Motivation toward Rice Farming in Margokaton Village, Sleman District, Yogyakarta Province, Indonesia

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ABSTRACT

Lately, younger people have not involved themselves in farming activities, nor have they continued their parents' jobs as farmers. Nevertheless, agriculture continues to play a pivotal role in Indonesian food production. Some studies reveal that fewer young people have been engaging in farming because aging farmers are unwilling to bequeath farms to younger farmers for educational, financial, and motivational reasons. Thus, this study sought to describe and analyze the motivating factors why farmers continue farming in Margokaton village, Sleman district, Yogyakarta province. The study gathered primary information from 82 farmers using a structured questionnaire. It used Alderfer's existence-relatedness-growth (ERG) theory to assess farmer motivations. It found that, overall, rice farmers' motivation, as seen from the motivation of ERG needs, was "moderate." Spearman's rank correlation coefficient analysis shows farmers' motivation correlating with their education, side jobs, perception of farming as an occupation, farmland areas, productivity of paddy fields, household income from crops farming, farming experience, maintenance of the farmland, having daughters only, and parental encouragement toward farming. Understanding the factors that correlate with farmers' motivation to continue farming can help assess the future of rice farming.

Keywords: motivations, ERG theory, Spearman rank correlation coefficient analysis, rice farming
JEL codes: J21, J24, O15, Q15

INTRODUCTION

Motivation to Continue Farming

Motivation has often been used to explain human behavior. Elliott (2006) defines motivation as the mechanism that directs and energizes human behavior. For Gendolla, Wright, and Richter (2012), motivation has two aspects: what people do and the amount of effort they expend to carry out an instrumental activity. From these narratives, motivation is what causes a person to act or behave in a certain way. There is no agreement on whether motivation has solid theoretical basis. A literature search yielded no concrete theory of motivation. However, numerous ideas about motivation have evolved from various fields and are widely utilized to describe human behavior.

Motivation theories (Herzberg 1968; Maslow 1970; Alderfer 1972; and McClelland and Rumelhart 1981) attempt to explain the factors that motivate people's behaviors. One of the most widely cited and discussed motivation theories is the need hierarchy model proposed by Abraham Maslow. Maslow's hierarchy of needs theory includes psychological, safety, belongingness, social esteem, and self-actualization needs; yet these needs have not been empirically shown to motivate people (Kaur 2013). In Herzberg's theory, the motivating factors include achievement, recognition, advancement, and possibility of growth (Herzberg 1968). This theory integrates intrinsic and extrinsic motivational factors into the activities of individuals (Yusoff, Kian, and Idris 2013). McClelland, however, asserts that individuals are motivated based on the need for achievement, power, and affiliation in their daily activities (Braden 2000 as cited in Othman, Latip, and Ariffin 2019, 47). In terms of needs-based theories in human resource management, none rings truer than the existence–relatedness–growth (ERG) needs theory by Clayton Paul Alderfer.

Alderfer simplified Maslow's hierarchy of needs theory and Herzberg's two factors or hygiene theory. Like Maslow and Herzberg, Alderfer believes that people do have needs, that these needs can be arranged in a hierarchy, that there is a basic distinction between lower-level needs and higher-level needs, and that needs are important determinants of employee motivation in organizations (Elujekwute, Aja, and Abachi 2021). Ivancerich, Konopaske, and Matterson (2008) further maintain that ERG mostly applies to the study of human motivation in the organization as a tool for increasing morale and productivity. It has helped educational administrators to understand what constitutes job satisfaction and identify incentives. According to Song, Wang, and Wei (2007), ERG is a motivational construct concerned with understanding the factors that contribute to individuals' human behavior. It is one of four content approaches that consider the intrinsic factors that cause a person to take specific actions. As a model of human needs, human experience has validated the ERG theory.

When applying the ERG motivation theory to farming, farmer's needs may typically be divided into three categories: existence (physiological and safety needs), relatedness (social needs), and growth (esteem and self-actualization) (Rahayu, Indardi, and Apina 2018). According to Liu and Zhang (2008) as cited in Caulton (2012, 6), acquiring educated, upwardly mobile talent could improve the agricultural community's ERG needs. They also indicated that the agricultural community experienced difficulties because of the loss of talent or agricultural actors. Some studies have revealed that the decreasing number of young farmers (agricultural actors) has been influenced by aging farmers' unwillingness to bequeath farms to younger farmers for educational, financial, and motivational reasons (Lobley, Baker, and Whitehead 2016; May et al. 2019).

Research has shown that the higher education of farmers has negatively affected intra-family farm transfers. This may reflect a correlation between the educational attainments of farmholders and their children, suggesting that the latter can obtain higher off-farm wages (Bertoni and Cavvichioli 2016). Older farmers who are concerned about

their financial future or those who do not have formal retirement plans have also been found unwilling to transfer their farm assets, negatively affecting intra–family farm transfer (Lobley, Baker, and Whitehead 2010). Finally, it is argued that aging farmers' unwillingness or lack of motivation to pass the farm down to younger generations is related to emotional, identity, and human factors (May et al. 2019).

