

Factors affecting farmers' motivation for red rice farming in Ponjong District, Gunung Kidul Regency, Indonesia

Pujastuti S. Dyah* and Wening Pinesti

Department of Agribusiness, Universitas Muhammadiyah Yogyakarta, 55183, Yogyakarta, Indonesia

Abstract. Red rice in Ponjong District has increased production. Increased production of red rice causes farmers to have limited capital by balancing their daily needs. In this case, farmers have the motivation or motivation to fulfill their basic needs. This study aims to determine the motivation of farmers in farming and the relationship between the factors that influence the motivation of red rice farmers. Ponjong sub-district has three parts with three villages, namely the northern zone (Umbulrejo Village), the middle zone (Sumbergiri Village), and the southern zone (Sidorejo Village). The research location was determined purposely. Samples were taken by systematic random sampling as many as 200 samples from 399 farmers. The analysis technique in this study uses descriptive analysis and Correlation Rank Spearman. The results showed that each motivation variable, namely the need for existence, the need for relatedness, and the need for growth had a high level of motivation. The results of the Spearman Rank Correlation show that the internal factors are significant, namely education, land area, and land status, while the negative sign is age. There are no significant external factors for each zone regarding the relationship of farmer motivation to red rice.

1 Introduction

Food is a basic need for the community that is sourced from plants and animals. Food is needed for survival to meet the maintenance of the body that will produce energy. The food that becomes a staple food in Indonesia is rice. So that the rice plant is an important plant to produce rice. The variety of rice makes the community can determine for food needs with one of them is red rice. Red rice is rice that has good benefits for health. The red colour in rice is formed from anthocyanin pigments that are not only found in the pericarp and tegmen. Anthocyanins include flavonoid components, which have an antioxidant, anticancer, reduced risk of stroke and heart attack [1]. In addition to being beneficial for health, red rice has productivity, resilience with pests and diseases, as well as ease in its maintenance [2].

* Corresponding author : pujastuti@umy.ac.id

Gunungkidul Regency is one of the districts located in the Special Region of Yogyakarta. Gunungkidul regency has a nickname as germplasm-producing red rice. There are two types of land in Gunungkidul Regency, namely wetlands (rice fields) and dry land (gogo). The variety of red rice developed is segreng handayani [3].

Based on data on red rice production that Ponjong District has high red rice productivity from 12 sub-districts that conduct red rice farming business (District Agriculture and Food Office) Gunungkidul). Ponjong District is an area that has three zones, namely the northern zone, the central zone, and the southern zone which is often referred to as a special area in Gunungkidul Regency. In the three zones, there are three villages in each zone, namely Umbulrejo Village (northern zone), Sumbergiri Village (central zone), and Sumbergiri Village (southern zone) (Gunungkidul Regency).

The three zones in Ponjong District have different land types and landforms, namely the northern zone has a lactosol type of land with hilly landforms, the central zone has gromosol land types with hilly landforms, and the southern zone has gromosol land types with flat landforms.

According to data from the Department of Agriculture and Food, Gunungkidul Regency 2014-2018 experienced changes in the productivity of red rice.

Table 1. Harvest Area, Production and Productivity of Rice Crops Gogo Ponjong District 2014-2018

Year	Harvest Area (Ha)	Production (Tons)	Productivity (Ku/Ha)
2014	3,537	15,521.75	43.88
2015	3,455	15,730.25	45.53
2016	3,447	12,835.42	37.24
2017	3,285	15,295.59	46.56
2018	3,417	19,321.29	56.54

Based on Table 1 it can be known that in 2015-2016 experienced a decrease in production and land area. In 2017-2018 there was an increase in the productivity of red rice, but the area of red rice has increased compared to the previous year where the area of land decreased. Increased productivity does not mean farmers will get a high income so that it can be met with daily needs. Farmers strive so that the quality of red rice produced has quality following farmers' expectations. For the sake of farmers can meet their needs. However, farmers in Ponjong District still depend on agricultural products to earn income. If the income obtained is low, then meeting the needs of farmers will be increasingly difficult. Capital limitations that will be a problem for farmers with income obtained are only sufficient for daily needs. This study aims to find out the motivation of farmers towards red rice farming with factors that influence farmers to be encouraged or motivated. in doing the business of red rice.

