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Factors Causing Low Regeneration of Rice Farmers in Mandastana District, Barito Kuala Regency

Fitria[1] , Deasy Arisanty[2] , Nevy Farista Aristin[3] , Karunia Puji Hastuti[4] , Parida Angriani[5]

[1] Geography Education Department, FKIP Lambung Mangkurat University ; 2110115120004@mhs.ulm.ac.id
[2] Geography Education Department, FKIP Lambung Mangkurat University ; desasarisanty@ulm.ac.id
[3] Geography Education Department, FKIP Lambung Mangkurat University ; nevyfarista@ulm.ac.id
[4] Geography Education Department, FKIP Lambung Mangkurat University ; karuniapuji@ulm.ac.id
[5] Geography Education Department, FKIP Lambung Mangkurat University ; parida.angriani@ulm.ac.id

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ABSTRACT

Farmer regeneration is one of the problems in the agricultural sector, this is because most farmers are classified as old and few young people are interested in continuing to work in the agricultural sector. This study aims to analyze the factors causing the low regeneration of rice farmers. The study was conducted in Mandastana District, Barito Kuala Regency, Indonesia. The subjects of this study were children of farmer group members in Mandastana District with an age range of 16-35 years. The sample taken was 365 people using the proportionate random sampling technique. This study uses a descriptive quantitative research method. Data collection used in this study was observation, questionnaires (semi-closed) and documentation. The analysis used in this study was factor analysis or Principal Component Analysis (PCA). The results of the study showed that the first factor or the most dominant factor causing the low regeneration of farmers was the level of education, information from outside and peers, with correlation values of 0.931, 0.796 and 0.705. The second factor that causes low regeneration of rice farmers is the area of land ownership, work experience in the agricultural sector, family income from the agricultural sector, family income from the agricultural sector and family socialization, with correlation values of 0.689, 0.730, 0.859 and 0.833. The third factor that causes low regeneration of rice farmers is wages outside the agricultural sector, with a correlation value of 0.934.

Corresponding Author:
Fitria
Geography Education Department, FKIP Lambung Mangkurat University ; 2110115120004@mhs.ulm.ac.id

1. INTRODUCTION

Indonesia, with its background as an agricultural country, should be the sector that absorbs the most labor compared to other sectors, but this is actually the opposite (Taufiqurrohman & Jayanti, 2022). The agricultural sector is one of the national development sectors that plays an important role as an absorber of labor, a source of food and nutrition, industrial raw materials and a driver of other

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economic sectors. Therefore, some of the reasons underlying farmer regeneration must run continuously include, first, farmer regeneration is a requirement for the realization of sustainable agriculture. Second, farmer regeneration is important for the implementation of food security in the future. Third, farmer regeneration is important for the realization of food sovereignty which is related to the ability to meet food needs independently (Anwarudin et al., 2020).

Farmer regeneration is a process of transferring farming efforts from old farmers to young farmers as the next generation (Kontogeorgos et al., 2014). Farmer regeneration is very important because it determines the productivity and competitiveness of agriculture due to the aging of farmers which will hinder changes in social structures and rural modernization (MARCU, 2014). The age of a farmer certainly affects the farmer's activities in managing agricultural businesses, namely on physical condition and thinking ability. The decline in the rate of labor absorption in the agricultural sector is a matter of concern because national food security is supported by this sector (Saleh et al., 2021). Farmer regeneration is one of the problems in the agricultural sector, this is because most farmers are classified as old and few young people are interested in continuing to work in the agricultural sector so that it can have an impact on agricultural productivity.

The number of people working in the agricultural sector has been proven to have decreased. Evidence of the decline is seen based on the results of the comparison of the 2013 and 2023 agricultural censuses which show that over the past 10 years there has been a decline in the number of Indonesian farmers by around 7.42%, from 31.70 million people in 2013 to 29.34 million people in 2023. Coupled with the problem of low interest among the younger generation in agricultural businesses, which is indicated by the very low portion of young farmers in Indonesia. The results of the 2023 agricultural census show that the proportion of young farmers aged 25-34 years has decreased by 1.73% to 10.24%, and the proportion of farmers aged 35-44 years has decreased by 4.34% to 22.0%, this number is much lower than farmers aged 43-58 years, which is 42%. Meanwhile, the number of farmers aged 55-64 years in the last 10 years has increased by 3.29% and farmers aged over 65 years have increased by 3.4% (Prasetiawan, 2024).