Rice Farming in Indonesian Rural Areas

Agriculture is crucial in Indonesian food production to feed its growing population. In 2017, the Food and Agriculture Organization stated that Indonesia had become the third-largest producer of rice even as the sector faces the daunting challenge posed by an aging farming population. Farm succession in the country begins with younger people helping in their parents' farmland. However, many of them have recently not been involved in farming activities or have discontinued participating in farming-related activities.

Although farming has a long tradition in most Indonesian families, farmers believe that their children have better professional options. A study of rice-producing villages in the country found that migration, especially in connection with the pursuit of careers outside of agriculture and higher education, is a key factor influencing the future of local farms (White 2015). Susilowati (2016) also found that factors such as low prestige, high risk, and unstable income affect the willingness of the youth to participate in the agriculture sector. Based on the Indonesian statistical data for 2021, the country's average monthly salary for non–agricultural income is USD 838.9, while for the Indonesian farmers, the average income is USD 69.3 (BPS 2021).

The current challenge for the Indonesian agriculture sector is also about land ownership, which affects the welfare of farmers. The number of farm households decreases annually, followed by a decrease in agricultural land. According to the Central Bureau of Statistics of Indonesia (BPS) in 2013, 46.8 percent of Indonesian farmers still operate on less than 0.50 ha of farmland because farmers sell their farmland, and land fragmentation and uncontroled land conversion cannot be avoided. This has resulted in smaller farm sizes.

Recent studies indicate that agricultural policy in Indonesia still supports farmers. As described in the Strategic Plan of Agriculture for 2009–14, the primary goals of agricultural development during the period included achieving and maintaining self-sufficiency of the five strategic commodities (rice, maize, soybean, sugar, and beef), notably rice (KEMENTAN 2011). The policy also aimed to raise farmers' wealth. As described by Syahyuti (2015), no specific policy has existed to encourage young people to adopt farming as an occupation. Moreover, the existing farmers thus far have no assurance of getting access to the farmland. This situation can decrease farmers' motivation to engage in farming activities.

On the other hand, farmer groups play an important role in increasing Indonesian farmers' motivation, which has a positive relationship with the learning process in the group. Generally, farmers learn by sharing their experiences among each other (Nurlaela 2021). This may be a vital motivational factor for farmers, but it need not become the goal of farm businesses.

Several studies have investigated motivation (Nurlaela 2021; Maican et al. 2021; Othman, Latip, and Ariffin 2019; Rahayu, Indardi, and Apina 2018; Rahmawati, Juwati, and Hamdzah 2021; Wulandari et al. 2021). Wulandri et al. (2021) found Indonesian farmers to be highly motivated to utilize urban yards for horticulture farming. According to Rahayu, Indardi, and Apina (2018), internal and external factors influenced Indonesian farmers' motivation. Formal education, training, counseling, income, and capital availability positively influenced farmers' motivation to engage in cabbage farming, while age and farming experience had a negative influence. Another study showed that the factors in a farm's economic performance positively influenced Romanian small farmers' motivation (Maican et al. 2021).

The main characteristics of small-scale farmers in rural areas are their having limited

capital, education, and experience. When starting out in farming, small–scale farmers face several challenges, such as acquiring more land to be competitive in modern agriculture and tight agricultural credit conditions. With such constraints, acquiring capital from commercial banks is difficult since small–scale farmers do not have any collateral. The rising prices of land and the absence of collateral for banks make it difficult for farmers, especially neophyte farmers, to acquire land (Kauffman 2013). In countries that do not follow the system of land inheritance, farmers' children hardly start farming. They generally develop their farming businesses by buying or renting land through profit-sharing systems. With limited capital and land assets, access to farmland is onerous for young farmers (Katchova and Ahearn 2014).

This is not the case in Indonesia, where the inheritance system is still widely applied (Iwamoto and Hartono 2009). Parents divide the land based on the number of children they have, resulting in land fragmentation and an increase in the number of new farm households. Rising land prices have made it difficult for small–scale farmers to resist selling their farms or a portion thereof (Rigg 2020). However, small–scale farmers remain highly motivated to continue their work in agriculture (Maican et al. 2021).

This study investigated rice farmers' motivation in Indonesian rural areas using the ERG needs theory. Rice farming in the country can be categorized as small–scale farming (Utami and Harianto 2021). It is necessary to describe and analyze the motivating factors that encourage small–scale farmers to continue rice farming in Indonesian rural areas. Consequently, this would provide evidence and illustrate the current state of rice farmers' motivation to continue farming in Indonesia.

METHODOLOGY

Study Population and Data

The study was conducted in an irrigated sector of Margokaton village, Seyegan subdistrict, Sleman district in Yogyakarta, where most farmers grow rice twice or thrice a year. Although the area is rural, it is located near Yogyakarta City. Therefore, village residents can readily access off–farm jobs in the city. Data were collected through interviews conducted between February and March 2020 with a sample group representative of all farm households in the village.