Motivation is a basic impulse in humans that has a movement function to behave and behave. Motivation makes a person able to do an action that is by the maxim and purpose. There are two impulses to a person's motivation: an external impulse and an inside drive. This is with encouragement; the fulfilment of primary and secondary needs will be met. In addition, it can also be related to social, economic, and professional [4]

Abraham H. Maslow was one of the famous pioneers of motivational theory who has worked as a scientist and has been recognized theoretically and practitioners. One of Maslow's theories is the Hierarchy Needs theory. According to [5], there are five theories of need, namely: (a) Physiological needs are needs that must be met and satisfied with humans still alive. These include clothing, food, and boards; (b) Security needs are where

the need for a sense of security is needed physically and psychology. Including fair behaviour in a person's work. (c) Social needs are human relationships that are reflected in four forms of "feelings" that include feelings of acceptance of others, must be accepted as reality, the need for forwarding feelings, and a sense of participation; (d) The need for appreciation is self-esteem or the need for recognition of existence and status by others; (e.)The need for self-actualization is the need to develop all potential or abilities that have not been fully developed so that they can provide great benefits for others or yourself.

According to Clayton P. Alderfer in the book [6] revealed his theory called the theory ERG (Existence, Relatedness, and Growth) as follows: (a) Existence is all the needs relating to human existence that are maintained. This need is related to physiological needs and a sense of security in Maslow's Hiroaki. Based on the results of [7] showed that the motivation of tobacco farmers in the application of Good Tobacco Practices has a moderate percentage. This can be interpreted by farmers not much change regarding aspects of meeting daily needs, satisfaction needs, and comfort in working satisfaction and comfort in the cultivation of tobacco; (b) Relatedness is a need related to a partnership or in other words a person's relationship with the surrounding social environment. Then based on the results of [7], stated that many farmers have high motivation in implementing tobacco GTP cultivation can be interpreted that farmer are always present at every meeting of farmers group and the sales process will be easier when there is a connection with warehouses; (c)Growth needs are needs related to the development of individual potential, the need for appreciation, and self-actualization that Maslow said [8]. Based on the results of [7], stated that tobacco farmers want to develop their business and the application of GTP can increase their skills in farming. Food insecurity is a standard part of developing countries and rural areas. At the level of food insecurity, food consumption focuses only on carbohydrate consumption. Although the consumption of carbohydrates has met nutritional needs, people should not only consume carbohydrates but also energy, protein, fat, and fiber. Indonesia's nutritional adequacy rate is divided by age and gender. Moreover, in the areas of low food insecurity or high food security, food consumption varies, not only carbohydrates. [9]

2 Research Method

The population in this study used purposive methods because Ponjong Subdistrict has the highest productivity of red rice. Ponjong district is divided into three zones, namely the northern zone, the central zone, and the southern zone. In each zone, there are three villages namely Umbulrejo Village (northern zone), Sumbergiri Village (central zone), and Sidorejo Village (southern zone). The population was taken based on all three zones that had 399 farmers and sampled as many as 200 samples. Sampling was obtained from three groups of farmers in each zone which included the Sedyomulyo, Advanced Farmers, and Sedyorukun farming groups which each farmer group uses a proportional so that each farmer's group uses the proportional so that each farmer The farming group had samples of 66, 56, and 78. Measurement of the motivation of red rice farming in Ponjong District of Gunungkidul Regency can be done using the scoring technique. In the measurement, five categories are measured using the interval formula, among others. Motivation measurement is done by calculating the average score and continue to add up the range of scores in each statement to find out the number of scores and score categories [4].

