

Farmers' Perception of Good Agricultural Practices (Gap) on Rubber's (*Hevea Brasiliensis*) Production in Malaysia: Case Study of Kuala Ketil Kedah

Nurul Izati Abdullah, Syahrizan Syahlan, Fairuz Khalid,
Muhammad Aliuddin Bakar and Farahida Zulkefli

Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA (UiTM),
Jasin 77300, Melaka Malaysia
Email: farahida@uitm.edu.my

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Abstract

This study examines farmers perception on good agricultural practices (GAP) on rubber's production. The purpose of this study is to identify the strength of relationship between the GAPs factors and rubber production. The data collection process was created by distributing the questionnaire form to the 114 smallholders of Kuala Ketil, Kedah. Data collected has been analysis using Statistical Package for Social Science (SPSS). This study can determine which factors among harvesting, fertilizing, landscape conservation, and mechanization that is being important to the farmers and obviously can affect the production of the rubber itself. This paper shows that the farmers perception on GAPs elements are significantly has positive moderate strength relationship on rubber production. The mechanization is proven to be the dominate factors in increase the rubber production. The findings indicate that the state Agency in Kedah need to pay attention in raising the important of GAP among smallholders, and the agency should introduce the motorize tapping machine to boost the rubber production.

Keywords: Farmers, Good Agricultural Practices (GAP), Harvest, Fertilizer, Mechanization, and Productivity

Introduction

The rubber industry in Malaysia is being slow compared to the oil palm industry in Malaysia. Although it being slow in the Malaysian industry, it continuously supplies the rubber to import and export activity and it also has demand among the other country. Because of that, the rubber tapper and rubber operator need to focus on the GAP for their farm to make the operation of their farm will be getting more efficient and get a high yield. The GAP will make the operation of the farm getting better and will enhance the yield of the rubber itself.

The problem of this study is the smallholder itself. The smallholder performance for managing farms shows that most smallholders failed to acquire the best performance (IFC, 2013). It is because of the lack of knowledge among the smallholder because most of them are government retirees (Rosniza et al., 2018). Most of the smallholders cannot accept the GAP concept and there also have smallholders that are not concern about the GAP even the GAP had been important to their farm operation. The solution for this problem is the guidance and also the teaching that can make the smallholder have a better practice of good agriculture and also can raise the production. The significance of the study is being shown obviously by the outcome of this study. This outcome will determine which factors among harvesting, manuring, landscape conservation, and mechanization that is being important to the farm and obviously can affect the production of the rubber itself.

Besides, it also to know the level of understanding of the GAP towards the smallholder. This study will show how the smallholder can tolerate with the GAP and their acceptance of the GAP. The toleration and acceptance of GAP towards the smallholder will make their farm more efficient with better operation and high yield. The MRB and FELDA itself will overcome the problem of the smallholder that does not accept the GAP concept and will show them how good the GAP is. It will make the smallholder can implement it to their farm itself.

Hence, the objectives of this study are:

- 1) To measure the factors that affecting the smallholder performance
- 2) To study the relationship between GAP towards smallholder performance

The paper begins with a tour of the literature regarding the structure of farmers performance and the influence of GAP at the farm. The study methodology then follows. Subsequently, the survey results are analyzed. A discussion of these results concludes the paper.

Review Literature

In the following section, this paper presents the literature describing the hypothesized relationships among various variables of this study.

Rubber Harvesting

The harvesting systems are different for every different farm, a different place, and different tapper. For every system of harvesting, there have several advantages and disadvantages that contribute to the percent of cost production, profit, income, and worker requirement. The harvesting process in rubber cultivation is contributing to income to the rubber tapper and contributing to the labor-intensive (Rodrigo et al., 2017).

Fertilizer Application

For this manuring activity, there has a certain age of plants that the planters need to apply the fertilizer. Not all the age of the rubber tree the planters need to apply the manuring process. According to the Thomas and Hidayati 2003, the mature of rubber plant does not need to apply the manuring activity as the rubber tree itself have their sufficient nutrient that can support the tree to grow and produce the yield.