The sample consisted of 99 farmers chosen at random from four of the 24 farmer groups who actively participated in a farmer group meeting and were highly motivated to participate in rice cultivation. Of 99 farmers, only 82 farmers with children over the age of 15 were considered relevant to the investigation into farmers' motivation. Initial interviews distinguished 23 farms with potential successors and 59 without, based on farm characteristics. The latter part of the interview determined their motivation to continue farming. Despite some of them having identified a potential successor for their farm, they were not confident that their potential successors would become farmers in the future.

The interview questionnaire sought data such as farm household characteristics (age, gender, marital status, education, main occupation, side job, income, and number of children); farming operations (farmland areas, production, cost of agricultural inputs, and marketing); and farmers' motivation to continue farming. Finally, qualitative data were elaborated and described using content analysis.

Data Analysis

The study used Clayton P. Alderfer's ERG theory (Schneider and Alderfer 1973; Nurlaela 2021; Maican et al. 2021; Othman, Latip, and Ariffin 2019; Rahayu, Indardi, and Apina 2018; Rahmawati, Juwati, and Hamdzah 2021) to assess

Table 1. Categories of motivation levels of farmers

Items	Category		
	Low	Moderate	High
Existence	0–9	10–19	20–28
Relatedness	0–9	10–19	20–28
Growth	0–9	10–19	20–28
Motivation (Y)	0–28	29–56	57–84

Note: The categories are based on the interval score for each item of each indicator in the questionnaire on farmers' motivation to continue farming using ERG theory (see Table 4).

farmer motivations. A Likert scale from 0 to 4 (0 = do not want, 1 = rarely want, 2 = doubtful, 3 = want, and 4 = highly want) was used to estimate the score for each item. Validity and reliability tests were conducted to ensure that data were valid and credible.

The farmers' responses were analyzed using descriptive statistics, categorizing them into high, moderate, and low motivation levels (Table 1). In addition, applying Spearman's rank correlation coefficient analyzed the factors that associated with the motivation of rice farmers. For this study, the dependent variable was *motivation,* while the independent variables comprised both the internal and external factors that correlated with farmers' motivation (Table 2). Internal factors included the farmers' age, education, number of children, occupation, household income, farming experience, farmland size, and productivity (Aldanondo Ochoa, Cassanovas Oliva, and Almansa Saez 2007; Othman, Latip, and Ariffin 2019; Rahayu, Indardi, and Apina 2018). External factors included parental support for farming activities (Pamungkaslara and Rijanta 2017) and farmers' circumstances.

The study hypothesized that internal and external factors based on farm household characteristics significantly correlate with farmers' motivation to continue farming. The parameters employed in this study are divided into two groups, as follows:

Internal factors of farmers

Internal factors represent the farmers' socioeconomic profile and household assets

(Seleky, Ozawa, and Sumita 2022). According to Othman, Latip, and Ariffin (2019), age could represent social, physical, and mental health motivations. Older people are generally retired; thus, their employment is no longer a source of social interaction. They are most likely motivated to participate in farming to alleviate the stress caused by reduced social interactions. Education level can describe the degree of understanding and motivation of farmers to receive information, innovation, and technology (Asrul, Irham, and Jamhari 2023). The number of children might relate to the motivation of farmers to meet their daily needs.

Main occupation, side jobs, and children having nonagricultural jobs might be associated with the farmers' motivation. As described earlier, the research site is close to the urban area; village residents can readily access off-farm jobs in the city. As for the land, farmland owned by farmers may motivate them to produce food for their daily needs (Dalmiyatun et al. 2018). Aside from the availability of land, availability of labor and capital strongly influence farm growth (Peerlings and Ooms 2008). Land status, particularly self-owned land, undoubtedly gives farmers more freedom in deciding how to use their land, from commodity selection to the use of production facilities (Rahayu, Indardi, and Apina 2018).

Farming performance may drive crop productivity in sole pursuit of high profits (economic motives) or other motivations (Indardi and Ramadianti 2021). Low income can also cause a decline in the number of farmers and farming motivation (Nurlaela 2021). Further, Dalmiyatun et al. (2018) called farming a hereditary family

Table 2. Independent variables used in analysis

Independent Variable (X)	Data Entry
Internal factors	
Age (X_1)	Age (year)
Education (X_2)	Years
Number of children (X_3)	Number (persons)
Main occupation (X_4)	1 = Farmer; 0 = Not farmer
Side jobs (X_5)	1 = Have; 0 = Do not have
Perception of farming as an occupation (X_6)	1 = Yes; 0 = No
Children have non-agricultural jobs (X_7)	1 = Yes; 0 = No
Farmland areas (X_8)	Farm area (ha)
Inheritance land status (X_9)	1 = Have; 0 = Do not have
Purchased land status (X_{10})	1 = Have; 0 = Do not have
Rent land status (X_{11})	1 = Have; 0 = Do not have
Sharecropping land status (X_{12})	1 = Have; 0 = Do not have
Productivity of paddy (X_{13})	Unit (ton/ha)
Productivity of other crops (X_{14})	Unit (ton/ha)
Household income from crops farming per land area (X_{15})	Amount (million IDR/year)
Independent Variable (X)	Data Entry
Farming experience (X_{16})	Year
Number of family laborers (X_{17})	Number (persons)
Number of hired laborers (X_{18})	1 = 1 person; 0 = <1 person
Interested in agriculture (X_{19})	1 = Yes; 0 = No
Being a farmer by own will (X_{20})	1 = Yes; 0 = No
Keeping the farmland as it is (X_{21})	1 = Yes; 0 = No
Children think of farming as a side job (X_{22})	1 = Yes; 0 = No
Have daughters only (X_{23})	1 = Yes; 0 = No
External factors	
Parents' encouragement (X_{24})	1 = Yes; 0 = No
No other jobs (X_{25})	1 = Yes; 0 = No
Affected by the environment (X_{26})	1 = Yes; 0 = No

