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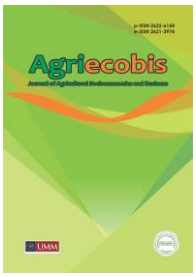

Research Article

Analysis on Farmers' Decision-Making Processes Regarding Sustainable Agricultural Practices: A Case Study in Kademangan, Pagelaran, Malang, Indonesia

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ABSTRACT

Pagelaran, located in Malang, is among the seven key rice-producing regions, encompassing an agricultural expanse of 2,592 hectares. Despite this, a notable scarcity persists in the adoption of sustainable agricultural practices among local farmers, such as the utilization of organic fertilizers and integrated pest and disease management within their agricultural enterprises. The investigation centered on Kademangan, Pagelaran, Malang, Indonesia. Employing a purposive sampling approach, the study engaged 66 respondents. Data synthesis encompassed primary and secondary sources. Methodologies encompassed descriptive analysis, Structural Equation Model (SEM), and Analytical Hierarchy Process (AHP). Outcomes underscored the significant impact of innovation characteristics on farmers' attitudes, intentions, and decisions. Additionally, attitudes and moral norms emerged as influential determinants of farmers' intentions and decisions. Perceived behavioral control and intentions were pivotal in shaping farmers' decisions. Notably, strategies aimed at enhancing farmer capacity pertaining to sustainable agriculture emerged as paramount in augmenting its implementation, as per the study's findings.

INTRODUCTION

The escalation of food production endeavors is driven by the imperative to satisfy burgeoning population demands. Nonetheless, such intensification endeavors are paralleled by a surge in the utilization of chemical inputs, posing adverse repercussions on agricultural ecosystems. Empirical evidence underscores humanity's substantial role in exacerbating climate change and environmental degradation within agricultural domains (Chen, 2016). The persistence of these practices harbors the potential to precipitate heightened and irreversible harm in forthcoming epochs. In response, sustainable agricultural innovations have been cultivated as a proactive measure to mitigate these deleterious effects.

Sustainable agriculture embodies a holistic agricultural framework prioritizing economic, social, and ecological dimensions (Wahyudi et al., 2017). It entails the integration of agricultural practices while minimizing or ceasing activities detrimental to the environment. This paradigm offers a viable approach to fostering robust, secure agriculture, sustainable food production, and environmental stewardship. Evidence from various Asian and Latin American nations underscores the efficacy of sustainable agriculture in enhancing agricultural sector

productivity and ameliorating food insecurity and poverty (Zeweld et al., 2017). Despite Indonesia's introduction of sustainable agricultural systems since the 21st century, their actual implementation remains suboptimal, as evidenced in locales like Pagelaran. Government initiatives aimed at bolstering sustainable agriculture, such as fertilizer subsidy programs, fall short in eliciting the desired behavioral shifts among farmers.

Multiple studies (Nguyen & Drakou, 2021; Zamasiya et al., 2017; Yanakittkul & Aungvaravong, 2020) underscore the significance of integrating socio-psychological factors within the Theory of Planned Behavior (TPB) framework to forecast farmers' decision-making processes. These factors encompass attitudes, subjective norms, and perceived behavioral control, alongside innovation characteristics including relative advantage, compatibility, complexity, triability, and observability (Sholahuddin, 2017). Moreover, this inquiry extends the discourse by incorporating moral norms as an additional predictor of environmentally friendly behavior (Maleksaeidi & Keshavarz, 2019). Motivated by the aforementioned challenges, this study endeavors to elucidate farmers' decision-making processes in sustainable agriculture implementation. Accordingly, the study aims to (1) describe the characteristics of farmers, (2) analyze the effect of innovation characteristics, attitudes, subjective norms, perceived behavioral control, and moral norms on farmers' intention to implement sustainable agriculture, (3) analyze the effect of innovation characteristics, attitudes, subjective norms, perceived behavioral control, and moral norms on farmers' decisions through farmers' intention to implement sustainable agriculture, and (4) analyze strategies to improve the implementation of sustainable agriculture.

METHOD

This study adopts a quantitative research approach, which entails examining specific representative populations or samples, collecting data through research instruments, conducting statistical/quantitative data analysis, and testing predetermined hypotheses (Sugiyono, 2012).

