The Effect of Agricultural Modernization on Work Preferences in Batu, East Java, Indonesia

O Efeito da Modernização Agrícola nas Preferências de Trabalho em Batu, East Java, Indonésia

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Abstract

This study aims to determine the effect of agricultural modernization on work preferences. There are two variables of agricultural modernization are used, which are the characteristics of human resources and farming characteristics. This type of research is survey research with a quantitative descriptive analysis. The location of this research was carried out in Batu on the respondents of Karang Taruna (Children of Farmers) aged 16-22 years. The sampling technique used the formula from Slovin to get 100 respondents. The sampling technique used Proportionate Random Sampling techniques and data collection methods through Google Form. Data analysis techniques in this study were the test instrument and multiple linear regression analysis. The results showed that there was a significant influence on the modernization of agriculture on work preferences for Karang Taruna in Junrejo District Batu.

Keywords: Karang Taruna; Farmer; Human resources

Resumo

Este estudo visa determinar o efeito da modernização agrícola sobre as preferências de trabalho. São utilizadas duas variáveis de modernização agrícola, que são as características dos recursos humanos e as características da agricultura. Esse tipo de pesquisa é do tipo survey com análise descritiva quantitativa. A localização desta pesquisa foi realizada em Batu sobre os entrevistados de Karang Taruna (Filhos de Agricultores) com idade entre 16 e 22 anos. A técnica de amostragem utilizou a fórmula de Slovin para obter 100 respondentes. A técnica de amostragem utilizou técnicas de Amostragem Aleatória Proporcional e métodos de coleta de dados por meio do Google Form. As técnicas de análise dos dados neste estudo foram o instrumento teste e a análise de regressão linear múltipla. Os resultados mostraram que houve uma influência significativa da modernização da agricultura nas preferências de trabalho para Karang Taruna no município de Junrejo Batu.

Palavras-chave: Karang Taruna; Agricultor; Recursos humanos

1 Introduction

Agriculture is one of the potential sectors to be developed in Indonesia. In the current era of globalization, all human activities have begun to shift from traditional to modern, including agriculture. In developing a modern agriculture, of course, it must be followed by supporting Human Resources (HR) and infrastructure. Moreover, global competition requires all fields to be packaged quickly, practically and in a modern way. In this case, the agriculture will be considered more attractive and more desirable for all groups, especially for the younger generation of agriculture.

One of the younger generations of agriculture based on age grouping is Farmer Cadets. Farmer Cadets is termed as a youth aged 16-22 years, a farmer's child, who helps in family farming, his life still depends on the income of his parents and has not yet determined the field of agriculture as a livelihood (Permentan No. 7, 2013). The role of the young generation in agriculture is considered very important because they have a burning spirit, have innovative ideas and are able to be competitive. Optimism needs to be built by fostering young farmers so that they have an agribusiness spirit (entrepreneurship) so that the development of the agricultural sector will continue (Njeru et al. 2015).

Based on several research results, it shows that there is a phenomenon of farmers who are getting older while the interest of the younger generation to farm is decreasing. The regeneration of young farmers is very important for the continuity of meeting food needs. There are internal and external factors that cause the agricultural sector to be increasingly abandoned by young workers and educated workers. One of the internal factors is that the average land area is narrow or landless; agriculture is seen as not having social authority, dirty, and risky; and parents do not want their children to work as farmers. On external factors, namely non-agricultural work is more prestigious; prefer formal jobs for those who have higher education; and the opinion that it is better to migrate to the city even if you are only working as manual labor (Susilowati 2016).

The results of the 2018 BPS SUTAS stated that about 27.4% of the workforce in the agricultural sector were 45 - 55 years old, 24.4% were aged 35-44 years, and about 20.8% were aged 55 - 64 years. In terms of age of farmers, it was known that the age of young farmers in the agricultural sector was still quite high, although the proportion was decreasing due to the decreasing interest of the younger generation in the agricultural sector (Ministry of Agriculture 2020b). Data from the Ministry of Agriculture (2020a) also showed that there was a decrease in the number of workers in the agricultural sector during 2017- 2018. In 2017 the number of workers was 36,956,111 people, experiencing a decrease of 1,080,722 in 2018. This figure was quite large and could provide effect on the sustainability of the agricultural sector in Indonesia. Apart from the reduced number of farmers, other problems faced by Indonesian agriculture were related to farmer age and productivity. The age structure of farmers in Indonesia was 60.8% over 45 years old with 73.97% only having an elementary level education, and the ability to apply new technology was still low. This caused the productivity of Indonesian farmers to be lower than other countries in ASEAN. The majority of the agricultural sector in Indonesia still uses traditional technology and technology adoption is still low, while in the industrial and service sector technology is very advanced so that many young people are interested in working in this sector (Arvianti et al. 2019).

