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DETERMINANTS OF YOUNG PEOPLE'S INTEREST IN BECOMING RICE FARMERS IN PENEBEL DISTRICT, TABANAN REGENCY, BALI PROVINCE

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Abstract

The sustainability of the agricultural sector in Penebel District is currently facing serious challenges due to the declining interest of the younger generation in pursuing rice farming as a profession. This study was designed to examine: (1) the contribution of motivation, perceptions of agriculture, agricultural experience, gender, educational level, parents' occupation, availability of family-owned rice fields, and family economic conditions to young people's interest in becoming rice farmers; (2) the moderating role of perceptions of agriculture on the relationship between family economic conditions and such interest; and (3) the most dominant factor influencing this interest. The study involved 100 young farmers aged 19–39 years who were selected through accidental sampling in Penebel District, Tabanan Regency. Data collected through observation, questionnaires, and interviews were analyzed using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) approach with SmartPLS 3 software. The findings indicate that motivation, agricultural experience, parents' occupation, availability of family-owned rice fields, family economic conditions, and perceptions of agriculture have a positive and significant effect on increasing young people's interest in rice farming. Among these variables, motivation was identified as the most influential factor. Furthermore, perceptions of agriculture negatively moderate (weaken) the effect of family economic conditions on such interest. In contrast, gender and educational level were found to have no significant effect. These findings imply the importance of government initiatives in promoting technology-based modern agriculture and protecting the availability of rice fields through agricultural land zoning regulations.

Keywords: family economic conditions, young people's interest, motivation, perceptions of agriculture, rice farmers.

INTRODUCTION

As an agrarian country, Indonesia possesses significant strategic potential in the agricultural sector, which not only contributes to food production but also provides raw materials for industries and creates employment opportunities for the population (Azmi, 2022). Referring to Law Number 19 of 2013, agriculture is defined as an activity involving the utilization of biological natural resources that integrates technology, capital, labor, and management to produce food crops, horticultural products, plantation commodities, and livestock within an agroecosystem framework. Given its broad scope, the agricultural sector plays a crucial role in both the economy and society. In line with this perspective, Laung (2021) emphasized that agriculture occupies a central position because it absorbs labor, generates foreign exchange earnings, strengthens national economic resilience, and improves community welfare. According to data from the Indonesian Central Statistics Agency (BPS), the sector contributed 12.53% to the Gross Domestic Product (GDP) in 2023, representing a growth of 7.77% compared to 2022 (BPS, 2023). Even during the COVID-19 pandemic, the agricultural sector maintained positive growth, reaching 2.59% in the fourth quarter of 2020 due to the expansion of harvested areas for strategic commodities (BPS, 2021). The sector also serves as a major source of employment, with approximately 24.96% of the national labor force, or around 35 million people, depending on agriculture for their livelihoods in 2020 (Ministry of Agriculture, 2021).

One of the primary commodities in Indonesia's agricultural sector is rice, which serves as the staple food for the majority of the population. Despite achieving substantial production of 54.75 million tons in 2021 (FAO, 2022), Indonesia continues to face challenges in meeting domestic rice demand due to structural labor shifts toward the industrial and service sectors. Declining rice production amid a growing population, projected to reach 273 million by 2025, may lead to rising food prices and threaten food security (Putra & Wardana, 2018; World Bank, 2023). This issue is further exacerbated by a severe farmer regeneration crisis. Data from the 2023 Agricultural Census indicate that Indonesia's farming population is currently dominated by individuals aged over 45 years (61%), while young farmers aged 19–39 years account for less than 4% of the total farming population (BPS, 2023).

This farmer regeneration crisis is also evident in Bali Province, where agriculture is closely intertwined with local cultural values, particularly the Subak irrigation system based on the philosophy of Tri Hita Karana (Dwipradnyana, 2017). According to data from the Bali Provincial Statistics Agency (2024), total rice production in the province reached 673,580.70 tons of milled dry grain throughout 2023. Tabanan Regency was recorded as the largest contributor, producing 169,511.90 tons or 25.17% of the provincial total, significantly surpassing other regencies such as Badung (15.54%) and Gianyar (18.32%). This achievement reinforces Tabanan Regency's position as the "Rice Granary of Bali" (Adyaguhyatriko et al., 2024). One of the key supporting areas within Tabanan Regency is Penebel District, which encompasses 3,841.01 hectares of rice fields with terraced topography that is highly suitable for both local and superior rice varieties. Penebel District consists of 18 villages and is home to 7,447 rice farmers, with the highest concentrations found in Wongaya Gede Village (9.87%) and Biaung Village (9.37%) (Agricultural Extension Center of Penebel District, 2024).