But, for a certain level of fertilizer requirement, the manuring process also can give the rubber tree produces a higher yield by 15% to 30% (Adiwiganda et al., 1994). For the immature rubber tree, applying a sufficient amount of fertilizer can make the immature process shorter and the tree will be mature quickly and can be produce yield at once (Adiwiganda et al., 1995,

and Sihotang, 1993). Because of that, the economy will increase as the tree can produce the yield earlier of what should have been and will bring a smile to the country and even to the planters.

Mechanization

The mechanization is the way of solving the issues of insufficient labor on the farm and will make the work become easier and will quickly be done. The mechanization tools can enrich the knowledge of farm machinery management and, in particular, the management of harvesting with custom operators to achieve optimal field operations, both from an economic point of view and from a standard of work. (Nurul et al., 2017).

The mechanized rubber tapping devices are for the unskilled labor which is not appropriate for the conventional rubber tapping process. This condition warrants the need for a semi-automatic or mechanized rubber tapping machine which needs no skill in labor and it will make sure there is no damage to the rubber tree and the production of the yield (Ramesh & Rahul, 2019).

The mechanization can improve the production of yield which is good to the smallholder. Somehow, the smallholder does not full acceptance towards the implementation of mechanization to their farm (Ain, S. Z. et al., 2017). The several factors that smallholder does not accept the mechanization are the lack of financial support and the cost of maintenance that they need to be done when they have been used mechanization in their farm (Rosniza et al., 2018).

Farmers Productivity

Smallholder performance is about the performance or the approval level for the certain activities that be done and give effect to the smallholder itself. The understanding of the activities by the smallholder can lead to better performance (Stella et al., 2009). The higher the performance of the smallholder in managing the farm, the higher the income that the smallholder will get and it also makes the smallholder more productive by using the new mechanization in their farm and applying the right practices in their farm.

According to Jean (2017), the amount of the smallholder is rise up year by year. So, they need to good to take a chance to attend the agricultural class or take any chance that can make them be a good performance of smallholders. The productive smallholder by doing high agricultural productivity may lead smallholders to have a good performance because they will get a high income and can improve their life.

Materials and Methods

The conceptual framework is the guidance of the study by the correct theories which can make the study will be on track (Dickson, 2018). The theories need to be matched with the study so that it will lead to a focus on the purpose of the study. When the purpose of the study has been a focus, the objective of the study will be achieved. The conceptual framework in this study is built on theoretical views and previous empirical research on correlation between GAPs factors (harvesting, fertilizer application, land conservation and mechanization) and rubbers production. The relationship between variables used in this study can be seen in Figure 1. The study conducted at rubbers farm situated at Kuala Ketil Kedah. The number of samples will be based on Krejcie and Morgan because it is an accurate one. Based on the Krejcie and Morgan, the number of populations will be showing the number of samples which is the number of farmers that will be distributed the questionnaire. The

population of the rubbers farmers of is 160 and the sample for 160 populations is 113. Before administering the survey to a full sample of field sites, a pilot test was carried out.