One of the efforts to overcome problems related to the decline in interest of the younger generation, there is a concept that is offered, which is a modernization of agriculture. Agricultural modernization itself has a meaning, which is a process of agribusiness reform that is oriented towards the needs of the changing times. The characteristic of agricultural modernization is that it must have four imperative conditions that are interrelated, which are modernization of exploitation; modernization of workers; corporate modernization; and modernization of the agribusiness structure (Pranadji & Simatupang 1999). Broadly speaking, agricultural modernization can be categorized by the characteristics of human resources and farming characteristics.

Modernization can also be interpreted as a process of changing the traditional style of community life into a modern one, especially those related to technology and social organization. Modernization theory is built on the assumption that social change is a unidirectional, progressive and gradual movement that takes society from a primitive to a more advanced state. Agricultural modernization is a major change in agricultural patterns from traditional ways to more advanced or modern ways covering various aspects including agricultural institutions, agricultural technology, natural resource development (SDA), and regulations (Rifkian, Suharso & Sukidin 2017).

On the other hand, agricultural modernization is one of the government's efforts to change public opinion that agriculture can be done practically and in a modern way. The concept of modernization is also believed to facilitate farmers' activities when doing farming. One example of modernization in farming is the presence of agricultural machinery such as tractors, transplants, combine, or hydroponic planting systems, verticulture, etc. In addition to making it easier for farmers when farming, agricultural modernization wants to give the impression that farming is casual and far from being dirty. Thus, the government hopes that if agricultural modernization is successfully implemented, the positive impact that will be obtained is that public opinion can gradually change to become interested and will gradually increase the community's workforce, especially the younger generation, to work in agriculture.

Taste or preference is a term to determine the level of consumer preference (Keller & Kotler 2012). Preference is generally formed because of the attributes attached to the product, such as price, packaging, taste, etc. The term preference generally comes from economics which aims to determine the level of consumer preference for certain products. Whereas in social science, preferences can be expressed as assumptions in taking action (Hamyana 2016). So that work preferences can be interpreted as an individual's preference for a job.

Batu was chosen as the research location because Batu is one of the cities with the fastest flow of mobility. One of the reasons is the number of tours that have sprung up, which has brought in many visitors from various regions. In 2018, tourists visiting Batu penetrated 5.6 million tourists which had an impact on increasing economic growth. Based on BPS Batu on 2018, it showed that the economic figure of the community reached 6.56% which exceeded the national

economic figure, about 5.07% and East Java province, about 5.45%. The benchmarks for the success of regional development could be seen from the economic growth and the smaller income inequality between the population and between sectors (Suryani 2013). With so many tourists visiting Batu it will have an impact on the development of tourist attractions and inns. On the one hand, Batu is one of the areas with productive natural conditions so that it is known as a vegetable-producing area in East Java. As a result of this condition, currently, Batu has turned into a tourist city and the densely populated area used as farming land is decreasing (Hamyana 2016).

In this research, the researcher wants to know the concept of agricultural modernization that has been applied by the farmers, whether it can effectively change the opinion of the local community, especially for the farming families themselves in Batu. It is a problem if the farming family, especially the farmer's children, are not interested in agriculture. With the opinion that continues to develop positively, it is hoped that it can increase preferences (tastes) for the children of farmers. So that many of the farmer's children will be interested and prefer to work in agriculture.

In-depth, researchers want to know the point of view of the children of farmers or what can be called Karang Taruna. Researchers are interested because basically at a relatively young age, on average, they don't have a firm belief so they are still vacillating about their life goals. Does the concept of agricultural modernization have an influence on work preferences (tastes) for Karang Taruna in Batu?

2 Research Method

This research was a survey research with a quantitative approach. The measuring tool in this research was a questionnaire via a Google Form.

2.1 Population and Sample

The population used is all Karang taruna in Batu. Determination of the sample using the Proportionate Random Sampling Technique. The sample of respondents was calculated using the Slovin formula in order to obtain 100 Karang taruna spread across three sub-districts in Batu.