occupation, with many children learning to farm by assisting their parents. Some farmers get knowledge from learning–by–doing (Seleky et al. 2020) and rely on farming experience as a teacher in running an agricultural business (Dalmiyatun et al. 2018).

The perception of farming as an occupation could describe the positive attitude toward it (Rayasawath 2018). In addition, the variables of being a farmer of their own will, interested in agriculture, to keep the farmland as it is, children thinking of farming as a side job, and having daughters only might relate with the attitude toward choosing an agricultural occupation (Seleky et al. 2022).

External factors of farmers

In many cases, the success of intergenerational farm transfer depends on the parents encouraging their children to become farmers or to pursue other careers (Aldanondo Ochoa, Cassanovas Oliva, and Almansa Saez 2007). Farmers' environments and conditions, such as lack of other job options, may also be related to their attitude toward choosing agriculture as a profession (Seleky et al. 2022).

FINDINGS

Characteristics of Farmers in the Study Area

Table 3 presents the characteristics of farmers in this study. Three types of farmers reside in the study area (Seleky, Ozawa, and Sumita et al. 2020): (1) principal farmers who have their own farmland; (2) tenant farmers who have no farmland; and (3) principal–tenant farmers who not only have their own farmland but also lease the farmland. Of the 82 farmers, those residing in the study area are predominantly principal farmers. Of the respondents, 91.5 percent primarily work as farmers. Other main occupations include civil service, labor, and entrepreneurship. Additionally, 46.3 percent also work as farm laborers, retired workers, and construction workers. All completed secondary school. Education levels vary widely among the farmers. Moreover, 84.1 percent of farmers' children have a primary occupation other than agriculture.

The average farmland in the study area is less than half a hectare, or approximately 0.34 ha (Table 3). In line with Rigg (2020), some 80 percent of landholdings in Java are less than 0.50 ha in area, tenant farming is prevalent, and landlessness is widespread. The farmers in the study area acquired farmland by inheritance based on local customs, by purchases, rent contracts, or sharecropping. Most farmers acquired their farmland through

Table 3. Characteristics of farmers in the study area (n = 82)

Variable	Mean	Std. Dev.
Farmer type		
Principal farmer	32 (39.02%)	0.49
Tenant farmer	26 (31.71%)	0.47
Principal–tenant farmer	24 (29.72%)	0.46
Age	62.40	9.51
Education	8.84	4.19
Number of children	2.40	1.17
Main occupation	0.91 (91.46%)	0.28
Side jobs	0.46 (46.34%)	0.50
Perception of farmer as a job	0.82	0.39
Farming experience	34.60	16.92
Children have non-agricultural jobs	0.84 (84.15%)	0.37
Farmland areas (ha)	0.34	0.25
Inheritance land status	53 (0.11)	0.48 (0.17)
Purchased land status	11 (0.02)	0.34 (0.07)
Rent land status	8 (0.02)	0.30 (0.10)
Sharecropping land status	45 (0.18)	0.50 (0.26)
Productivity (ton/ha)		
Paddy	5.23	3.89
Other crops	1.23	2.51
Head of livestock		
Yes	38 (46.34%)	0.50
No	44 (53.66%)	0.50
Fish farming	7 (8.54%)	0.28
Number of hired laborers	2.55	2.41
Production cost (USD/year)	304.81	355.09
Revenue from farming (USD/year)	1,647.16	1,622.95
Agricultural income (USD/year)	1,342.36	1,550.31
Non-agricultural income (USD/year)	1,614.75	1,752.44
Farm household income (USD/year)	2,957.10	2,249.65

inheritance and sharecropping systems. Under the sharecropping system, the landowner and the tenant farmer share the harvest at a 50:50 ratio or depending on the sharecropping contract between them.

Based on the local custom, parents divide most of the farmland equally among their children. Barlinti (2013) stated that three main systems exist in support of the legal inheritance system in Indonesia: (1) customary *(adat)* inheritance law is an unwritten law in society and the oldest legal system based on the norms of local customs; (2) Islamic inheritance law consists of patrilineal, bilateral, and compilations of Islamic law; and (3) western inheritance law, applied to particular groups, is the norm of heritage based on the Dutch governance system.