Research Setting (Location and Time)

The study was purposively conducted in Kademangan, Pagelaran, Malang, Indonesia, encompassing local rice farmers. Data collection occurred during the planting season in October 2023. The offline distribution of questionnaires was chosen by the researcher to ensure accuracy, facilitating effective and systematic interviews for obtaining valid data from the researcher-developed questionnaire.

Sampling Technique

The analysis employed Structural Equation Models (SEM), utilizing non-probability sampling to encompass every member of the population. Specifically, purposive sampling was employed, with careful consideration given to respondents residing in Kademangan engaged in rice farming, ensuring data collection aligned with desired characteristics. Sample size determination followed Cohen's guidelines, aiming for a Statistical Power of 80% at a significance level of 5% ($\alpha = 0.05$), with a minimum R2 of 0.50 and 8 arrows pointing to construct formation. Consequently, 62 respondents were included in the SEM analysis.

For the Analytical Hierarchy Process (AHP) analysis, purposive sampling was also utilized. Selection of respondents to complete the AHP questionnaire was based on their expertise, credibility, and extensive knowledge of rice farming activities. Specifically, four respondents were chosen, including the Coordinator and Counselor of Agricultural Extension of Pagelaran, as well as the Heads of Farmers Association (GAPOKTAN) "Mekar Sari II" and "Mekar Sari." These individuals played an integral role in providing agricultural insights and assisting in questionnaire completion.

Data collection

This study employs both primary and secondary data sources. Primary data, as delineated by Sugiyono (2012), is directly gathered through questionnaires. Secondary data sources, conversely, are obtained indirectly from various sources such as the Department of Food Crops Horticulture and Plantations, Indonesia Statistics (BPS), Agricultural Extension Center of Pagelaran, as well as from literature sources including books, journals, and online repositories. The first offline questionnaire utilizes a 5-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree. Similarly, the second offline questionnaire employs an importance scale: 1 = equal relative importance, 3 = Moderately more important, 5 = Strongly important, 7 = Very Strongly more important, 9 = Extremely important, with intermediary values assigned scores of 2, 4, 6, and 8.

Data analysis

This study employs descriptive analysis, Structural Equation Model (SEM) analysis utilizing the Warp PLS method, and Analytical Hierarchy Process (AHP) employing the expert choice method. Descriptive analysis is utilized to depict the socio-demographic characteristics encompassing respondent information such as age, gender, highest education level, number of family dependents, occupation, farmer income, experience, and agricultural land ownership area (Sugiyono, 2012). Additionally, the structural equation model in Warp PLS comprises two components: the outer model and the inner model (Solimun et al., 2017). Furthermore, the research utilizes Analytical Hierarchy Process (AHP) to establish a hierarchical model encompassing objectives, criteria, and alternatives. Subsequently, the acquired data is processed using Expert Choice version 11 software application.

RESULTS AND DISCUSSION

Kademangan, situated in Pagelaran, Malang, Indonesia, serves as a prominent rice-producing village, with approximately 69 farmers registered under the Farmers Association (GAPOKTAN) "Mekar Sari II." Notably, Kademangan is renowned for its rice-centric agricultural activities. The demographic profile of the farmers reveals that 87.1% are male and 12.9% are female, with the majority falling within the age bracket of 56-65 years (29.03%), followed by 36-45 years (27.41%), and 46-55 years (19.35%). This age range is deemed productive, as per the classification by the Ministry of Health, Republic of Indonesia (2018). Age plays a pivotal role as it correlates with farmers' physical capabilities and energy levels. This aligns with the assertion by Meliyanawati et al. (2020) that age can influence the capacity and receptivity to new information or technology. Regarding education, the predominant level attained among respondents is high school (51.61%), followed by junior high school (9.68%), elementary school (20.97%), and D3/S1 degree (17.34%). This indicates a moderate education level among the respondents, which, according to Yuliana and Nadapdap (2020), can impact their readiness to embrace change, owing to its association with comprehension and analytical abilities.