2.2 Variables and Measurements

The concept of Agricultural Modernization in this study described using the Humman Resources characteristics variable and the Farming Business Characteristics variable as influencing variables (X). Meanwhile, Work Preference was used as the variable that was affected (Y). In more detail, the variables and indicators used in this study were as follows (Table 1).

2.3 Instrument Test

The instrument testing was validity and reliability tests. The validity test was to determine the level of validity of an instrument that was declared valid if it had a predetermined value of r count and r (r> 0.3). Reliability test to determine the level of confidence that was declared reliable if it had a Cronbach's alpha value> 0.60.

2.4 Data Analysis

Analysis of the data used in this study was multiple linear regression analysis. Researchers used SPSS 20 to process data. The purpose of this analysis was to determine whether agricultural modernization had a significant effect on work preferences either partially (individually) or simultaneously (collectively). The formula of the regression analysis of this study was as follows.

$$Y = a + b_1X_1 + b_2X_2 + e \qquad (1)$$

Where **Y** is Job Preference, **a** is constant, **b$_1$**, **b$_2$** is regression coefficient, **X$_1$** is HR characteristic, **X$_2$** is farming characteristic and **e** is error.

3 Result and Discussion

Based on the results of the research that had been done, it showed the following.

3.1 Instrument Test

The instrument test used was the validity test and the reliability test. In variable X1, there are 33 questions with details of 31 valid questions, 1 control question, and 1 invalid question. In variable X2, there were 27 questions with details of 24 valid questions, 1 control question, and 2 invalid questions. In variable Y, there were 11 questions with details of 10 valid questions, 1 control question, and 0 invalid questions. While the reliability test showed that Cronbach's Alpha value on X1 was .954; at X2 is .917; and at Y .896. According to Nunnaly (1960) if the Cronbach's Alpha value is > .60 then it is declared reliable and according to Guildford (1956) the Cronbach's Alpha value is in the range .80 - 1.00 then the reliability is very high.

Table 1 Study Variables and Indicators.

No	Variables	Sub Variables	Indicators
1.	Human Resources Characteristics (X1) (Pranadji & Simatupang 1999)	Rationality Anticipation Emphaty Mobility Participation Behaviour and Value	Understanding and explaining the event of causal relationships in a systematic manner Able to predict circumstances to come Able to predict the right action in the future Able to understand the way of thinking of others Able to understand other people's attitudes Able to understand other people's behavior patterns Having a desire to achieve a better social position Having a desire to achieve the economy Having an active search for information Having an active part in an activity Having a desire to succeed Having a hard working character Having the nature of working selflessly Having the goal of trying to meet other than personal needs Using new technology in doing business Having a decrease in production costs due to production volume The existence of a developed business branch There is a clear division of labor
2.	Farming Characteristics (X2) (Pranadji & Simatupang 1999)	Farming Orientation Technology Scale Enterprises Business Scope Management	
3.	Work Preferences (Y1) (Hamyana, 2016)	Moral Dimension Structural Dimensions	Way of Life Tradition Values Social status Economic Utilities Policy Support Facility

3.2 Multiple Linear Regression Test

a. Simultaneous Multiple Linear Regression Analysis

The analysis results show the R_2 value in Table 2 and the F test results in Table 3.

The purpose of this analysis was to determine agricultural modernization of work preferences. Agricultural modernization was indicated by the HR variable as X1 and the farming variable as X2. The results of the analysis showed that agricultural modernization simultaneously had a significant effect on preferences with an F value of 46.489 (F count > 3.09) with a significance value of .000 (a <.05). The relationship between these variables had an R square value of .479 which indicated that the influence of variable X in this study was 47.9% on variable Y and the remaining 52.1% was influenced by other variables not included in this study.

b. Multiple Linear Regression Analysis individually (partially)

The results of the analysis on the T test were shown in Table 4.

The results of the analysis showed that there were 2 independent variables, which were the HR characteristic variable (X1) and the Farming characteristic variable (X2) and 1 dependent variable, which was work preference (Y). The HR characteristic variable had a T value of 5.34 (T count > 1.98) and a significance value of .000 (a < .05). This showed that the characteristics of human resources individually influence work preferences. While the farming variable had a T value of 3.53 (T count > 1.98) and a significance value of .001 (a < .05). This showed that the characteristics of farming had an independent effect on work preferences.