Although Penebel District serves as a major center of rice cultivation, threats to its sustainability remain substantial. A preliminary survey conducted by the researchers in

February 2025 revealed indications of low interest among young people, with only one young farmer (2%) identified among 50 rice farmers surveyed. This crisis of interest corresponds with the decline in rice field area in Tabanan Regency, which decreased from 22,479 hectares in 2008 to only 19,991 hectares in 2023 due to land conversion (BPS Bali, 2018; SDI Bali, 2023). The external reduction in land availability interacts with internal psychological factors, as occupational interest does not emerge spontaneously but is shaped by environmental stimuli (Bustami et al., 2021; Firmansyah et al., 2024). Internally, many young people hold negative perceptions of agriculture, associating farming with physically demanding, dirty, and low-income work compared to employment in the formal sector (Wahyuni et al., 2021; Syaifulloh et al., 2022).

Several previous studies have confirmed these dynamics of interest. Meitry et al. (2024) argued that interest in the agricultural sector is influenced by personal motivation and family economic conditions. Meanwhile, Marcus et al. (2022) found significant effects of gender, educational level, and land size. Furthermore, Arvianti et al. (2019) emphasized that the perception of farming as an outdated occupation and the limited ownership of agricultural land are major factors discouraging young people from engaging in farming activities. Nevertheless, previous studies have generally focused on agriculture from a broader perspective and have not comprehensively examined multidimensional factors and their moderating effects in the context of rice farming within major agricultural centers such as Penebel District.

Based on these considerations, this study aims to measure the extent to which motivation, perceptions of agriculture, agricultural experience, gender, educational level, parents' occupation, availability of family-owned rice fields, and family economic conditions influence young people's interest in becoming rice farmers in Penebel District. Furthermore, the study investigates the moderating role of perceptions of agriculture in the relationship between family economic conditions and such interest, while also identifying the most dominant influencing variable. The findings are expected to provide strategic recommendations for sustaining farmer regeneration in one of Bali's major food-producing regions.

METHOD

This study employed a causal associative quantitative research design and was conducted in Penebel District, Tabanan Regency, Bali, with the objective of examining the factors influencing the interest of young people aged 19–39 years in pursuing rice farming as an occupation (Y). The independent variables examined included motivation (X_1), agricultural experience measured in years (X_2), gender as a dummy variable (X_3), educational level (X_4), parents' occupation (X_5), availability of family-owned rice fields measured in ares (X_6), family economic conditions (X_7), and perceptions of agriculture (M), which simultaneously served as a moderating variable in the relationship between family economic conditions and occupational interest. The study population consisted of 133 young farmers registered at the Agricultural Extension Center (BPP) of Penebel District in 2024. Using a combination of purposive, accidental, and snowball sampling techniques, a sample size of 100 respondents was determined. This sample size met the requirements of the Slovin formula with a 5% margin of error and was further validated through statistical power analysis using G*Power 3.1 (predictors = 9, effect size = 0.18, power = 0.80). Primary data were collected through structured questionnaires employing a five-point Likert scale and in-depth interviews, while secondary data were obtained from official documents of

the Agricultural Extension Center of Penebel District and the Department of Agriculture of Tabanan Regency.