South Kalimantan Province is one of the largest agricultural granaries outside Java, besides South Sumatra and South Sulawesi. There are 5 regencies that are used as rice production centers in South Kalimantan, namely Barito Kuala (Batola), Banjar, Tapin, Hulu Sungai Tengah (HST), and Hulu Sungai Selatan (HSS) Regencies. In addition to having a larger planting area, these five regencies also have higher rice productivity. South Kalimantan has types of swamp land consisting of tidal swamp land and lowland swamp land (Ritung, 2015). Swamp land is a mainstay as a contributor of rice, especially for the five regencies that are rice production centers (Masganti et al., 2020). The largest rice harvest area is in Barito Kuala Regency with an area of 54,196 hectares or 25.59% of the total rice harvest area in South Kalimantan. This is supported by the fact that Barito Kuala Regency is the regency that is the largest rice producer and has been named the center of the rice granary of South Kalimantan (Purwati et al., 2023).

Barito Kuala Regency as a rice barn center and known as an area with high rice productivity also has problems in terms of labor absorption in the agricultural sector. The results of the 2023 Barito Kuala Regency agricultural census reviewed by age group show that the age of individual agricultural farmers is mostly managed by farmers over 45 years old or around 62.94% of all individual agricultural business managers in Barito Kuala Regency. The majority of heads of agricultural business households are in the 45-54 year age range or as much as 29.91%. The percentage of young people under 25 years old who are agricultural managers in Barito Kuala Regency is less than 1.31% (Sensus Pertanian, 2023).

Barito Kuala Regency has the potential for wetland agriculture that can be developed, one of which is in Mandastana District. Mandastana District has potential in the food crop sector, especially rice, and has contributed the highest harvest area in the past 10 years along with several other districts in Barito Kuala Regency. However, there has been a decrease in the harvest area in 2020 to 2022 in Barito Kuala Regency by 20%, and especially in Mandastana District there has been a decrease of 44%. (Abdillah et al., 2024). Mandastana District is the district with the largest decrease in land area and rice

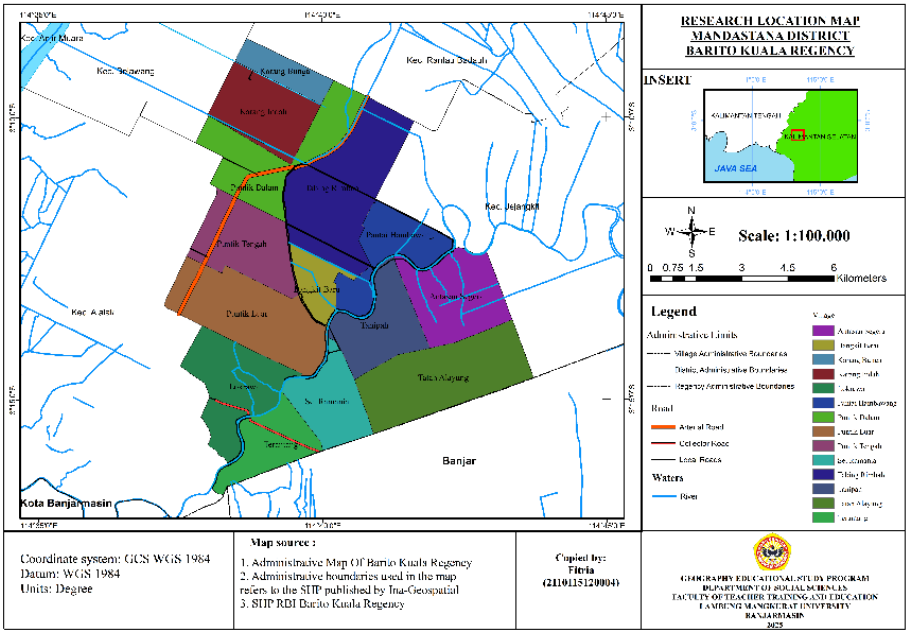
production in Barito Kuala Regency. Mandastana District experienced a decrease in harvest area of 5,666 tons or 59%. This also coincided with the rice production results which also experienced the highest decrease, namely 20,403 tons or 60%. However, the population growth rate experienced the highest increase, namely 2.66%. The condition of population growth tends to be higher, while the availability of land area is decreasing.