As the average farm size is small (Table 3), farmers are unable to meet their farm households' needs solely with agricultural income. Not all farmers engage in livestock and fish farming for added agricultural income. This indicates that farmers could not survive without nonagricultural income, although land leases partially help them increase their farm sizes. Based on Iwamoto and Hartono's (2009) research in the study area, the nonagricultural income also increased constantly after the economic crisis, which compensated for the reduction in agricultural income.

Rice Farmers' Motivation to Continue Farming

Table 4 presents findings on the motivation of farmers to continue farming. The rice farmers' motivation can be categorized as "moderate" as the mean score is 50.89 (Table 4), with interval scores of 29–56 (Table 1). The "low" category has an interval score of 0–28, and the "high" category has an interval score of 57–84 (Table 1). The indicators used to measure farmers' motivation levels are their need for *existence*, *relatedness*, and *growth*.

The need for existence and security includes basic needs such as food, water, and shelter, as well as security in terms of savings. However, when engaged in rice farming, the farmers' income is mostly used to meet primary and secondary needs, and education for children. Further, based on the motivation rate in Table 4, 90.2 percent of farmers want to meet material needs, such as food, through farming activities. In line with Wulandari et al.'s (2021) findings, farmers' motivation to fulfill their family's food needs was "very high" because food is a primary need.

Relatedness needs include social needs and external esteem needs. Farmers require interaction and communication with other people or society to develop their farms. The data also show that 90.2 percent of the farmers wanted good relationships with other farmers (Table 4). This could be a chance for them to exchange ideas about farming, interact well with each other, and participate in activities held by farmer groups. Wulandari et al. (2021) reported that emotional bonds among farmers are essential for survival. For instance, farmer group members can share seeds and other things to strengthen good relationships among them.

The need for growth comprises self-esteem and self-actualization. Farmers must develop their potential to be more productive, which will benefit them and the environment (Rahayu, Indardi, and Apina 2018). In terms of motivation, 60.7 percent of farmers wanted to increase their respective family incomes (Table 4). They also wanted to improve their experience, skills, and knowledge in agribusiness (53.7%). Increasing their knowledge on agribusiness allows them to be more skilled and gain better expertise in rice farming, eventually earning more profit from farming.

Table 4 also shows that the highest score for farmers' motivation to continue farming concerned relatedness needs, although categorized as "moderate." In short, farmers are motivated to engage in farming because they desire to work with other farmers. This might imply that, for example, at the farmer group level, an effort is carried out by supplying seeds, fertilizer assistance, borrowing capital and agricultural machinery, and providing wells and watering equipment. Farmers can produce more efficiently by working together and thereby also increase their leverage in dealing with intermediaries, traders, and markets.

Table 4. Farmers' motivation to continue farming (n = 82)

No.	Items	Interval Score	Mean Score	Motivation Rate (%)
	Existence	**0–28**	**17.27**	**53.96**
1	Farmers want to meet material needs such as food.	0–4	3.61	90.24
2	Farmers want to meet material needs such as clothing.	0–4	3.51	87.80
3	Farmers want to meet material needs such as shelter.	0–4	2.35	58.84
4	Farmers want to be secure in their future.	0–4	2.17	54.27
5	Farmers want to have a guaranteed income as they face the risk of failure of other businesses.	0–4	2.09	52.13
6	Farmers want to save.	0–4	1.99	49.70
7	Farmers want to attain good social status in society.	0–4	1.55	38.72
	Relatedness	**0–28**	**19.30**	**68.95**
1	Farmers want to have many farmer friends.	0–4	3.60	89.94
2	Farmers want to have a good relationship with other farmers.	0–4	3.61	90.24
3	Farmers want to cooperate with other farmers.	0–4	3.44	85.98
4	Farmers want to have a good relationship with extension workers.	0–4	2.23	55.79
5	Farmers want to have a good relationship with the traders.	0–4	2.02	50.61
6	Farmers want to have a good relationship with researchers.	0–4	1.85	46.34
7	Farmers want to build a relationship with the related institution.	0–4	2.55	63.72
	Growth	**0–28**	**14.32**	**59.65**
1	Farmers want to increase the family income.	0–4	2.43	60.67
2	Farmers want to improve their experience and skills in agribusiness.	0–4	2.15	53.66
3	Farmers want to improve their knowledge of agribusiness.	0–4	2.15	53.66
4	Farmers want to increase the farming scale.	0–4	1.88	46.95
5	Farmers want to improve and develop agricultural innovation and new technology.	0–4	1.95	48.78
6	Farmers want to obtain rewards for their own ideas.	0–4	1.94	48.48
7	Farmers want to be respected by other farmers.	0–4	1.83	45.73
	Motivation (Y)	**0–84**	**50.89**	**60.58**

Relationship between Internal and External Factors with Rice Farmers' Motivation

Farmers who have decided to continue farming must have a reason, and some of their considerations may be related to internal and external factors. Table 5 presents the factors that motivated farmers to continue rice farming in the study area. A Spearman's rank correlation coefficient test determined the relationship between the variable parameters and the farmers' motivation.

