Examining farmers' willingness to learn environmental conservation agriculture: Implications for women farmer empowerment in Bagmati Province, Nepal," *Agriculture*, vol. 15, no. 7, pp. 726, 2025, doi: 10.3390/agriculture15070726.
[36] X. Yang, and A. Esmaeili, "Exploring factors influencing sustainable behaviors in undergraduate students' sports participation through model development and validation," *Scientific Reports*, vol. 15, no. 1, pp. 35460, 2025, doi: 10.1038/s41598-025-19284-0.
[37] C. Zou, Y. Peng, and H. Han, "Understanding participation psychology in rural cultural activities: internal and external drivers toward regional cultural sustainability," *Frontiers in Psychology*, vol. 16, pp. 1688408, 2025, doi: 10.3389/fpsyg.2025.1688408.
[38] T. Rahmania, "Exploring school environmental psychology in children and adolescents: The influence of environmental and psychosocial factors on sustainable behavior in Indonesia," *Heliyon*, vol. 10, no. 18, 2024, doi: 10.1016/j.heliyon.2024.e37881.
[39] T. Gu, E. Hao, L. Ma, X. Liu, and L. Wang, "Exploring the determinants of residents' behavior towards participating in the sponge-style old community renewal of China: Extending the theory of planned behavior," *Land*, vol. 11, no. 8*11*(8), 1160, 2022, doi: 10.3390/land11081160.
[40] J. Huang, and Y. Liu, "Influential factors of corporate involvement in community resilience governance from the perspective of symbiosis theory," *Frontiers in Energy Research*, vol. 12, pp. 1394159, 2024, doi: 10.3389/fenrg.2024.1394159.
[41] J. R. Siahaan, G. Pagalung, E. B. Demmallino, A. Saleng, A. A. Sulaiman, and N. Nagu, "Reframing sustainability in post-mining landscapes: A foundational framework for institutional and behavioral integration in Indonesia," *Sustainability*, vol. 17, no. 12, pp. 5278, 2025, doi: 10.3390/su17125278.
[42] S. H. Hamilton, W. S. Merritt, L. Carter, A. Chakraborty, M. Cosijn, L. Lim-Camacho, R. Mishra, M. Das, and D. Ray, "Affecting behavioural change through empowerment: conceptual insights from theory and agricultural case studies in South Asia," *Regional Environmental Change*, vol. 22, no. 3, pp. 85, 2022, doi: 10.1007/s10113-022-01939-7.
[43] S. Freed, R. C. Voss, T. Falk, A. M. Rietveld, V. Alary, V. G. Chimonyo, ... and T. Zingwena, "Agency and behavior change in agricultural research for development: New directions for guiding agri-food system transformations. *Agricultural systems*, *228*, 104399, 2025, doi: 10.1016/j.agsy.2025.104399.
[44] K. Ofosu-Ampong, W. Abera, A. Müller, S. Adjei-Nsiah, R. Boateng, and B. Acheampong, "Framing behaviour change for sustainable agriculture: Themes, approaches, and future directions," *Farming System*, vol. 3, no. 1, pp. 100123, 2025, doi: 10.1016/j.farsys.2024.100123.
[45] C. A. Torres-Vitolas, S. C. Trienekens, W. Zaadnoordijk, and A. N. Gouvras, "Behaviour change interventions for the control and elimination of schistosomiasis: a systematic review of evidence from low-and middle-income countries," *PLoS neglected tropical diseases*, vol. 17, no. 5, pp. e0011315, 2023, doi: 10.1371/journal.pntd.0011315.
[46] A. Regan, A. Burrell, C. McKernan, H. Martin, T. Benson, C. McAloon, E. G. Manzanilla, and M. Dean, "Behaviour change interventions for responsible antimicrobial use on farms," *Irish Veterinary Journal*, vol. 76, no. 1, pp. 8, 2023, doi: 10.1186/s13620-023-00236-x.
[47] J. Maltby, "Avoiding siloed approaches: Integrating psychological insights into sustainable farming," *PloS One*, vol. 19, no. 10, pp. e0301881, 2024, doi: 10.1371/journal.pone.0301881.
[48] Z. Zhou, Y. Zhang, and Z. Yan, "Will digital financial inclusion increase Chinese farmers' willingness to adopt agricultural technology?," *Agriculture*, vol. 12, no. 10, pp. 1514, 2022, doi: 10.3390/agriculture12101514.
[49] R. Tombe, and H. Smuts, "Agricultural social networks: An agricultural value chain-based digitalization framework for an inclusive digital economy," *Applied Sciences*, vol. 13, no. 11, pp. 6382, 2023, doi: 10.3390/app13116382.
[50] N. Ndege, F. Marshall, and R. Byrne, "Exploring inclusive innovation: A case study in operationalizing inclusivity in digital agricultural innovations in Kenya," *Agricultural systems*, vol. 219, pp. 104033, 2024, doi: 10.1016/j.agsy.2024.104033.
[51] A. A. Vărzaru, "Digital revolution in agriculture: Using predictive models to enhance agricultural performance through digital technology," *Agriculture*, vol. 15, no. 3, pp. 258, 2025, doi: 10.3390/agriculture15030258.