Data on land area and number of members of farmer groups in Mandastana District in 2024 obtained from the Agricultural Extension Agency (BPP) of Mandastana District shows that the number of members of farmer groups in Mandastana District from 2022 to 2024 has decreased by around 2-3%. This decrease is due to the age of farmers who are old so that they are no longer able to work in the fields. This is also supported by the results of observations that the age of farmers who are members of farmer groups ranges from 35 years to 65 years, some are even 70 years old but still farming, the majority of the average age of the population who farm in Mandastana District are old farmers. This shows that there is a problem of regeneration of rice farmers in Mandastana District. Therefore, this study will analyze the factors causing the low regeneration of rice farmers in Mandastana District, Barito Kuala Regency using 8 factors including education level, land ownership area, work experience in the agricultural sector, family income from the agricultural sector, family socialization, information from outside, wages outside the agricultural sector, and peers.

2. METHOD

This research was conducted in Mandastana District, Barito Kuala Regency. The location of the research is shown in Figure 1. This research uses a descriptive quantitative research method. The subjects of this study were children of farmer group members in Mandastana District with an age range of 16-35 years. The sample taken was 365 people using the proportionate random sampling technique. The variables used in this study are dependent variables, which are identified as consisting of education level, land ownership area, family socialization, work experience in the agricultural sector, family income from the agricultural sector, external information, wages outside the agricultural sector, and peers. The number of questions is 45 with a scale of 1-4 (interval scale) (Table 1). Data collection in this study used observation, questionnaire (semi-closed) and documentation methods. The questionnaire was distributed to be filled in by all respondents in the study, namely children of farmer group members spread across 14 villages in Mandastana District.

Figure 1. Location of Mandastana District



The analysis technique used in this study is Principal Component Analysis (PCA). Principal Component Analysis (PCA) is used to identify the most influential factors and causes of low rice farmer regeneration. PCA is a statistical technique that is able to linearly change a set of original variable forms into a smaller set of new variables that are able to represent information from the original set of variables (Wangge, 2021). Factor test analysis uses the SPSS 22 application.

Table 1. Variables and Indicators

Variable	Indicators
Level of education	Formal education level that has been completed
Area of land ownership	1. Area of rice fields owned by parents (Ha) 2. Area of rice fields cultivated by parents (Ha)
Work experience in the agricultural sector	1. Number of participants in agricultural activities 2. Forms of participation in agricultural activities 3. Length of experience helping parents who work as farmers (years)
Family income from the agricultural sector	1. Nominal family income from agriculture (rupiah) 2. Comparison of income from the agricultural sector with the non-agricultural sector 3. The ability of agricultural sector income to meet family needs
Family socialization	1. Parental support for children to work as farmers 2. The influence of parents on the decision not to work as a farmer
Information from outside	1. External sources of information 2. Length of travel to obtain information about off-farm opportunities
Wages outside the agricultural sector	1. Amount of wages from outside the agricultural sector (rupiah) 2. Comparison of jobs in the non-agricultural sector with jobs in the agricultural sector
Peers	1. Peer views on the agricultural profession. 2. The amount of peer support to shift to the non-agricultural sector 3. Peer support to shift to non-agricultural sectors