Educational factors (X_2) had a significant positive relationship with existence motivation but did not significantly correlate with the relatedness or growth motivation. The BPS stated that the educational background of the farmers improved slightly in 2015. Data from 38.3 million farmers in Indonesia showed that in 2015, 31.9 percent of farmers had not finished primary school, whereas only 38.7 percent had graduated from secondary school. Consequently, seven out of ten farmers in Indonesia have little or no educational background beyond secondary school.

Based on the research findings of Rahayu, Indardi, and Apina (2018), the low level of education among farmers made it difficult for them to accept new innovations; thus, they still used manual methods. However, most farmers at the research sites had completed their secondary

schooling. Farmers in the study area stated that they believed that education is important. However, only a few farmers achieved a high educational level and continued to engage in rice farming. We can infer that better educated farmers can think more strategically, solve farming problems, and continue farming. In line with the findings of Rahayu, Indardi, and Apina, formal education was also significantly and positively related to the motivation of farmers engaged in cabbage farming.

I want to keep farming as a side job because being a farmer in my leisure time can benefit me, particularly my health. It is like a workout. Furthermore, farming can generate income."

Farmers' side jobs (X_5) had a significant positive relationship with motivation for ERG. This factor positively correlates with all three types of farmers' motivations to continue farming because farmers can increase their family income by engaging in other occupations, even when the agricultural income is meager. Moreover, farmers at the research sites can readily find nonfarm jobs because they live in rural areas near urban areas. This is in line with the findings of Aldanondo Ochoa, Cassanovas Oliva, and Almansa Saez (2007) who mentioned that in some cases, the main occupation provides farmers with acceptable full-time employment and, in others, because the farm's location allows farmers to hold two jobs. The engagement of farmers in other occupations can lead to greater profitability and the continuation of farming. One farmer opined:

"Farming can be an alternative source of income and is essential for farmer regeneration. I hope my children will carry on my farming legacy" (a Margokaton farmer interviewee).

Farmers' perceptions of farming as an occupation (X_6) were significantly related to their motivation for existence. When farmers perceive farming as an occupation, farmers can do better in their farming to support their families' daily needs. As mentioned before, the perception of farming as an occupation could describe their positive attitude toward the agricultural occupation (Rayasawath 2018). Additionally, it can keep their farming activities consistently stable. Although the respondents did not find strong arguments for choosing farming as a profession, many encouraged and expected their children to become farmers. During the survey, the respondents designated even their infants as farm successors.

The farmland areas factor (X_8) was also significantly and positively related to existence motivation. In line with Dalmiyatun et al. (2018), the farmland areas have the strongest correlation with farmers' motivation. The size of a farm and investment in it motivate farmers to continue farming. However, if the inherited land becomes smaller in the study area, they may not survive on farming. According to Rahayu, Indardi, and Apina (2018), farmers with limited land tenure must be able to use their land intensively to provide optimal results and increase their income.

The farmers' productivity of paddy (X_{13}) had a significant negative relationship with their motivation for existence, meaning, the lower the productivity of paddy, the higher the farmers' motivation to increase their productivity to survive. Productivity depends on farm size and paddy yield. This factor is important for rice farmers to fulfil their current needs. In line with Rahayu, Indardi, and Apina (2018), farmers must be able to maximize the productivity of their cultivated plants to meet market demand and the farmers' own livelihood needs.

The farmers' household income (X_{15}) also had a significant negative relationship with the motivation for relatedness. When farmers are independent enough to establish relationships with outside parties, especially those related to rice marketing, it increases their motivation to gain more income from rice farming. This finding contradicts the findings of Rahayu, Indardi, and Apina (2018), who found a significant and positive relationship between farmer income and motivation. Farmers with higher incomes will be more eager to expand their farming operations, increasing farmer motivation. Michel-Villarreal, Vilalta-Perdomo, and Hingley (2020) also mentioned that small, large, part-time, and full-