The primary occupation of the majority of respondents is farming (61.29%), while 28.71% engage in agriculture as a supplementary source of income. The income of most respondents ranges between IDR 2,000,000 - IDR 5,000,000 (74.19%), encompassing revenues from both farming and non-farming endeavors. Family sizes vary, with the majority having three members (38.71%), although the number can extend up to five members or reduce to a single member. This pattern suggests an increasing proportion of expenses for essential needs, leaving a relatively small portion for other expenditures (Lestari et al., 2009). Farm sizes predominantly fall within the range of <0.5 hectares (30.6%) and 0.5-2 hectares (66.1%). As noted by Setyono (2018), farmers with smaller land holdings tend to exhibit reluctance towards innovation adoption due to fear of failure, whereas those with larger land holdings are more inclined to experiment with innovations on smaller plots. The experience level of the majority of farmers, spanning 15 years and above, is 80.65%. Farmer experience is considered instrumental in innovation implementation success, given that higher experience levels correlate with enhanced skills, knowledge, and adaptability to new technologies (Utari et al., 2022).

Table 1. Results of Validity and Reliability Test

Variable	Indicator	*Loading factors*	P-*Value*	*Composite Reliability*	*Cronbach's Alpha*	AVE
Value Standards		**>0.50**	**<0.05**	**≥0.70**	**>0.60**	**>0.50**
Innovation Characteristics (X1)	X1.1	0.852	<0.001	0.914	0.892	0.757
	X1.2	0.745	<0.001			
	X1.3	0.785	<0.001			
	X1.4	0.690	<0.001			
	X1.5	0.718	<0.001			
	X1.6	0.784	<0.001			
	X1.7	0.777	<0.001			
	X1.8	0.686	<0.001			
Subjective Norm (X2)	X2.1	0.798	<0.001	0.879	0.792	0.841
	X2.2	0.895	<0.001			
	X2.3	0.828	<0.001			
Perceived of Behavioral Control (X3)	X3.1	0.740	<0.001	0.857	0.791	0.740
	X3.2	0.692	<0.001			
	X3.3	0.687	<0.001			
	X3.4	0.830	<0.001			
	X3.5	0.741	<0.001			
Moral Norm (X4)	X4.1	0.794	<0.001	0.904	0.875	0.758
	X4.2	0.654	<0.001			

Variable	Indicator	*Loading factors*	P-*Value*	*Composite Reliability*	*Cronbach's Alpha*	AVE
Value Standards		**>0.50**	**<0.05**	**≥0.70**	**>0.60**	**>0.50**
	X4.3	0.727	<0.001			
	X4.4	0.867	<0.001			
	X4.5	0.782	<0.001			
	X4.6	0.735	<0.001			
	X4.7	0.732	<0.001			
Attitude (Y1)	Y1.1	0.674	<0.001	0.906	0.883	0.720
	Y1.2	0.702	<0.001			
	Y1.3	0.790	<0.001			
	Y1.4	0.668	<0.001			
	Y1.5	0.730	<0.001			
	Y1.6	0.762	<0.001			
	Y1.7	0.785	<0.001			
	Y1.8	0.748	<0.001			
	Y1.9	0.601	<0.001			
Intention (Y2)	Y2.1	0.722	<0.001	0.863	0.808	0.719
	Y2.2	0.677	<0.001			
	Y2.3	0.562	<0.001			
	Y2.4	0.872	<0.001			
	Y2.5	0.724	<0.001			
	Y2.6	0.721	<0.001			
Decision (Y3)	Y3.1	0.785	<0.001	0.879	0.831	0.744
	Y3.2	0.694	<0.001			
	Y3.3	0.702	<0.001			
	Y3.4	0.517	<0.001			
	Y3.5	0.831	<0.001			
	Y3.6	0.882	<0.001			

Source: Processed SEM-PLS Data, 2023

The analysis findings (see Table 1) indicate that all factor loadings exceed 0.50, meeting the criteria for convergent validity, as outlined by Solimun et al. (2017). Composite reliability values for all variables meet the criterion of ≥0.70, while Cronbach's Alpha values exceed 0.60 for all variables (Hair et al., 2014). Additionally, the Average Variance Extracted (AVE) values for all variables surpass 0.50. The goodness-of-fit test results indicate that all criteria are satisfied, indicating the adequacy of the research model. The Average Path Coefficient (APC) is 0.002, with Average R-Squared (ARS) and Average Adjusted R-squared (AARS) both less than 0.001, indicating statistical significance at the 5% level. Furthermore, the Average Block VIF (AVIF) is 1.972, and the Average Full Collinearity VIF (ARVIF) is 2.549, both below the threshold of 3.3, suggesting the model's adequacy. The Tenenhaus GoF (GoF) value of 0.569 falls within the large category, indicating strong predictive power. Moreover, Sympson's Paradox Ratio (SPR), R-Squared Contribution Ratio (RSCR), Statistical Suppression Ratio (SSR), and Non-linear Bivariate Causality Direction Ratio (NLBCDR) all equal 1, demonstrating the model's acceptability according to Solimun et al. (2017).