Table 2. Category of Each Indicator

Indicators	Score Range	Category				
		Very Low	Low	Moderate	High	Very High
<i>Existence</i>						
Motivation to meet the family's food needs	2-10	2-3.60	3.70-5.30	5.40-7.00	7.10-8.70	8.80-10.00
Motivation to meet the needs of clothing and family boards	2-10	2-3.60	3.70-5.30	5.40-7.00	7.10-8.70	8.80-10.00
Motivation to meet the cost of education	2-10	2-3.60	3.70-5.30	5.40-7.00	7.10-8.70	8.80-10.00
Motivation to meet security needs	3-15	3-5.40	5.50-7.90	8.00-10.40	10.50-12.90	13.00-15.00
Motivation to increase family income	2-10	2-3.60	3.70-5.30	5.40-7.00	7.10-8.70	8.80-10.00
<i>Relatedness</i>						
Motivation to establish relationships with people other than farmers or people who work the same	2-10	2-3.60	3.70-5.30	5.40-7.00	7.10-8.70	8.80-10.00
Motivation to establish close relationships with other farmers	2-10	2-3.60	3.70-5.30	5.40-7.00	7.10-8.70	8.80-10.00
Motivation to work with other farmers	2-10	2-3.60	3.70-5.30	5.40-7.00	7.10-8.70	8.80-10.00
Motivation to share experiences with other farmers	2-10	2-3.60	3.70-5.30	5.40-7.00	7.10-8.70	8.80-10.00
<i>Growth</i>						
Motivation to use modern equipment that supports red rice farming	2-10	2-3.60	3.70-5.30	5.40-7.00	7.10-8.70	8.80-10.00
Motivation to increase knowledge about red rice farming	2-10	2-3.60	3.70-5.30	5.40-7.00	7.10-8.70	8.80-10.00
Motivation to buy tertiary items	2-10	2-3.60	3.70-5.30	5.40-7.00	7.10-8.70	8.80-10.00
Motivation to be appreciated and respected by others	2-10	2-3.60	3.70-5.30	5.40-7.00	7.10-8.70	8.80-10.00
Motivation to own or develop a red rice farming business	2-10	2-3.60	3.70-5.30	5.40-7.00	7.10-8.70	8.80-10.00
Motivation for Health	2-10	2-3.60	3.70-5.30	5.40-7.00	7.10-8.70	8.80-10.00

The score consisting of each motivation, namely existence, relatedness, and growth is measured by summing the scores of all motivation categories.

Table 3. The level of motivation of each variable.

No.	Indicators	Score Range	Category				
			Very Low	Low	Moderate	High	Very High
1	<i>Existence</i>	11.00 - 55.00	11.00-19.80	19.81-28.61	28.62-37.42	37.43-46.23	46.24-55.00
2	<i>Relatedness</i>	8.00-40.00	8.00-14.40	14.41-20.81	20.82-27.22	27.23-33.63	33.64-40.00
3	<i>Growth</i>	12.00-60.00	12.00-21.60	21.61-31.21	31.22-40.82	40.83-50.43	50.44-60.00

The overall level of motivation is calculated by summing up all the motivation level scores and calculating the achievement of the scores obtained in each of the five categories.

Table 4. Overall motivation category level.

Number of Scores	Score Achievement %	Category
31.00 - 55.80	0.00-19.99	Very Low
55.81 - 80.61	20.00-39.99	Low
80.62 - 105.42	40.00-59.99	Moderate
105.43 -130.23	60.00-79.99	High
130.24 -155.00	80.00-100.00	Very High

To find out the related factors that affect the motivation of red rice farmers by using spearman *rank* correlation analysis

3 Results and Discussion

3.1 Farmer's Motivation in the Rice Farming Business

The motivation of farmers in the rice farming business is divided into three, namely the need for existence, the need for *relatedness*, and the need for growth.