3. RESULT AND DISCUSSION

3.1 Education Level Factor

The level of education is measured based on the last formal education that has been taken. The results of the study showed that as many as 93% of the young generation in Mandastana District have completed education up to high school/equivalent level and as many as 4% of them have completed college. High education illustrates that the young generation in Mandastana District is able to utilize the available educational facilities and realizes the importance of formal education. Mandastana District has secondary education facilities including Senior High School (SMA) and Madrasah Aliyah (MA), except for vocational schools. For the young generation who do not want to continue their education to a higher level such as college, they will choose to enter the world of work. The high level of education taken will influence the perspective of the young generation to find work that is in accordance with the level of education they have taken. The young generation in Mandastana District

assumes that now to find work outside the agricultural sector with adequate wages, the qualifications sought must have a minimum education of high school/equivalent. So that with the education that has been taken, it will encourage the young generation to look for work outside the agricultural sector with more promising wages or salaries. The level of education is clearly a requirement for access to the non-agricultural sector. Higher education will indirectly have consequences for individual choices in getting a job (Julianto & Utari, 2019). The higher the level of education, the more likely young people will choose jobs outside the agricultural sector (industry and services) (Nugroho & Waluyati, 2018).

3.2 Land Ownership Area Factor

The largest area of land ownership of parents in Mandastana District is 1 to 2 hectares, which is 38% of people, and another 36% have a land area of <1 hectare. This land area is relatively narrow because the optimum land area to support the lives of farmers is at least 2 hectares (Wiyono, 2015). Meanwhile, as many as 37% of young generation parents have a cultivated land area ranging from> 0.5 to 1 hectare. The reason not all land is cultivated is because of limited capital due to crop failure and planting failure that occurs because the rice fields are submerged for weeks. One of the causal factors is climate conditions, climate refers to the patterns and characteristics of weather that occur in a particular area. Rainfall patterns will vary due to climate change, which can have negative impacts, such as unpredictable rainfall (Yati et al., 2024). This is what caused the rice fields in Mandastana sub-district to be submerged in floodwater and resulted in failed planting and harvest failures.

Moreover, the long planting period of Siam Banjar rice (7-9 months) means that farmers must be able to set special strategies in matching the planting calendar with conditions in the field. Conditions like this will make farmers not optimal in farming and result in not all of the land they own being able to be cultivated. The area of land controlled by farmers will affect the increase in farmer income, thus indicating that narrow land ownership will result in low income received by farmers (Ridha, 2017). Therefore, rural youth who have narrow land will be encouraged to leave the agricultural sector and prefer to work in the non-agricultural sector.

3.3 Family Socialization Factors

Family socialization is an important thing for the formation of youth views on work in the agricultural sector. The results of the study showed that as many as 78% of parents do not support their children working as farmers. Parents who work as farmers certainly introduce agricultural activities to their children, but no parents expect their children to become farmers. The orientation of parents towards their children is not expecting their children to work as farmers (Khumairotusyifa, 2020). In addition, as many as 50% of parents prioritize formal education and advise them to look for work outside the agricultural sector where the income is more stable. Farming families consider that being a farmer is less promising for the future of their children, so parents do not inherit it. Farming families encourage their children to work outside the agricultural sector. Therefore, this is one of the obstacles to farmer regeneration (Saleh et al., 2021).

3.4 Work Experience Factors in the Agricultural Sector

The decision to enter a job is determined by the work experience they have, because the work experience they have affects the level of work productivity compared to those who do not have work experience. Work experience in the agricultural sector is seen based on the number of participations, forms of participation and length of experience helping parents in agricultural activities. The results of the study showed that the number of participants in the agricultural sector in Mandastana District was 46% of the young generation only 1-2 times a year. Meanwhile, the length of experience of the young generation helping parents in agricultural activities was mostly < 3 years, which was 55% of the young generation. This shows that the work experience of the young generation in the agricultural sector is relatively low.

The most common form of young generation participation is only involved as needed (helping when there are problems or urgent activities in the rice fields) which is 49% of the young generation. The involvement of the young generation in Mandastana District decreases during the planting season (land preparation) and plant maintenance, which is only 15% of the young generation, this is because

the young generation assumes that this stage requires a lot of time and energy. While at the maintenance stage, the activities carried out are not too crucial because only the activities of providing fertilizer and pesticides are irregular. However, the involvement of the young generation at harvest time is higher, which is 25%, this is because there is a request from parents to distribute (transport) the results of rice grains from the rice fields to home. This activity is also usually carried out during holidays or after school so that it does not interfere with school time.