Data analysis was conducted using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) approach with SmartPLS 3 software. The analysis began with descriptive statistics to examine respondent characteristics and questionnaire scores. The outer model evaluation included tests of convergent validity (factor loadings > 0.70 and Average Variance Extracted [AVE] > 0.50), construct reliability (Cronbach's Alpha and Composite Reliability > 0.70), and discriminant validity assessed using the Heterotrait–Monotrait Ratio (HTMT < 0.90). The inner model evaluation involved examining multicollinearity (Variance Inflation Factor [VIF] < 5), model fit indices (SRMR and NFI), coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2 with D = 7). Finally, hypothesis testing for both direct effects and moderating interaction effects was conducted based on the significance of path coefficients estimated through a non-parametric bootstrapping procedure. The moderating effect was examined by incorporating a product interaction term between Family Economic Conditions and Perceptions of Agriculture ($X_7 \times M$), which was statistically generated within SmartPLS. Moderation was considered significant when the interaction path coefficient was statistically significant ($p < 0.05$). Furthermore, all final results were revalidated through post hoc statistical power analysis using G*Power 3.1 to minimize the risk of Type II errors and ensure the robustness of the model's statistical power.

RESULTS AND DISCUSSION

Overview of the Research Area

This study was conducted in Penebel District, Tabanan Regency, Bali, a region characterized by fertile hilly and mountainous landscapes situated at elevations ranging from 225 to 2,276 meters above sea level. The administrative area covers a total of 14,198 hectares and is divided into 18 administrative villages. Historically and socio-culturally, Penebel has served as a strategic rice-producing region and continues to preserve the traditional Subak-based agricultural system. Primary data for this study were collected from 100 young farmers aged 19–39 years who were distributed across villages recognized as local Subak rice production centers. A small proportion of respondents (4%) originated from neighboring Baturiti District but actively managed agricultural land under the jurisdiction of Subak organizations within Penebel District.

Respondents' Demographic Characteristics

A summary of the demographic data and farming profiles of the 100 respondents is presented in an integrated manner in Table 1.

Table 1. Socio-Demographic Profile and Farming Characteristics of Respondents

Characteristic	Category	Frequency (n)	Percentage (%)
Age (Years)	19–23	3	3
	24–28	13	13
	29–33	15	15
	34–39	69	69
Gender	Male	86	86
	Female	14	14

Characteristic	Category	Frequency (n)	Percentage (%)
Farmer Status	Landowner Only	63	63
	Landowner and Farm Laborer	16	16
	Landowner and Tenant Farmer	13	13
	Others	8	8
Parents' Occupation	Both in Non-Agricultural Sector	6	6
	One Parent in Agricultural Sector	29	29
	Both in Agricultural Sector	65	65
Educational Level	No Formal Education	6	6
	Elementary School Graduate	10	10
	Junior High School Graduate	23	23
	Senior High School/Vocational High School Graduate	42	42
	Bachelor's Degree Graduate	19	19
Farming Experience	Short (1–5 Years)	33	33
	Moderate (6–10 Years)	43	43
	Extensive (11–15 Years)	24	24
Rice Field Size	Small (< 50 Are)	57	57
	Medium (50–<200 Are)	41	41
	Large (200–1,000 Are)	2	2

Source: Processed primary data, 2026.

Referring to Table 1, the demographic profile indicates a clear sign of a farmer regeneration crisis, as the majority of respondents belonged to the upper age range of the youth category (34–39 years), accounting for 69% of the sample, whereas only 3% were aged 19–23 years. Farming activities were predominantly carried out by males (86%), highlighting the continued importance of physical labor in agricultural operations. In terms of physical asset ownership, 63% of respondents were pure landowners, while the remainder adopted multi-role livelihood strategies or fell into the "Others" category (8%) due to the limited availability of family-owned rice fields, which were predominantly small-scale holdings of less than 50 are (57%).

Social environmental factors reveal strong emotional attachment and early socialization within farming households, as 94% of respondents had at least one parent actively engaged in the agricultural sector. Despite being raised in a traditional rural setting, the human capital of young farmers in Penebel can be considered adaptive, as it was dominated by respondents with secondary and higher education. Senior high school and vocational school graduates constituted the largest proportion (42%), followed by junior high school graduates (23%), bachelor's degree holders (19%), elementary school graduates (10%), and respondents with no formal education (6%). This relatively educated farming population was further supported by substantial practical farming experience.

The majority of respondents (43%) had been farming for 6–10 years, while cumulatively 67% had engaged in rice cultivation for more than five years.