3.1.1 The Need for Existence

The need for *existence* is a need that encourages farmers to meet daily needs that include food needs, clothing, boards, education, and security costs. There are five indicators used to regulate the need for *existence*. (Hanifah Ihsaniyati, 2016)(Caulton, 2012

Income earned from red rice farmers is widely used as meeting primary, secondary, as well as educational costs. The need for security, for farmers, does not become a need that must be met. Security needs in the form of saving and insurance become conditional needs depending on the income earned by farmers. In meeting the cost of education farmers will always strive to meet the educational needs of family members. However, farmers who no longer have family members who have education, are no longer needed to be fulfilled.

Table 5. Number of category scores need for Existence

No.	Indicators	Score Range	Number of Scores		
			Northern Zone	Central Zone	Southern Zone
1	Motivation to Meet Family Food Needs	2-10	8.58	8.38	8.86
2	Motivation to meet the needs of clothing and family boards	2-10	7.58	7.64	7.26
3	Motivation to meet the cost of education	2-10	6.08	5.93	6.23
4	Motivation to meet security needs	3-15	7.58	9.29	8.31
5	Motivation to increase family income	2-10	8.97	8.11	8.36
Sum		11-55	38.79	39.35	39.02
Category			High	High	High

Food needs are basic needs that must be met by farmers. The income earned by farmers the main thing that must be met is food needs even though the income obtained is low. This research is different from [11] that existence needs fall into the moderate

category. Respondents conducted cabbage farming by having a goal to meet food needs. No matter how small the income of the most important thing that is met is food, for other needs can be considered.

3.1.2 The Need for Relatedness

The need *for relatedness* is a need for farmers who encourage farmers to be able to establish relationships and interact with farmers or non-farmers. Four indicators govern the need for *relatedness*. [12]

Table 6. Number of *category scores* need for *Relatedness*

No.	Indicators	Score Range	Number of Scores		
			Northern Zone	Central Zone	Southern Zone
1	Motivation to establish relationships with people other than farmers or people who work the same	2-10	7.64	7.71	7.76
2	Motivation to establish close relationships with other farmers	2-10	8.18	8.02	8.28
3	Motivation to work with other farmers.	2-10	8.58	8.43	8.18
4	Motivation to share experiences with other farmers	2-10	8.39	8.32	8.35
Sum		8-40	32.79	32.48	32.57
Category			High	High	High

The high level of motivation of red rice is caused by red rice farmers need relationships that can interact and communicate that can increase knowledge and receive information to develop red rice farming business for the better. Farmers assume that with the need for relatedness (relatedness) impact farmers can establish friendship and establish a stronger brotherhood. This study is different from (Rahayu et al., 2018) which states that relatedness is a high social relationship between farmers and extension workers to cooperate and meet their own social needs.

3.1.3 The Need for Growth

The need for growth is a need that encourages farmers to develop better in the future. Six indicators govern the need for growth [14].

High motivation for the need for growth in every three zones. The motivation of farmers in wanting the needs to be met makes farmers strive to achieve their goals. However, the high motivation of farmers in meeting the needs of purchasing tertiary goods and modern equipment is not all farmers can meet the needs. Erratic income makes farmers will meet food needs first if the farmer's high income will try to meet other needs.

Table 7. Number of Growth needs score

No.	Indicators	Score Range	Number of Scores		
			Northern Zone	Central Zone	Southern Zone
1	Motivation to use modern equipment	2-10	5.98	6.68	7.06
2	Motivation to increase knowledge of red rice farming	2-10	7.26	7.68	7.86
3	Motivation to buy tertiary goods	2-10	5.70	6.61	6.36
4	Motivation to be appreciated and respected by others	2-10	7.27	7.30	7.81
5	Motivation to own and develop a red rice farming business.	2-10	8.11	8.32	8.44
6	Motivation for health	2-10	8.76	8.79	8.99
Sum		12-60	43.08	45.38	46.52
Category			High	High	High

In contrast to the results of the study [13] with low motivation for the need for growth in the view of farmers this is an additional need. Causes of low motivation in the motivation of rice farming in buying tertiary goods and motivation to be appreciated. The level of motivation of red rice farmers with the number of scores on each variable in the three zones can be measured by the achievement of the score so that the level of motivation of farmers will be known as follows:

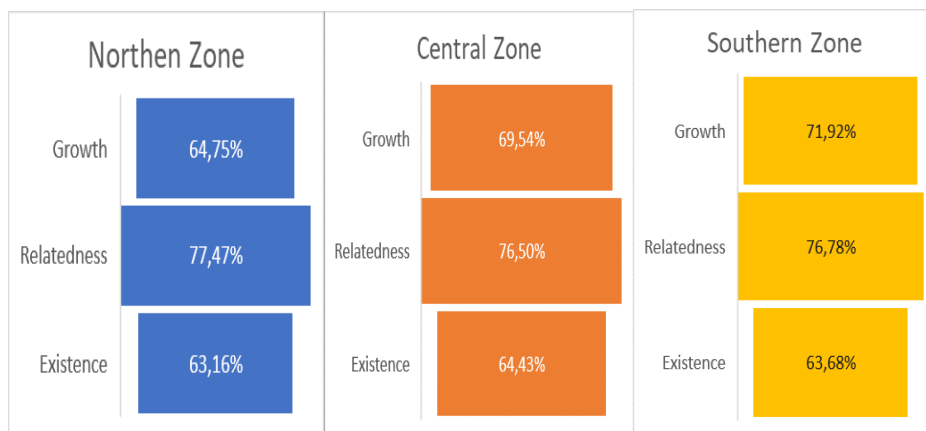


Fig 1. Motivation ERG in Ponjong District

Based on Figure 1, that the motivation category of red rice farmers can be seen from the achievement of scores with ERG variables, namely the need for *existence*, the need for *relatedness*, and the need for *growth* which has a high category in all three zones. In this case, farmers are driven to the need for *relatedness* (relatedness) which has the highest score which means as a social creature in establishing relationships with socialists and interacting to make farmers strengthen relationships. So that the need for *growth* in developing red rice farming and environmental health can achieve the goal well and the need for the *existence* of farmers can meet. In contrast to the results of research [15] motivation of trying to farm rice shows that *relatedness needs* and *existence needs* have a high category which means rice farmers want to meet *relatedness needs* and *existence needs*, while some farmers have started to have higher motivation, namely *growth needs*

3.2 Factors That Affect Motivation

Factors that affect the motivation of farmers there are two factors, namely internal factors, and external factors. Internal factors include age, education, income, farming experience, land status, land area. And external factors include the availability of capital, marketing, and the suitability of land potential.

3.2.1 Age

There is a relationship between age and motivation. Correlation values in the *existence* of the three zones with a negative relationship direction. Farmers with the age of production have the drive or motivation to meet the needs with a physical ability that is still strong. Relatedness in the central zone has a negative directional relationship which means farmers of productive age can find information by being active in social relationships by achieving the same goals. And *growth* does not have a relationship which means it is not a limit for farmers to meet the need for growth that can prosper the family.

3.2.2 Education

Education in *existence* in the central zone and the southern zone has a positive relationship which means that education affects farmers in receiving knowledge and innovation of farmers. In contrast to the northern zone that it has no relationship which means the level of education is not an obstacle to doing business. In *relatedness*, no relationship means education is not an obstacle to be able to relate to farmers and extension workers in agriculture relationship with the positive direction. The level of education is influential with farming to have broad insights and can easily develop agricultural businesses. In contrast to the two zones, namely the central zone and the southern zone that there is no relationship so that education does not affect the development of agriculture.