There are two things that influence work experience in the agricultural sector on the decision to work in the agricultural sector. First, because the younger generation does not know how to farm well, this is because of the lack of participation and involvement in helping parents in farming and also the lack of skills in the agricultural sector, this is because most of the time is used for education. Second, the existence of work experience in the agricultural sector. The younger generation who have experienced and been involved in working in the agricultural sector even for a short time certainly gives an impression of the job. Impressions such as the tiredness of working in this sector and the various challenges faced in the agricultural sector, while the results obtained are uncertain or low. This work experience in the agricultural sector makes the younger generation in Mandastana District unwilling to continue their parents' agricultural business and tend to prefer to look for work outside the agricultural sector.

3.5 Family Income Factors From the Agricultural Sector

Income from the agricultural sector in Mandastana District is quite low, this is based on the results of a study that 47% of the younger generation stated that the income their parents received from the agricultural sector was IDR 4,000,000-IDR 6,000,000, and 44% of the other younger generation stated that the income their parents received from the agricultural sector was <IDR 4,000,000. This low income is certainly influenced by the decline in rice productivity produced. According to the head of the Agricultural Extension Agency (BPP) of Mandastana District, Mr. Imam Supeno Maryo Nani, MP, stated that the decline in rice productivity that occurred was due to crop failure and planting failure that hit Mandastana District and several other districts in Barito Kuala Regency in recent years. The crop failure and planting failure were caused by floods, droughts and *tungro* disease in rice.

As many as 51% of the young generation in Mandastana District stated that family income from the agricultural sector has not been able to contribute to their parents' income. Therefore, to meet needs beyond clothing, food and shelter, parents must look for side jobs. This is because income from farming is not obtained periodically, but must wait until harvest while the waiting time from planting to harvest is quite long. The harvest period for local rice varieties is once a year, so the young generation is pessimistic about the income generated from the agricultural sector. The income received by farmers must go through a fairly long and long time because they have to wait until harvest. This shows that farmers' income is only obtained every harvest season, while expenses must be every day (Susilowati, 2016).

3.6 External Information Factors

External information is related to cosmopolitanism, namely a person's openness to receiving information from outside. The cosmopolitan level is seen from the intensity of a person accessing mass media or new sources of innovation to obtain information from outside and is also measured by traveling or visiting outside the village. The results of the study showed that as many as 55% of the young generation of Mandastana District used as many as 2 sources of information used to obtain information about non-agricultural jobs, the types of information sources include social media and direct discussions. This shows that the young generation uses the internet to find job vacancy information, this is because the flow of information and communication is currently developing rapidly. The increasing use of the internet will of course have an impact on the development of digital technology (Rahimah et al., 2024). The development of information technology allows people to connect with each other and be able to communicate and make transactions through technology (Yasir et al., 2024). In addition, the young generation of Mandastana District also uses direct discussions or asks friends, family or people who are working outside the village as a way to find job vacancies. News from

the media or information brought by other people from outside the area can influence the perspective of the village community including the jobs they will choose (Hak, 2018).

Development and progress of economic growth will increase along with the utilization of land (Rahman et al., 2024). The increasing development of the village economy in Mandastana District has an impact on improving rural accessibility to economic centers in cities or districts, because Mandastana District is located close to economic centers such as Banjarmasin City and Banjar Regency, making it easier to find information and access outside the village to work outside the agricultural sector.

3.7 Wage Factors Outside the Agricultural Sector

The problem of the agricultural workforce regeneration crisis that occurs in rural areas is caused by the young generation who are migrating to cities to get more certain jobs with much more promising wages (Suyanto, 2016). The migration of this young generation is influenced by the difference in wage levels and job opportunities between villages and cities. The results of the study showed that the amount of wages or salaries received by 71% of the young generation was IDR 2,000,000-IDR 4,000,000 per month with various professions outside the agricultural sector. In addition, as many as 81% of the young generation gave a comparison that work outside the agricultural sector is more promising because income is more stable, has a higher income or wider career opportunities than income from the agricultural sector. Income outside the agricultural sector is more profitable than income in the agricultural sector (Aryanto & Sunaryanto, 2019).