Based on the results of multiple linear regression analysis, both partially and simultaneously, it could be expressed in the form of a regression equation, which was as follows.

$$Y = -11{,}824 + 0{,}245\ X_1 + 0{,}163\ X_2 + e \qquad \textbf{(2)}$$

The results of this equation could be interpreted as a constant value which was equal to -11.824, indicating that if the independent variable had a value of 0, the value

Table 2 Coefficient of Determination

Model Summaryb					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.700a	.489	.479	5.832	1.966

a. Predictors: (Constant), Usahatani, Humman Reseources

b. Dependent Variable: Preference

Table 3 F-test

ANOVAa						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	3162.454	2	1581.227	46.489	.000b
1	Residual	3299.256	97	34.013		
	Total	6461.710	99			

a. Dependent Variable: Preference

Table 4 t-test

Coefficientsa						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	-11.824	4.609		-2.565	.012
1	SDM	.245	.046	.472	5.344	.000
	Usahatani	.163	.046	.312	3.535	.001

a. Dependent Variable: Preference

of the variable Y was -11.824, which means that if there was no intervention in the independent variable, then the Y variable decreased by -11.824.

The regression coefficient X1, which was .245, indicated that if the value of the independent variable other than X1 was constant, then every 1% increased in the X1 variable (HR characteristics) increased the Y variable (work preference) by .245 or 24.5%.

The regression coefficient X2, which was .163, shows that if the value of the independent variable other than X2 was constant, then every 1% increased in the X2 variable (farming characteristics) increased the Y variable (work preference by .163 or 16.3%.

From the results of the multiple linear regression analysis that had been carried out, the following was a discussion of each variable.

3.3 The Influence of HR Characteristics on the Work Preferences of Youth Farmers

Based on the multiple linear regression analysis that had been done, it showed that the characteristics of human resources had a positive influence on work preferences. This was indicated by the value of the regression coefficient in the model which was positive. This form of influence illustrated that the higher the characteristics of the human resources, the more impact on the increase in the Work Preference of Youth Farmers in Junrejo District. The attraction of potential human resources from the agricultural sector to the industrial sector could affect and hinder agricultural productivity because quality human resources were capable of driving agricultural development. (Nurlaela et al. 2020). Therefore, to advance a modern agriculture, first improve the quality of the human resources of young farmers.

Karang taruna in the aspect of HR Characteristics had a fairly good value, about 24.5%, so that when there was an intervention that could increase an individual's HR, the level of preference or work taste would increase in agriculture. Improving the quality of human resources could be obtained from various efforts. According to Purwanto (2015), the way to change the paradigm of rural communities was to increase HR through informal education (counseling and training) and formal education (PAUD schools to tertiary institutions), this was also supported by research from (Nugroho, Waluyati & Jamhari 2018) that the training would attract the younger generation as well (Pardian et al. 2017) that the training could provide young farmers

with perceptions and interest in cultivation methods so that young farmers had the willingness to explore and cultivate more. The hope was that when agriculture was introduced as early as possible, the sense of love for agriculture would increase. According to (Pudjiastuti 2014) efforted that need to be done were improving the human resources of the young generation of agriculture through education and training in agribusiness, the application of technology in farming and the ease of obtaining farming capital. The goal was that the young generation of agriculture was ready to compete in free trade.

In addition, Karang taruna also needed to be involved in all family farming activities so that work preferences could be increased. Other empirical evidence by (Ritonga, Erlina & Supriadi 1970), showed the importance of the role of youth as agents of change and agents of development in the development of sustainable food land agriculture in the aspects of human resources (HR), natural resources (SDA) and appropriate technology. With this optimism to empower the young generation of agriculture to be able to bring change and progress in food crop agriculture. (Arvianti, Asnah & Prasetyo 2015) also found that continuous encouragement to the young generation of agriculture in developing consistent food crop farming, increased understanding in agriculture and active participation in agricultural extension activities would contribute to food security.

Based on research (Wahyuni & Hendri 2015) Overall, the youth of Cihideung Udik Village had a negative perception of employment in the agricultural sector. The background of the respondents, most of whom did not come from farming families and did not own agricultural land, was the reason for this difference in yield. Whereas in this study, Karang taruna in the aspect of human resource characteristics had an influence on work preferences towards agriculture because the respondents used were children of farmers. Even though Karang Taruna had a good work preference towards agriculture, it was still necessary to make efforts to increase the interest of young people in the agricultural sector. According to (Paisley 2014) several efforts to encourage young people to become interested in agriculture through the success stories of young professionals in agriculture, optimizing the role of social media in spreading a positive image to the global community and information about opportunities in this sector, working together and accepting new ideas and strategies from young people to increase the productivity of family farms. The older generation must understand that young people can bring modern practices and tools to help modernize agricultural business activities.