Description of Research Variables

Descriptive analysis of questionnaire responses was conducted to provide an overview of the distribution of scores and mean values of the study's principal variables. While demographic and socio-economic characteristics such as Gender (X_3), Educational Level (X_4), and Parents' Occupation (X_5) have been comprehensively discussed in the respondent profile section, this section focuses on the dynamics of indicators associated with the latent variables influencing young people's engagement in rice farming in Penebel District.

For the Young People's Interest variable (Y), the results demonstrated a strong positive trend, with an overall mean score of 3.88, categorized as high. More specifically, the conative dimension, representing behavioral intention, recorded the highest mean score of 3.92, indicating that most respondents expressed a commitment to continuing their family rice farming businesses in order to improve their future income. This finding was supported by the affective dimension, which achieved a mean score of 3.89, reflecting genuine personal interest and emotional attachment to farming activities rather than participation driven by necessity. Meanwhile, the cognitive dimension recorded a mean score of 3.83, suggesting that respondents consciously recognized the economic potential of rice farming as a promising long-term source of livelihood.

This strong level of interest was consistent with the Motivation variable (X_1), which achieved a very high overall mean score of 3.95. The motivation of young farmers in the study area stemmed from a harmonious combination of intrinsic and extrinsic factors. The intrinsic dimension recorded a mean score of 4.00, indicating that respondents experienced a profound sense of satisfaction and pride when successfully cultivating rice crops. Conversely, the extrinsic dimension achieved a mean score of 3.90, emphasizing that moral support from family members and the tangible benefits obtained from harvests served as effective external stimuli in sustaining their commitment to rice farming careers.

The maturity of respondents' profiles was further reinforced by the Agricultural Experience variable (X_2), which showed an average farming experience of 7.56 years. This figure places the majority of young farmers within the moderate-to-extensive experience categories (67% cumulatively), indicating that they had progressed beyond the novice stage and had undergone multiple cultivation cycles, thereby acquiring sufficient technical competence to manage operational challenges in the field.

However, this strong skill base faces constraints related to the Availability of Family-Owned Rice Fields variable (X_6), which recorded an average landholding size of 48.77 are. Although this value lies near the threshold between small and medium-scale landholdings, the median value of 40 are and mode of 25 are indicate that most respondents actually managed land areas below the average. The predominance of small-scale land ownership reflects production constraints resulting from inheritance-based land fragmentation and land-use conversion in rural areas.

The limited availability of agricultural land directly affects the economic structure of farming households, as reflected in the Family Economic Conditions variable (X_7). Overall, this variable was categorized as moderate, with a total mean score of 2.03. The income stability indicator recorded the highest mean score (2.21), with the mode falling within the stable category, suggesting that cash flows generated from rice farming were relatively

consistent. Nevertheless, the family asset ownership indicator recorded the lowest mean score (1.91), partly due to weak household income management, which achieved an average score of only 1.96 and a mode categorized as low. This finding suggests the presence of financial literacy challenges, whereby stable income streams have not been effectively transformed into productive assets or long-term investments but are instead largely allocated to short-term consumption needs.

Despite these broader economic constraints, the Perceptions of Agriculture variable (M) remained within the high category, as indicated by an overall mean score of 3.54. The median and mode values, both equal to 4.00, confirm a strong sense of optimism among young people regarding the future of rice farming. The perception of agriculture's economic value emerged as the strongest indicator, with a mean score of 3.56, reflecting respondents' belief that rice cultivation remains financially profitable when managed using modern approaches. This finding was reinforced by perceptions regarding the social image of farming, which recorded a mean score of 3.54, indicating that the farming profession continues to be regarded as respectable within the local community. Such psychological optimism was further strengthened by perceptions of technological accessibility, which achieved a mean score of 3.51, reflecting respondents' confidence that the modernization of agricultural tools and machinery is a key driver of efficiency and improved welfare for farmers in Penebel District.

Measurement Model Evaluation (Outer Model)

Data analysis was conducted using the Partial Least Squares (PLS) approach with SmartPLS 3 software. The PLS-SEM algorithm was configured using the path weighting scheme, standardized data metrics (standardized coefficients with a mean of 0 and a variance of 1), a maximum of 300 iterations, and a stop criterion of 10^{-7}. Based on the results, the research model achieved complete convergence at the second iteration. This indicates that the proposed model was highly stable and that the estimated parameters were appropriate for further interpretation.