3.8 Peer Factors

Peers are an important source of emotional support for the younger generation. At this time, the younger generation will spend more time with peers than with their families. The results of the study showed that as many as 63% of the younger generation in Mandastana District stated that their peers' views on the agricultural profession were that they considered the farming profession as a less prestigious job so that they preferred other sectors. In addition, as many as 54% of the younger generation stated that there were 3-4 forms of support received by the younger generation from peers regarding encouragement to work in the non-agricultural sector. The forms of support received include finding job vacancies, inviting them to join joint ventures in the non-agricultural sector, providing access to networks or connections to work in the non-agricultural sector and providing information about job opportunities in the non-agricultural sector. This is because peers believe that the non-agricultural sector has much better career opportunities than the non-agricultural sector.

The choice of work outside the agricultural sector is influenced by peers who work a lot outside the agricultural sector (Azhari et al., 2021). Peer views on work in the agricultural sector are certainly the cause of the low regeneration of farmers in Mandastana District. According to Ningsih (2015), the reluctance of young people to be involved in their parents' agricultural activities is due to negative views of the work. Such views do not only come from within the individual themselves but also from peers. Sources of income require effort, perseverance and determination because life will continue to go on, therefore to maintain their lives humans must carry out economic activities that are related to other individuals (Sari et al., 2024).

3.9 Factors Causing Low Regeneration of Rice Farmers in Mandastana District

The most significant factors influencing and causing low regeneration of rice farmers were identified using Principal Component Analysis (PCA). The factors causing low regeneration of rice farmers were education level, land ownership area, work experience in the agricultural sector, family income from the agricultural sector, family socialization, information from outside, wages outside the agricultural sector and peers. All factors had a correlation value >0.5 so that all factors were included in the calculation and further analysis could be carried out (Table 2).

Table 2. Measure of Sampling Adequacy (MSA) Value

Variable		Education level	Land ownership area	Work experience in the agricultural sector	Family income from the agricultural sector	Family socialization	Information from outside	Wages outside the agricultural sector	Peers
Anti-image Covariance	X1	.214	-.046	-.086	.098	.070	-.050	-.060	-.044
	X2	-.046	.230	-.045	-.094	-.001	-.043	.120	-.040
	X3	-.086	-.045	.143	-.037	-.088	-.001	.037	.008
	X4	.098	-.094	-.037	.252	-.056	.017	-.135	.037
	X5	.070	-.001	-.088	-.056	.159	-.023	-.005	-.044
	X6	-.050	-.043	-.001	.017	-.023	.257	-.001	-.062
	X7	-.060	.120	.037	-.135	-.005	-.001	.204	-.094
	X8	-.044	-.040	.008	.037	-.044	-.062	-.094	.134
Anti-image Correlation	X1	.724[a]	-.208	-.491	.423	.379	-.216	-.288	-.263
	X2	-.208	.784[a]	-.248	-.389	-.004	-.179	.552	-.228
	X3	-.491	-.248	.806[a]	-.197	-.584	-.004	.216	.058
	X4	.423	-.389	-.197	.667[a]	-.282	.066	-.594	.201
	X5	.379	-.004	-.584	-.282	.814[a]	-.111	-.028	-.301
	X6	-.216	-.179	-.004	.066	-.111	.933[a]	-.006	-.333
	X7	-.288	.552	.216	-.594	-.028	-.006	.577[a]	-.571
	X8	-.263	-.228	.058	.201	-.301	-.333	-.571	.820[a]

a. Measure of Sampling Adequacy(MSA)

Table 3 shows the number of components or factors formed. The variance column has 3 components formed: component 1 with a value of 62.596, component 2 with a value of 14.067 and component 3 with a value of 13.608. These three components determine the causal factors with the most significant influence on the low regeneration of rice farmers. The influence of components 1,2 and 3 on the low regeneration of rice farmers is 90.271 or 90.271%. This means that the three factors formed can be causal factors for the low regeneration of rice farmers in Mandastana District by 90.271% and the rest is influenced by other factors not included in the study. The variables formed as factor variables include education level, land ownership area, work experience in the agricultural sector, family income from the agricultural sector, family socialization, information from outside, wages outside the agricultural sector and peers.