Table 8. Internal Factors to ERG

Existence						
Internal Factors	Northern Zone		Central Zone		Southern Zone	
	Rs	Sig	Rs	Sig	Rs	Sig
Age	-0.281(*)	0.022	-.0294(*)	0.017	-0.285(*)	0.011
Education	0.158	0.204	0.307(*)	0.012	0.256(*)	0.024
Income	-0.017	0.89	-0.143	0.252	-0.097	0.397
Farm experience	-0.253(*)	0.04	-0.124	0.32	-0.102	0.374
Land Status	-0.127	0.31	0.223	0.072	0.017	0.883
Land	0.129	0.301	0.137	0.271	0.186	0.103
Relatedness						
	Northern Zone		Central Zone		Southern Zone	
	Rs	Sig	Rs	Sig	Rs	Sig
Age	-0.105	0.401	-0.332(**)	0.006	-0.027	0.813
Education	0.206	0.098	0.061	0.624	0.128	0.263
Income	0.085	0.5	0.073	0.562	-0.105	0.359
Farm experience	-0.033	0.795	0.073	0.559	-0.19	0.096
Land Status	-0.072	0.564	0.07	0.578	0.258(*)	0.022
Land	-0.064	0.611	0.297(*)	0.015	0.157	0.17
Growth						
	Northern Zone		Central Zone		Southern Zone	
	Rs	Sig	Rs	Sig	Rs	Sig
Age	-0.241	0.052	-0.094	0.452	-0.066	0.565

Education	0.371(**)	0.002	0.13	0.298	0.174	0.127
Income	0.159	0.202	-0.091	0.469	-0.073	0.528
Farm experience	-0.102	0.415	-0.038	0.761	-0.194	0.088
Land Status	0.118	0.346	0.158	0.205	-0.014	0.903
Land	0.018	0.885	0.112	0.373	0.240(*)	0.034

3.2.3 Income

There is no relationship to income in the motivation variables namely existence, relatedness, and growth. The high and low income of farmers is not an obstacle to the welfare of the family. Farmers can connect and interact with farmers and extension workers for farming and farmers will always strive to be able to develop farming businesses so that they can meet all needs.

3.2.4 Farm experience.

There is a relationship with the negative direction in the existence variables found in the northern zone. Low farmers in increasing the business of red rice because the experience of farmers who try to farm does not have an increase. The central zone and the southern zone have no relationship to the motivation of existence has no effect to find solutions so that the basic needs of farmers can be met. Likewise, the motivation of relatedness that does not have a relationship that means the experience of farming makes farmers discuss to get results following farmers' expectations. There is a growth motivation not having a relationship, so the experience does not affect farmers to still develop and meet the needs of the family.

3.2.5 Land Status.

The motivation of farmers in variables of existence, relatedness, and growth in the red rice farming business has no relationship. This is because farmers in trying to farm red rice with the aim that it can be met all the needs of farmers. Land area. Land area relationships in existence do not have the relationship of each zone. This is characterized by a narrow or large area of land that is not an obstacle to continue to farm red rice. So is the motivation relatedness that the northern zone and the southern zone have no relationship. However, the middle zone has a relationship with positive direction which means that the area of land influences farming because the wider the land there will be more farmers' problems. So, it takes discussion with farmers and extension workers. The motivation of growth in the southern zone has a positive relationship so that the area of land makes farmers can develop red rice farming businesses. However, the northern zone and the central zone do not have a relationship that means the condition of a narrow or large land area can be as a development of rice farming business.

4 Conclusion

The motivation of farmers towards the farming of red rice is based on the three zones in Ponjong District of Gunungkidul Regency which includes the northern zone (Umbulrejo Village), the central zone (Sumbergiri Village), and the zone South (Sidorejo Village). The motivation of red rice farmers has a high category in the three motivation variables, namely the need for existence, the need for relatedness, and the need for growth.

Factors related to the motivation of red rice farmers are internal factors and external factors. Internal factors have a significant relationship with a positive direction in the business of red rice in the central zone, namely education and land area, the southern zone, namely education, and status land. While the significant relationship with the negative direction in the motivation of red rice farming includes the northern zone and the central zone i.e., age. External factors of each zone have no significant relationship regarding the motivation of red rice farming. To the Ponjong District government to increase extension activities to red rice farmers so that farmers do not switch with other commodities because there is still a lack of knowledge of farmers. red rice farming business. Farmers groups in each zone to further improve the relationship between farmers to make it easier to provide information about red rice farming.

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