Table 2. Results of Convergent Validity and Reliability Evaluation of the Measurement Model

Latent Variable	Indicator	Outer Loading	AVE	Cronbach's Alpha	rho_A	Composite Reliability
Y	Y.1	0.932	0.815	0.887	0.892	0.930
	Y.2	0.879				
	Y.3	0.897				
X_1	X_1.1	0.922	0.864	0.843	0.849	0.927
	X_1.2	0.933				
X_2	X_2.1	1.000	1.000	1.000	1.000	1.000
X_3	X_3.1	1.000	1.000	1.000	1.000	1.000
X_4	X_4.1	1.000	1.000	1.000	1.000	1.000
X_5	X_5.1	1.000	1.000	1.000	1.000	1.000
X_6	X_6.1	1.000	1.000	1.000	1.000	1.000
X_7	X_7.1	0.897	0.789	0.911	0.918	0.937
	X_7.2	0.900				

Latent Variable	Indicator	Outer Loading	AVE	Cronbach's Alpha	rho_A	Composite Reliability
	X_7.3	0.859				
	X_7.4	0.897				
M	M.1	0.956	0.896	0.942	0.944	0.963
	M.2	0.934				
	M.3	0.949				
$X_7 \times M$	Interaction	1.087	1.000	1.000	1.000	1.000

Source: Processed primary data, 2026.

Variable Notes: X_1 (Motivation), X_2 (Experience), X_3 (Gender), X_4 (Educational Level), X_5 (Parents' Occupation), X_6 (Land Availability), X_7 (Family Economic Conditions), M (Perceptions of Agriculture), Y (Young People's Interest).

Indicator Notes: Y.1 (Cognitive), Y.2 (Affective), Y.3 (Conative); X_1.1 (Intrinsic), X_1.2 (Extrinsic); X_7.1 (Income), X_7.2 (Assets), X_7.3 (Stability), X_7.4 (Management); M.1 (Economic Value), M.2 (Professional Image), M.3 (Technology).

The purpose of evaluating the outer model is to assess the extent to which empirical indicators accurately reflect their respective latent constructs. This evaluation comprises tests of convergent validity (through outer loadings and Average Variance Extracted), construct reliability (using Cronbach's Alpha, rho_A, and Composite Reliability or rho_C), and discriminant validity.

According to the criteria proposed by Hair et al. (2019), an indicator is considered to possess adequate convergent validity when its loading factor exceeds 0.70 and its AVE value exceeds 0.50. As shown in Table 2, all multidimensional indicators of the Motivation (X_1), Family Economic Conditions (X_7), Perceptions of Agriculture (M), and Young People's Interest (Y) constructs exhibited high and consistent loading values, all exceeding 0.85. Meanwhile, the Experience (X_2), Gender (X_3), Educational Level (X_4), Parents' Occupation (X_5), and Land Availability (X_6) variables recorded loading and AVE values of 1.000 because they were modeled as single-indicator constructs. Technically, loading values for single-indicator constructs are fixed at 1.000, resulting in mathematically perfect validity. Regarding the outer loading value of 1.087 for the moderating effect, this value remains acceptable because the application of the Two-Stage Approach in standardized interaction constructs may produce coefficients greater than 1.000 without violating validity assumptions (Henseler, 2015). Furthermore, the AVE values for all latent variables exceeded the recommended threshold of 0.50, confirming that each construct explained more than half of the variance in its indicators.

With respect to construct reliability, the internal consistency of the research instrument is considered satisfactory when the values of Cronbach's Alpha, rho_A, and Composite Reliability (rho_C) exceed 0.70. The results presented in Table 2 indicate that all multi-item constructs achieved reliability values above 0.80, while the rho_A values consistently confirmed the stability of the measurement model as one of the most representative reliability parameters in SEM-PLS. Single-indicator constructs and the interaction term representing the moderating effect exhibited perfect reliability values of 1.000. This outcome occurs because there is no internal measurement error variance among indicators within a single-indicator construct. Therefore, all variables can be regarded as highly reliable and suitable for subsequent structural modeling.