Table 2. Results of Hypothesis Test

Variable	*Patch Coefficient*	P-*Value* <0.05	Confirm
Innovation Characteristics (X1) → Attitude (Y1)	0.700	<0.001	Significant
Innovation Characteristics (X1) → Intention (Y2)	0.116	0.172	Not Significant
Subjective Norm (X2) → Intention (Y2)	0.091	0.230	Not Significant
Perceived Behavioral Control (X3) → Intention (Y2)	0.062	0.310	Not Significant
Moral Norm (X4) → Intention (Y2)	0.280	0.009	Significant
Attitude (Y1) → Intention (Y2)	0.399	<0.001	Significant
Perceived Behavioral Control (X3) → Decision (Y3)	0.280	0.009	Significant
Intention (Y2) → Decision (Y3)	0.564	<0.001	Significant
Innovation Characteristics (X1) → Attitude (Y1) → Intention (Y2)	0.279	<0.001	Significant
Innovation Characteristics (X1) → Intention (Y2) → Decision (Y3)	0.066	0.229	Not Significant

Variable	*Patch Coefficient*	P-*Value* <0.05	Confirm
Subjective Norm (X2) → Intention (Y2) → Decision (Y3)	0.052	0.281	Not Significant
Perceived Behavioral Control (X3) → Intention (Y2) → Decision (Y3)	0.035	0.347	Not Significant
Moral Norm (X4) → Intention (Y2) → Decision (Y3)	0.158	0.034	Significant
Attitude (Y1) → Intention (Y2) → Decision (Y3)	0.225	0.004	Significant
Innovation Characteristics (X1) → Attitude (Y1) → Intention (Y2) → Decision (Y3)	0.158	0.013	Significant

Source: Processed SEM-PLS Data, 2023
Notes: P-value ≤0.01 = Highly Significant, P-value ≤0.05 = Moderately Significant, and P-value ≤0.10 = Least Significant

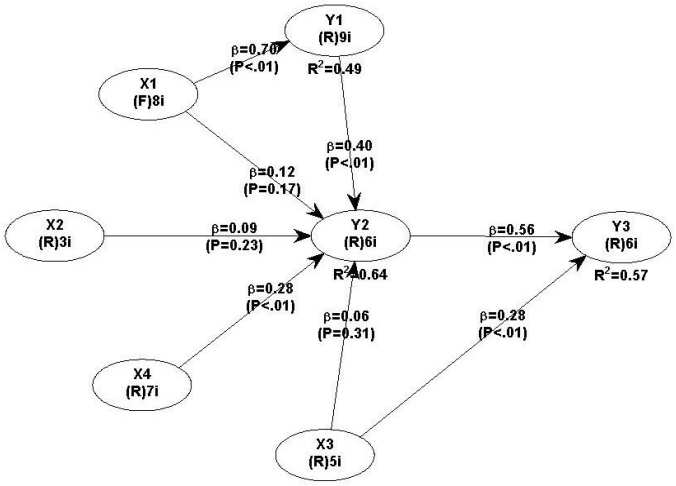

Figure 1. Results of Research Path Diagram

The Effect of Characteristics of Innovation on Attitudes, Intentions, and Decisions