Table 5. Factors related to the farmers' motivation

Variable	Existence		Relatedness		Growth	
	rs	Sig.	rs	Sig.	rs	Sig.
Age (X_1)	-0.111	0.322	-0.132	0.238	-0.023	0.841
Education (X_2)	0.271	0.014**	0.176	0.113	0.093	0.406
Number of children (X_3)	-0.046	0.682	0.121	0.279	0.113	0.314
Main occupation (X_4)	-0.012	0.362	-0.144	0.195	0.062	0.579
Side jobs (X_5)	0.268	0.015**	0.183	0.099*	0.278	0.012**
Perception of farming as an occupation (X_6)	0.219	0.048**	-0.111	0.323	0.034	0.765
Children have non-agricultural jobs (X_7)	-0.069	0.535	0.007	0.949	-0.055	0.626
Farmland areas (X_8)	0.398	0.000***	0.064	0.570	0.095	0.398
Inheritance land status (X_9)	-0.146	0.190	-0.167	0.133	-0.160	0.151
Purchased land status (X_{10})	0.087	0.435	0.100	0.371	0.131	0.241
Rent land status (X_{11})	0.155	0.164	-0.064	0.567	0.087	0.435
Sharecropping land status (X_{12})	0.106	0.345	0.116	0.301	0.004	0.974
Productivity of paddy (X_{13})	-0.226	0.041**	-0.139	0.212	-0.043	0.704
Productivity of other crops (X_{14})	0.049	0.660	-0.041	0.716	0.030	0.787
Household income from crops farming per land area (X_{15})	-0.053	0.639	-0.332	0.002***	-0.081	0.469
Farming experience (X_{16})	-0.381	0.000***	-0.241	0.029**	-0.115	0.304
Number of family laborers (X_{17})	-0.133	0.232	-0.157	0.158	-0.061	0.583
Number of hired laborers (X_{18})	0.167	0.133	0.132	0.238	-0.028	0.805
Interested in agriculture (X_{19})	0.097	0.386	-0.057	0.609	0.174	0.118
Being a farmer by own will (X_{20})	0.098	0.383	0.018	0.872	-0.030	0.792
Keeping the farmland as it is (X_{21})	-0.154	0.168	-0.217	0.050*	-0.076	0.497
Children think of farming as a side job (X_{22})	0.096	0.389	0.111	0.321	-0.015	0.892
Only had daughters (X_{23})	0.041	0.716	-0.233	0.035**	-0.052	0.644
Parents' encouragement (X_{24})	0.066	0.558	0.133	0.235	0.278	0.011**
No other jobs (X_{25})	-0.063	0.575	-0.067	0.547	-0.087	0.437
Affected by the environment (X_{26})	-0.017	0.882	0.170	0.126	-0.082	0.465

Note: * Significance at 0.1, ** Significance at 0.05, *** Significance at 0.01

time producers are willing to engage in farmers' markets for a variety of primary economic and non–economic motivations.

"I have helped my parents in farming since I was a child, so I practically learned how to farm from my parents before I became a farmer" (a Margokaton farmer interviewee).

The farming experience factor (X_{16}) had a significant negative relationship with existence and relatedness motivation but did not significantly relate to the growth motivation. This finding is also in line with those of Rahayu, Indardi, and Apina (2018) and Dalmiyatun et al. (2018). The average rice farmers in this study area had been involved in rice farming for a long time with more than 30 years of experience in farming. However, they learned from their parents mostly conventional farming practices. Farming experience is necessary to meet the existence needs of farmers. This factor also played a role in relatedness needs, which include interactions between farmers and sharing farming experiences while managing their farms. In line with the study by Wulandari et al. (2021), farming experience was not significantly related to growth motivation because it would not affect farmers' ability to apply new methods and techniques to their farms.

"I inherited this farmland from my parents, so I must keep this farmland as it is. This is also an act to preserve the agricultural land in this village" (a Margokaton farmer interviewee).

Farmers' opinions on keeping the farmland as it is (X_{21}) has a significant negative relationship with relatedness motivation. However, this relationship is weak. In the study area, farmers highly respect their parents or ancestors and local customs. Some farmers acquired farmland through an inheritance system. Therefore, they may have felt that they had the same responsibility toward their farmland as their parents. In addition, the farmers' motivation to buy and sell farmland is also weak because farmland is their most valuable asset, and they expect land prices to increase. Therefore, it is extremely difficult to increase farm size in the study area.

The factor on farmers who had daughters only (X_{23}) is significantly and negatively related to relatedness motivation. This indicates that some farmers in the study area prefer to have sons as successors to continue farming and interact with other farmers. They assume that farming activities are burdensome for a female. Other studies also mention that the number of children, age, and gender composition of the household significantly affect labor divisions and management decisions to continue farming (Garner and de La O Campos 2014).

"I became a farmer because I come from a farming family; and my parents inherited farmland. When I was old enough, they asked me to manage their farmland and encouraged me to become a farmer as well. They claimed that farming would provide us food for our family" (a Margokaton farmer interviewee).

Moreover, farmers' willingness to engage in farming because of their parents' encouragement (X_{24}) has a significant positive relationship with growth motivation. In line with the findings of Pamungkaslara and Rijanta (2017), parents' encouragement also motivated the farmers to continue farming in rural and urban areas.

CONCLUSION

Internal and external factors that correlated with farmers' motivation to continue farming can be used to determine farmer motivation and assess the future of rice farming. Overall, rice farmers' motivation to continue farming was categorized as "moderate", as seen from their motivation to meet ERG needs. This indicates a potential for maintaining the sustainability of rice farming in the study area. Furthermore, education, side jobs, perception of farming as an occupation, farmland areas, and encouragement from parents to be a farmer are positively related to farmer motivation.

Conversely, paddy productivity, household income from crop farming, farming experience, keeping the farmland in its current condition, and farmers who had daughters only negatively related with farmer motivation. Considering all the factors identified in this study may provide some insights into developing a method to encourage rice farmers to continue farming. Attracting younger people and inspiring high levels of motivation in farming is especially important for the future of farming. Because this study is limited to a single region, its generalizability is also limited.

Finally, the questionnaire used in this study was mainly based on socioeconomic statements. Moreover, the survey only reflected the perspectives of current farm managers (i.e., long-time farmers). Further research should be conducted, particularly from the perspective of young rice farmers.