The final stage of the outer model evaluation involved testing discriminant validity to ensure that each latent construct was empirically distinct from the others. This assessment was conducted using the Heterotrait–Monotrait Ratio (HTMT) matrix, with a critical threshold value of less than 0.90 (Henseler et al., 2015).

Table 3. Heterotrait–Monotrait Ratio (HTMT) Matrix

	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	M	(X_7 x M)
Y										
X_1	0,879									
X_2	0,562	0,474								
X_3	0,194	0,193	0,091							
X_4	0,306	0,362	0,128	0,136						
X_5	0,418	0,270	0,203	0,035	0,149					
X_6	0,667	0,597	0,307	0,107	0,421	0,429				
X_7	0,362	0,284	0,112	0,025	0,056	0,044	0,239			
M	0,648	0,613	0,462	0,114	0,122	0,219	0,311	0,095		
(X_7 x M)	0,085	0,079	0,103	0,091	0,036	0,092	0,058	0,157	0,146	

Source: Processed primary data, 2026.

Notes: Young People's Interest in Becoming Rice Farmers (Y); Motivation (X_1); Agricultural Experience (X_2); Gender (X_3); Educational Level (X_4); Parents' Occupation (X_5); Availability of Family-Owned Rice Fields (X_6); Family Economic Conditions (X_7); Perceptions of Agriculture (M); Moderating Effect ($X_7 \times M$).

Based on Table 3, all HTMT ratios consistently fall below the recommended threshold of 0.90, with the highest value recorded at 0.879 for the relationship between Motivation (X_1) and Young People's Interest (Y). These results indicate the absence of overlapping constructs and confirm that each latent variable is empirically distinct from the others. Therefore, all constructs demonstrate satisfactory discriminant validity and are considered suitable for structural model (inner model) evaluation

Structural Model Evaluation (Inner Model)

Following the fulfillment of all measurement model (outer model) quality criteria, the analysis proceeded to the evaluation of the structural model (inner model). This stage aimed to assess the predictive power of the proposed model, evaluate model fit, and examine the presence of multicollinearity among latent constructs prior to hypothesis testing.

The first step involved assessing multicollinearity through the examination of both Outer Variance Inflation Factor (Outer VIF) values at the indicator level and Inner Variance Inflation Factor (Inner VIF) values at the construct level. The results indicated that all indicator-level VIF values were below the recommended threshold of 5.00, with the exception of the indicator representing the economic value of agriculture (M.1), which recorded a value of 5.093. Although this value suggests moderate collinearity, it was retained because it remained substantially below the maximum tolerance level of 10.00 and possessed strong theoretical relevance. At the construct level, all Inner VIF values were consistently below 5.00, ranging from a maximum value of 2.171 for Motivation (X_1)

to a minimum value of 1.065 for Gender (X_3). These findings confirm that the structural model is free from multicollinearity bias among the independent variables.

The combination of exact fit indices further confirmed that the proposed structural model exhibited a high degree of fit with the empirical data. The estimated model produced an SRMR value of 0.042, indicating that the average residual error was only 4.2%, substantially below the maximum acceptable threshold of 10%. This result was reinforced by the d_ULS (0.267) and d_G (0.289) values, which closely resembled those of the saturated model, suggesting only a minimal discrepancy between the empirical correlation matrix and the model-implied correlation matrix. Furthermore, the Normed Fit Index (NFI) value of 0.851 demonstrated that the structural model provided an explanatory capacity 85.1% better than the null model, exceeding the minimum acceptable benchmark of 0.80.