The analysis results (see Table 2) revealed a significant effect of innovation characteristics on farmers' attitudes, accounting for 70%, with a p-value ≤0.01. Innovation characteristics, assessed through indicators such as relative advantage, compatibility, complexity, trialability, and observability, demonstrated a positive effect on farmers' attitudes, aligning with previous findings (Zeweld et al., 2017). Specifically, farmers' perception of the ease of understanding, learning, and application of new innovations correlated with a favorable attitude towards agricultural innovations. Furthermore, the analysis indicated a significant indirect effect of innovation characteristics on intention through attitude, accounting for 28%, with a p-value ≤0.01. Additionally, the study found a significant relationship between innovation characteristics and farmers' decisions, explaining 16% of the variance, with a p-value ≤0.05. This result is consistent with prior research (Permatasari et al., 2018), which underscored the positive effect of innovation characteristics on behavior change among organic rice farmers. It suggests that farmers in Kademangan perceive sustainable agriculture as compatible with their past experiences, cultural values, needs, and existing agricultural systems, in line with findings by Yuliana and Nadapdap (2020), emphasizing farmers' tendency to adapt gradually to agricultural innovations.

The Effect of Attitudes on Intentions and Decisions

The analysis results (Table 2) demonstrate a significant effect of 39% with a p-value of ≤0.01 for the attitude variable on farmers' intention to engage in sustainable agriculture. This implies that heightened favorable attitudes among farmers correspond to a greater inclination towards implementing sustainable agricultural practices. Consistent with previous research (Bagheri et al., 2019; Maleksaeidi & Keshavarz, 2019; Tama et al., 2021), our findings affirm a noteworthy association between attitude and behavioral intention. Additionally, our study reveals a significant relationship between attitudes, accounting for a 22% effect with a p-value of ≤0.01, and farmers' decisions. This finding aligns with prior research (Andry, 2018), which underscores the substantial impact of positive farmer attitudes on adoption decisions, such as the Bestari seed variety in Musi Rawas. Thus, farmers in Kademangan exhibit favorable attitudes towards sustainable agriculture, as assessed through cognitive, affective, and conative indicators, thereby influencing their implementation decisions positively. Notably, attitude variables serve as mediators between innovation

characteristics, farmers' intentions, and decisions, as evidenced by the significant results of indirect effect path coefficients (Solimun et al., 2017).

The Effect of Subjective Norms on Intentions

The analysis results (Table 2) indicate that the subjective norm variable exerts no discernible impact on the intention to enact sustainable agriculture. This observation aligns with previous studies (López-Mosquera et al., 2014; Rezaei & Ghofranfarid, 2018), which assert the negligible influence of subjective norms on farmers' intentions, notwithstanding the recognized significance of the Theory of Planned Behavior (TPB) model in comprehending individual intention formation. Agriculture frequently interfaces with broader communal or social spheres, wherein certain farmers may find themselves more influenced by economic or technical considerations rather than social expectations. This intricate milieu consequently complicates the evaluation and quantification of subjective norms, leading to inconsistencies. As posited by Rezaei et al. (2019), while their findings may demonstrate a lack of correlation between subjective norms and intentions, it would be imprudent to underestimate the role of social pressures in molding specific behaviors.

The Effect of Perceived Behavioral Control on Intention

The analysis results (Table 2) reveal that the perceived behavioral control variable exerts no discernible influence on the intention to implement sustainable agriculture. This outcome refutes the initial hypothesis posited in this study and corroborates findings from research conducted by Maleksaeidi & Keshavarz (2019) concerning the intention to preserve biodiversity in Iran. This contradicts the conclusions drawn from several prior studies (Nguyen & Drakou, 2021; Tama et al., 2021; Yanakittkul & Aungvaravong, 2020), which identified perceived behavioral control as a robust predictor of farmers' behavioral intentions. Nevertheless, the study's findings indicate a positive and significant effect of perceived behavioral control on decisions, amounting to 28% with a p-value of ≤0.01. This finding resonates with research conducted by Tapsoba et al. (2023), which suggests that perceived behavioral control directly influences farmers' decisions to adopt agroecological practices in Bernin and Burkina Faso. This phenomenon may be attributed to the high dependency of the agricultural sector on governmental financial and technical assistance. Most local farmers benefit from subsidized support provided by the government, including the provision of organic fertilizers. However, farmers perceive the support rendered as inadequate to meet their agricultural requirements.