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APPENDIX

Validity test of farmers' motivation based on ERG needs theory

We used the Pearson correlation test to check the validity and reliability of the data for this study. The results below show that all the data are valid because the total significance values are less than 0.05.

Appendix Table 1. Validity test of the existence (E) variable (*n*=82)

Variable		E1	E2	E3	E4	E5	E6	E7	Total
E1	r	1							
	Sig.								
E2	r	0.729	1						
	Sig.	0.000							
E3	r	0.439	0.673	1					
	Sig.	0.000	0.000						
E4	r	-0.106	-0.122	0.053	1				
	Sig.	0.341	0.277	0.639					
E5	r	0.149	0.225	0.246	0.084	1			
	Sig.	0.182	0.042	0.026	0.452				
E6	r	-0.064	0.042	0.138	0.183	0.359	1		
	Sig.	0.567	0.707	0.216	0.100	0.001			
E7	r	-0.055	0.110	0.249	0.144	0.152	0.582	1	
	Sig.	0.621	0.323	0.024	0.197	0.172	0.000		
Total	r	0.449	0.603	0.692	0.376	0.564	0.607	0.611	1
	Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Note: Total results are 0.000***; * level of significance at 0.1, ** level of significance at 0.05, *** level of significance at 0.01. r is the Pearson's correlation coefficient.

Appendix Table 2. Validity test of the relatedness (R) variable (*n*=82)

Variable		R1	R2	R3	R4	R5	R6	R7	Total
R1	r	1							
	Sig.								
R2	r	0.817	1						
	Sig.	0.000							
R3	r	0.656	0.737	1					
	Sig.	0.000	0.000						
R4	r	0.424	0.398	0.532	1				
	Sig.	0.000	0.000	0.000					
R5	r	0.373	0.424	0.512	0.534	1			
	Sig.	0.001	0.000	0.000	0.000				
R6	r	0.287	0.265	0.329	0.645	0.604	1		
	Sig.	0.009	0.016	0.003	0.000	0.000			
R7	r	0.339	0.317	0.560	0.758	0.510	0.631	1	
	Sig.	0.002	0.004	0.000	0.000	0.000	0.000		
Total	r	0.696	0.710	0.812	0.815	0.764	0.729	0.784	1
	Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Note: Total results are 0.000***; * level of significance at 0.1, ** level of significance at 0.05, *** level of significance at 0.01. r is the Pearson's correlation coefficient.

Appendix Table 3. Validity test of the growth (G) variable (*n*=82)

Variable		G1	G2	G3	G4	G5	G6	G7	Total
G1	r	1							
	Sig.								
G2	r	0.498	1						
	Sig.	0.000							
G3	r	0.395	0.752	1					
	Sig.	0.000	0.000						
G4	r	0.433	0.552	0.548	1				
	Sig.	0.000	0.000	0.000					
G5	r	0.373	0.667	0.748	0.616	1			
	Sig.	0.001	0.000	0.000	0.000				
G6	r	0.364	0.422	0.444	0.472	0.423	1		
	Sig.	0.001	0.000	0.000	0.000	0.000			
G7	r	0.070	0.175	0.266	0.367	0.311	0.439	1	
	Sig.	0.534	0.115	0.016	0.001	0.004	0.000		
Total	r	0.594	0.792	0.815	0.796	0.819	0.703	0.543	1
	Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Note: Total results are 0.000***; * level of significance at 0.1, ** level of significance at 0.05, *** level of significance at 0.01. r is the Pearson's correlation coefficient.

Reliability test of farmers' motivation based on ERG needs theory

We also conducted a reliability test to ensure the validity and reliability of the data. The results below show that all data are reliable because the Cronbach's alpha value for each item is greater than 0.6.

Appendix Table 4. Reliability test of ERG variable (*n*=82)

Variable	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Existence 1	47.281	77.636	0.181	0.637	0.876
Existence 2	47.378	77.497	0.209	0.767	0.875
Existence 3	48.537	75.955	0.236	0.600	0.876
Existence 4	49.061	76.428	0.184	0.572	0.878
Existence 5	48.720	74.501	0.375	0.433	0.871
Existence 6	48.805	72.826	0.533	0.595	0.867
Existence 7	48.902	72.336	0.454	0.583	0.869
Relatedness 1	47.293	74.531	0.463	0.724	0.869
Relatedness 2	47.281	74.698	0.485	0.798	0.869
Relatedness 3	47.451	69.954	0.532	0.763	0.867
Relatedness 4	48.659	70.499	0.635	0.726	0.863
Relatedness 5	48.866	70.710	0.564	0.599	0.865
Relatedness 6	49.037	70.431	0.572	0.716	0.865
Relatedness 7	48.342	72.228	0.601	0.695	0.865
Growth 1	48.463	73.215	0.502	0.485	0.868
Growth 2	48.744	71.230	0.607	0.707	0.864
Growth 3	48.744	70.415	0.644	0.763	0.863
Growth 4	49.012	71.346	0.497	0.609	0.868
Growth 5	48.939	70.601	0.595	0.756	0.864
Growth 6	48.951	71.849	0.543	0.684	0.866
Growth 7	49.342	73.092	0.375	0.530	0.872