Table 3. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.008	62.596	62.596	5.008	62.596	62.596
2	1.125	14.067	76.663	1.125	14.067	76.663
3	1.089	13.608	90.271	1.089	13.608	90.271
4	.244	3.047	93.318			
5	.225	2.816	96.134			
6	.152	1.897	98.031			
7	.081	1.019	99.050			
8	.076	.950	100.000			

Extraction Method: Principal Component Analysis.

Table 4 shows the variables that cause low farmer regeneration. The first factor causing low farmer regeneration is the level of education, external information and peers, with correlation values of 0.931,

0.796 and 0.705 respectively. The second factor is the area of land ownership, work experience in the agricultural sector, family income from the agricultural sector and family socialization, with correlation values of 0.689, 0.730, 0.859 and 0.833 respectively. The third factor is the wage factor outside the agricultural sector with a correlation value of 0.934.

Table 4. Rotated Component Matrix[a]

Variable	Component		
	1	2	3
Education level	.931	.049	.189
Land ownership area	.608	.689	-.224
Work experience in the agricultural sector	.605	.730	.015
Family income from the agricultural sector	-.077	.859	.425
Family socialization	.345	.833	.275
Information from outside	.796	.346	.282
Wages outside the agricultural sector	.246	.171	.934
Peers	.705	.343	.550

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]

Farmer regeneration or inheritance is increasingly considered a complex phenomenon that affects not only the core dimensions of farmer family life but also the wider agricultural sector (Anwarudin et al., 2018). Several reasons or considerations underlying the importance of farmer regeneration, namely first, farmer regeneration is important to do because considering the age of farmers who are getting older or elderly, there needs to be a generation or young farmers who can continue their farming efforts. Second, the number of young farmers is decreasing, this is due to the lack of the older generation who inherit their agricultural efforts. Third, the increasingly open world and increasingly competitive markets mean that the actors who must work in the agricultural sector are productive and efficient farmers (Anwarudin et al., 2020).

Efforts that can be made to deal with the problem of low regeneration of rice farmers are to increase socialization from parents to children so that they are willing to continue their parents' farming so that the agricultural sector can run sustainably and there are future generations. In addition, the role of the Agricultural Extension Agency (BPP) is also important because this agency plays a role as a facilitator, communicator, dynamic and consultant. So that it is expected to be able to focus on the younger generation as the target of agricultural extension and be able to grow and develop young farmer institutions. The role of the government is also inseparable in dealing with the problem of farmer regeneration, the government should be able to provide access to agricultural resources such as training, capital, technology and markets to increase the interest of the younger generation and the productivity of the younger generation in agriculture.

4. CONCLUSION

Based on the results of the study, it can be concluded that the variables that cause low rice farmer regeneration are 3 factors: the first factor is the level of education, external information and peers, with correlation values of 0.931, 0.796 and 0.705. The second factor that causes low rice farmer regeneration is the area of land ownership, work experience in the agricultural sector, family income from the agricultural sector, family income from the agricultural sector and family socialization, with correlation values of 0.689, 0.730, 0.859 and 0.833. The third factor that causes low rice farmer regeneration is wages outside the agricultural sector, with a correlation value of 0.934. Efforts that can be made to deal with the problem of low farmer regeneration in Mandastana District are from the support of parents, the Agricultural Extension Agency (BPP) and the government to be able to increase the interest of the younger generation in the agricultural sector so that the agricultural sector can run sustainably.

Suggestions for further researchers are expected to further examine the factors that cause low farmer regeneration with other indicators or variables. In addition, other analysis methods can also be used to provide innovation in research on the factors causing low farmer regeneration.

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