The Effect of Moral Norms on Intentions and Decisions

The analysis results (Table 2) demonstrate a significant relationship between moral norms and farmers' implementation intentions. This relationship exhibits an effect of 28% with a p-value of ≤0.01, representing the most substantial effect among all variables on farmers' intentions. This suggests that farmers perceive sustainable agriculture as aligning with their moral commitments, as evidenced by considerations of ethical matters, feelings of guilt, and adherence to life principles. This perception underscores the importance of adhering to nature and implementing environmentally friendly strategies to mitigate adverse impacts resulting from agricultural management practices. These findings corroborate existing research (Liu et al., 2017; Maleksaeidi & Keshavarz, 2019; Zhang et al., 2017), which posits that individual behavior is influenced not only by rationality and cost-benefit analyses but also by emotions and moral obligations, which play pivotal roles in shaping environmental behaviors. Additionally, researchers identified an indirect relationship between moral norms, exhibiting a significant effect of 16% on decisions with a p-value of ≤0.05. This value signifies farmers' sense of social responsibility towards the communal environment, wherein they play active roles in environmental preservation or endorse ethical farming principles. These findings align with prior research (Menozzi et al., 2015) and the viewpoints of Yazdanpanah et al. (2014), which assert that moral norms exert influence on intentions and behaviors related to water conservation in Iran.

The Effect of Intentions on Decisions

The analysis results (Table 2) reveal a significant relationship between intention and the decision to adopt sustainable agriculture, with an effect of 56% and a p-value of ≤0.01. This indicates that stronger and more positive intentions among farmers towards their agricultural practices correspond to a more favorable impact on various aspects of farmers' lives and decision-making processes. These findings are consistent with prior research (Tapsoba et al., 2023; Zeweld et al., 2017), which indicates that farmers' intentions exert a

positive and substantial influence on their decisions regarding the adoption of agroecological practices. It is evident that farmers in Kademangan generally harbor favorable intentions towards implementing sustainable agriculture, as measured by their inclination to implement and their intention to advocate for other farmers. In mediation analysis, the intention variable serves as a mediator between innovation characteristics, attitudes, and moral norms in influencing farmers' decisions. This is supported by the significant results of the indirect effect path coefficient (Solimun et al., 2017). These findings align with previous research (Bamberg & Möser, 2007), which suggests that intention mediates the impact of attitudes and moral norms on agroecological behavior and the adoption of sustainable agricultural practices (Coulibaly et al., 2021).

Strategies to Increase the Implementation of Sustainable Agriculture

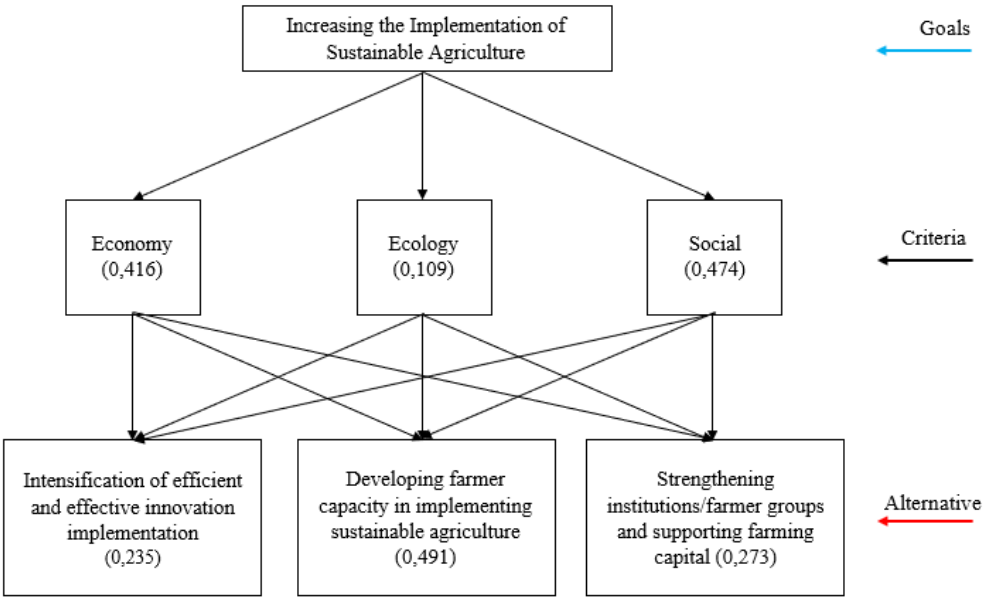

Figure 2. Hierarchy Model and Priority Weighting to Increase the Implementation of Sustainable Agriculture