The predictive capability of the model was assessed through the coefficient of determination (R^2) and predictive relevance (Q^2) obtained using the blindfolding procedure with an omission distance (D) of 7. The model produced an R^2 value of 0.761 and an Adjusted R^2 value of 0.738, indicating that the independent variables, the moderating variable Perceptions of Agriculture (M), and their interaction effects collectively explained 76.1% of the variance in young people's interest in becoming rice farmers in Penebel District. The remaining 23.9% was attributable to factors not included in the model. This explanatory power was further supported by a Q^2 value of 0.592 for the endogenous variable Interest (Y), which substantially exceeded the critical threshold of 0.35, indicating very strong predictive relevance. In terms of practical contribution, the effect size (f^2) analysis revealed that Motivation (X_1) was the most influential predictor with an f^2 value of 0.239 (medium effect), followed by Perceptions of Agriculture (M) with an f^2 value of 0.123. Conversely, demographic variables such as Gender (X_3) and Educational Level (X_4) exhibited the smallest contribution (0.007), suggesting the relative neutrality of personal demographic characteristics in shaping young people's interest in farming within the study area.

Hypothesis Testing Results and Discussion

After the measurement model and structural model met all evaluation criteria, hypothesis testing was conducted to determine the significance of the relationships among variables and to assess whether the proposed hypotheses should be accepted or rejected. Structural model testing was performed using the Complete Bootstrapping procedure with 5,000 resamples, employing the Bias-Corrected and Accelerated (BCa) Bootstrap confidence interval method and a two-tailed test with a significance level of 5%. Hypotheses were considered supported when the criteria of T-statistics > 1.96 and p-values < 0.05 were simultaneously satisfied.

Table 4. Hypothesis Testing Results and Moderating Effects

Relationship	Original Sample (O)	Sample Mean (M)	STDEV	T-Statistic	P-Value	Result	Hypothesis
$X_1 \rightarrow Y$	0.352	0.352	0.094	3.740	0.000	Significant	Accepted
$X_2 \rightarrow Y$	0.184	0.179	0.062	2.965	0.003	Significant	Accepted
$X_3 \rightarrow Y$	0.044	0.046	0.048	0.917	0.359	Not Significant	Rejected
$X_4 \rightarrow Y$	0.050	0.045	0.062	0.800	0.424	Not Significant	Rejected

Relationship	Original Sample (O)	Sample Mean (M)	STDEV	T-Statistic	P-Value	Result	Hypothesis
$X_5 \rightarrow Y$	0.143	0.141	0.070	2.037	0.042	Significant	Accepted
$X_6 \rightarrow Y$	0.208	0.213	0.068	3.073	0.002	Significant	Accepted
$X_7 \rightarrow Y$	0.142	0.140	0.060	2.365	0.018	Significant	Accepted
$M \rightarrow Y$	0.217	0.221	0.086	2.527	0.012	Significant	Accepted
$X_7 \times M \rightarrow Y$	-0.101	-0.101	0.049	2.058	0.040	Significant	Accepted

Source: Processed primary data, 2026.

To ensure the robustness of the conclusions presented in Table 4, a post hoc statistical power analysis was conducted using **G***Power 3.1. Based on an effect size of 0.18, a significance level of 0.05, and nine predictors, the resulting statistical power ($1 - \beta$) reached 0.985 (98.5%). This value substantially exceeds the recommended minimum threshold of 80%, indicating that the sample size of 100 respondents provided excellent statistical power and minimized the risk of Type II errors, thereby strengthening the empirical validity of the model.

The results presented in Table 4 reveal that seven of the nine hypotheses were supported, while two hypotheses were rejected. A closer examination indicates that internal psychological factors constitute the primary driving force behind young people's interest in rice farming in Penebel District. This phenomenon is evidenced by the dominance of Motivation (X_1), which recorded the highest path coefficient (0.352), followed by Perceptions of Agriculture (M) with a coefficient of 0.217. Consistent with the Theory of Planned Behavior proposed by Ajzen (1991), the strong influence of motivation reflects powerful intrinsic drives to preserve the sustainability of Bali's Subak agricultural tradition, combined with rational utility considerations concerning the economic benefits offered by the agricultural sector. Meanwhile, the significant positive effect of perceptions suggests that agricultural modernization and mechanization have successfully transformed the image of farming from a physically demanding traditional occupation into a promising and contemporary career opportunity (Nugraha & Hadikusuma, 2020).