So it could be concluded that when you had parents who work as farmers, for Karang taruna in Batu it had a

pretty good effect on work preferences (tastes) in agriculture. According to (Wiyono 2015), The agricultural model in Indonesia was a family farming model that was passed down and down and was able to maintain production and sustain the life of farmers. Parents' income from farming could also affect the interest of young people to want or not to continue family farming (Arimbawa & Rustariyuni 2018). Youth who had an interest in business see the prospect of profit so that income became the main consideration (Arvianti et al. 2015); (Oktaviani, Usman & Azhar 2017). Therefore, if the income in the agricultural sector was high and economically profitable it would foster the interest of young farmers to be involved in the agricultural sector, and vice versa and support from the family and the surrounding community was very important because it could affect the interest of young people to farm (Oktaviani et al. 2017).

In addition, the role of the community greatly influences the desire of young farmers to survive in the agricultural sector (May et al. 2019). In addition, Indonesian agriculture, which tends to be a family farm from generation to generation, is very important for the sustainability of agriculture in the future (Graeub et al. 2016). Family support and family influence can also have an influence in deciding future agricultural business development (Pechrová et al. 2018). Apart from family support groups are also good because farmers get motivation, discuss friends, help, and are close kinship.

3.4 The Influence of Farming Characteristics on the Work Preferences of Youth Farmers

Based on the multiple linear regression analysis that had been carried out, it showed that Farming Characteristics had a positive influence on Job Preferences. This was indicated by the value of the regression coefficient in the model which was positive. This form of influence illustrated that the higher the Farming Characteristics would have an impact on increasing the Work Preference of Youth Farmers in Junrejo District. The success of farmers in their production was influenced by various supporting factors. Farmers would be able to produce agricultural products properly if various needs could be met (Arvianti et al. 2019).

The Karang taruna in the aspect of Farming Characteristics had a fairly good value, which was equal to 16.3%, so that when there was an intervention that was able to increase the farming of an individual, the level of preference or working appetite would increase in agriculture. Improving the quality of farming could be obtained from various efforts such as the use of modern technology, supporting infrastructure and good

management. The existence of government incentives in the agricultural sector will encourage someone to have a career in agriculture (Mishra & El-Osta 2016). According to (Nugroho et al. 2018), The support of modern machine tools has attracted young people to agriculture because of the ease in managing commodities. According to research results (Arvianti, Asnah & Prasetyo 2016), it can be seen that the most dominant factors affecting the consistency of farm laborers in Ponorogo Regency are the area of land ownership, income, other skills possessed, and demographic status. This situation is in accordance with the theory put forward by Yunus (2008), that the consistency of farmers is influenced by other skills and demographic status.

As a whole, when referring to the theory of economic preferences, the perspective or perception of consumers on a brand will trigger consumer preferences to try to buy it. Consumers can trust in a brand, so consumers have the intention to buy. If the brand does not disappoint, consumers will repurchase a preferred brand (Halim, Dharmayanti & Brahmana 2014). So that the Karang taruna have a good view because their family or environment is working as farmers, then the Karang taruna try to explore the field of agriculture. When the results are good, the Karang taruna will work as farmers.

4 Conclusion

The conclusion that could be drawn based on the results of the analysis in this study was that the existence of agricultural modernization as measured by the variable characteristics of HR and farm characteristics had a significant effect either simultaneously or partially on the work preferences of Karang taruna in Batu. Suggestions for the local government to be consistent in supporting efforts to generate interest through the programs that had been determined. For further researchers, it was necessary to further investigate the most appropriate model of agricultural modernization to increase the work preferences of young generation to the agricultural sector in Batu.

5 Acknowledgements

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Hamyana Yana: conceptualization; formal analysis; methodology; validation; writing-original draft; visualization and Funding acquisition. **Kliwon Hidayat**: methodology; validation, supervision, and editing. **Keppi Sukesi**: methodology, writing - review and supervision. **Yayuk Yuliati**: methodology, writing - review and supervision. **Eva Sofiana**: Collecting data, writing - draft, and Funding acquisition

Conflict of interest

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