The analysis results obtained (Figure 2) indicate that the eigenvalue of the objective criteria for implementing sustainable agriculture prioritizes social criteria, with an eigenvalue of 0.474 and an inconsistency level of 0.04, meeting the criteria for an inconsistency ratio of ≤10%. Subsequently, the analysis of eigenvalues concerning alternative objectives reveals that enhancing farmers' capacity in implementing sustainable agriculture emerges as the primary strategy for improving its application, with an eigenvalue of 0.491. Following this, strengthening farmer associations and providing capital assistance represents the second priority strategy, with an eigenvalue of 0.273. The third and final priority strategy entails intensifying the adoption of effective and efficient innovations, with an eigenvalue of 0.235. Respondents concur that enhancing farmers' capacity in sustainable agriculture is crucial for achieving the objective of increasing its application. Rustandi et al. (2020) define capacity as the farmer's ability, encompassing factors such as education level, farming experience, and participation in extension activities, to effectively and sustainably meet farming objectives. Moreover, Nguyen & Drakou (2021) elucidate that farmers equipped with a clear understanding of addressing climate change through sustainable agriculture are more inclined to modify their attitudes toward its implementation.

The second strategic priority for enhancing the implementation of sustainable agriculture is the reinforcement of farmer associations and provision of capital assistance. Farmer associations empower farmers by enhancing their bargaining leverage in various realms, such as price negotiations, access to agricultural technology information, resource availability, adaptation to climate change, and policy advocacy. Presently, there is minimal interaction among farmers, and local stakeholders acknowledge a prevailing lack of enthusiasm among farmer group members. Putra et al. (2016) underscore the pivotal role of farmer groups in disseminating agricultural technology information, often facilitated through extension methodologies. These extension activities significantly influence changes in farmers' knowledge, attitudes, and skills. Additionally, respondents highlighted the significance of capital assistance for farm businesses. They expressed concerns that insufficient assistance hinders the adoption of sustainable agriculture practices to meet agricultural needs

adequately. This observation resonates with the findings of Adawiyah et al. (2018), who underscored that the adequacy of assistance influences the adoption of UPSUS PAJALE (special efforts to enhance rice, corn, and soybean production) technology.

The third priority strategy for enhancing the implementation of sustainable agriculture is the intensification of efficient and effective innovations. Respondents concur that intensifying activities to apply such innovations is crucial, as they facilitate optimal resource utilization, biodiversity conservation, and enhanced productivity. Moreover, intensifying the adoption of agricultural innovations can address consumer demands, aligning with findings by Hardiyanti et al. (2022), which highlight shifts in consumer preferences towards health-conscious and sustainable food choices. Therefore, prioritizing the intensification of efficient and effective sustainable agricultural innovations can foster the development of a more efficient and environmentally friendly agricultural system, yielding long-term benefits for the community. The overall inconsistency rate stands at 0.02 or 2%, indicating acceptable coherence in the Analytic Hierarchy Process (AHP) analysis results, as they adhere to the criterion established by Syukron (2014) of a Consistency Ratio (CR) ≤10%.

CONCLUSION

The findings of this study indicate that innovation characteristics exert a significant influence on attitudes, intentions, and decisions. Furthermore, attitudes significantly impact both intentions and decisions, while moral norms and perceived behavioral control similarly wield significant influence over intentions and decisions. Notably, intentions significantly shape farmers' decisions to implement sustainable agriculture. Conversely, subjective norms and perceived behavioral control exhibit no discernible effect on farmers' intentions. Additionally, the study prioritizes the process of implementing sustainable agriculture based on social criteria. Subsequently, the primary strategy for enhancing sustainable agriculture application entails bolstering farmer capacity in sustainable agricultural practices, followed by the secondary strategy of fortifying farmer associations and providing capital assistance.

Furthermore, the study suggests that government intervention through policy measures aimed at bolstering extension activities to enhance farmer capacity and strengthening farmer associations and capital assistance to promote sustainable agriculture application is imperative. Moreover, the research underscores the need to consider other variables beyond those examined in this study to provide a comprehensive understanding of farmers' decisions regarding agroecological behavior.

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