These psychological factors are further reinforced by material resources and family social environments that serve as important foundations for farmer regeneration. Availability of Family-Owned Rice Fields (X_6; O = 0.208) and Agricultural Experience (X_2; O = 0.184) were found to be essential forms of physical and human capital that reduce entry barriers for young farmers (Hanafiah, 2015). Land ownership provides operational stability, while accumulated farming experience equips young people with the technical competencies necessary to adapt to agricultural risks (Purwanto et al., 2018). Furthermore, the significant effects of Parents' Occupation (X_5; O = 0.143) and Family Economic Conditions (X_7; O = 0.142) confirm the existence of cultural capital transfer and financial support mechanisms (Bourdieu, 1986). Financially stable households provide young people with the confidence to adopt modern agricultural technologies without facing immediate economic pressures (Todaro & Smith, 2015).

On the other hand, an interesting finding emerged from the rejection of the effects of Gender (X_3; O = 0.044) and Educational Level (X_4; O = 0.050). The non-significant influence of these demographic factors suggests that rice farming in Penebel District has evolved into a highly inclusive sector. Interest in farming is no longer constrained by conventional gender roles (Mankiw, 2012) or specific levels of formal education (Putra & Sudibia, 2018). In fact, young individuals with higher educational backgrounds may utilize

their critical and reflective thinking skills to assess the agricultural sector from a more modern and rational perspective.

A more complex relationship was observed in the moderating effect ($X_7 \times M$), which was statistically significant and exhibited a negative path coefficient (-0.101). This result indicates that Perceptions of Agriculture function as a quasi-moderator, weakening the effect of Family Economic Conditions on young people's interest in rice farming. Based on simple slope analysis, among households with strong economic conditions, positive perceptions of agriculture do not necessarily increase farming interest because a wider range of alternative career opportunities outside agriculture is available, many of which offer greater social prestige and global career prospects. In contrast, among households with lower or moderate economic conditions, positive perceptions serve as a crucial source of hope and intrinsic motivation. When material resources are limited, an optimistic outlook toward the future of agriculture becomes a key driver encouraging young people to improve their living standards through participation in the sector with which they are most familiar. This negative moderating effect empirically demonstrates that stronger cognitive perceptions can reduce young people's dependence on material economic considerations and shift farming motivations from financial necessity toward a more autonomous and professionally driven commitment.

CONCLUSION

The findings indicate that the majority of the independent variables make a substantial contribution to fostering young people's interest in pursuing rice farming in Penebel District. Specifically, motivation, agricultural experience, parents' occupation, availability of family-owned rice fields, family economic conditions, and perceptions of agriculture were found to have positive and significant effects on such interest. Among these variables, motivation emerged as the most influential factor, highlighting that the combination of intrinsic professional pride and extrinsic expectations of financial benefits constitutes the primary driving force behind farmer regeneration. In contrast, gender and educational level did not exhibit significant effects, suggesting a high degree of inclusiveness in Penebel District, where interest in farming is no longer constrained by gender or formal educational attainment. Furthermore, perceptions of agriculture were found to negatively moderate (weaken) the relationship between family economic conditions and young people's interest in rice farming. This finding suggests that a mature and positive perception of the economic value and modern image of the agricultural sector can reduce young people's dependence on their family's financial status, thereby fostering a stronger and more autonomous commitment to pursuing a career as rice farmers.

Based on these findings, it is recommended that the Tabanan Regency Government, relevant agencies, and the Agricultural Extension Center (BPP) of Penebel District intensify socialization programs and technology-based modern agriculture (smart farming) training initiatives to maintain and strengthen positive perceptions of farming among young people. At the same time, efforts should be directed toward reinforcing sustainable agricultural land zoning regulations to safeguard the availability of family-owned rice fields. Local communities and parents are encouraged to continue providing moral support and to consistently involve their children in farming activities from an early age in order to enhance their practical agricultural experience. Young people are also encouraged to actively improve their capabilities in adopting agribusiness innovations so that traditional farming can be transformed into a competitive and professional business

sector with promising economic prospects. Finally, future researchers are advised to expand the scope of the existing research model by incorporating additional external variables that were not addressed in this study, such as access to agricultural financing, the adoption of digital agricultural technologies (e-agriculture), and market access networks for millennial farmers.

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