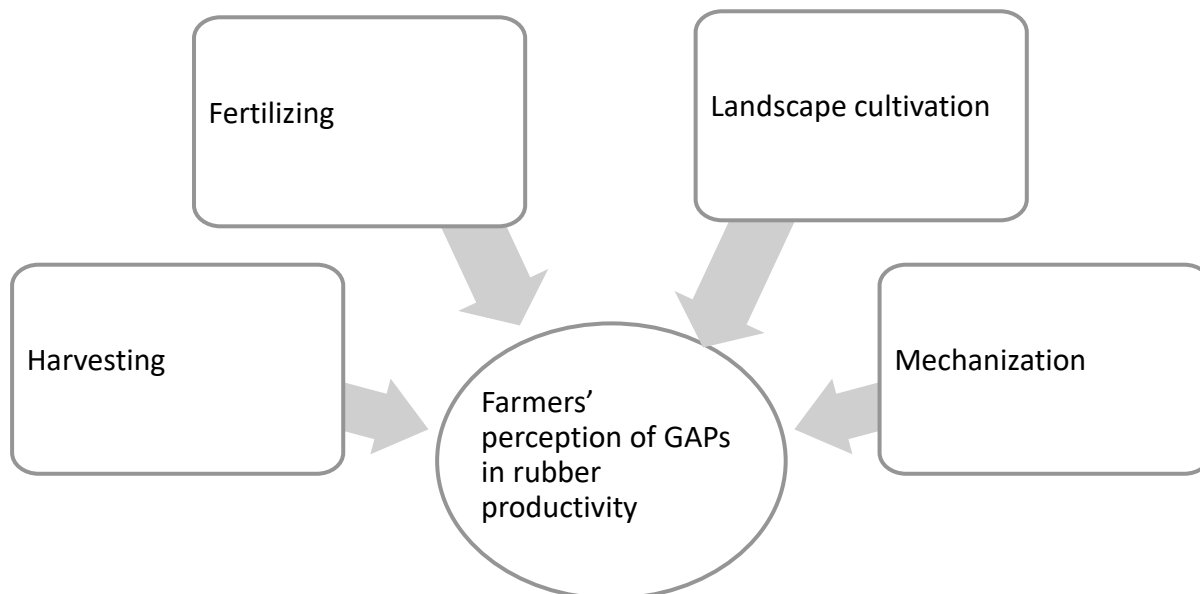


Figure 1: Conceptual framework

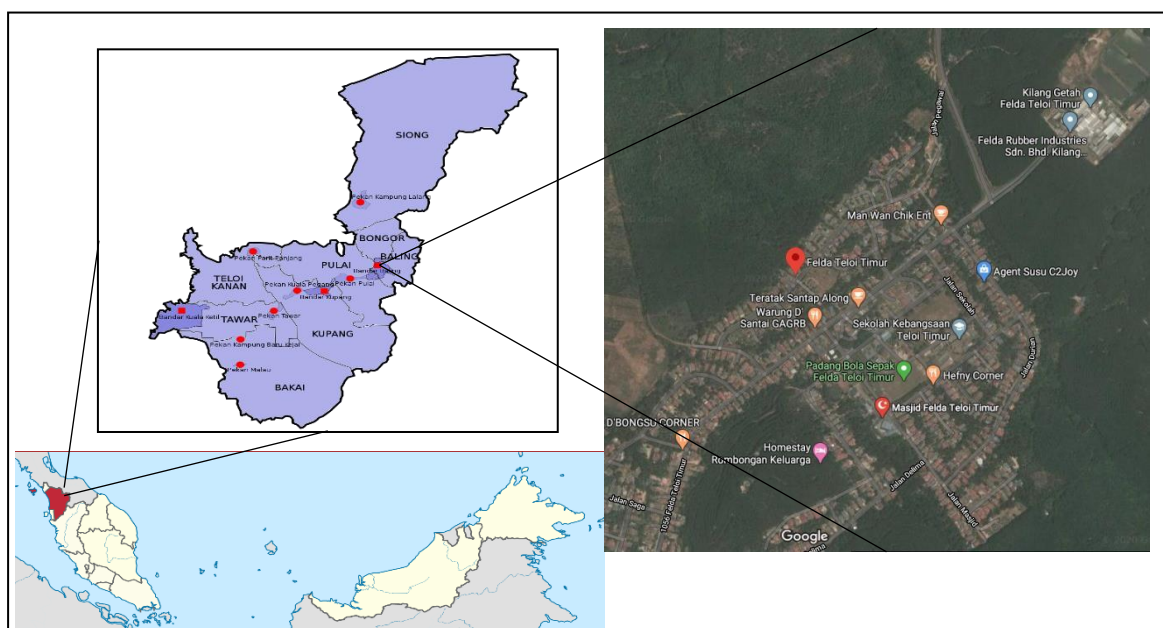


Figure 2: Location of the farmers rubbers farms.

Results and Discussion

Reliability Test

From table 1, the results of Cronbach's alpha show a positive consistency on the data when Cronbach's Alpha value estimated was higher than the index of reliability test (0.6). This shows that there is consistency among the workers, and it can be concluded that the study based on the questionnaires is fit for this study Reliability measure how all items in a set questionnaire are positively or negatively to correlated to one another. Previous studied showed the instrument used in the survey should have reliability of 0.7 or more (Nunnaly, 1978). Reliability value less than 0.6 was considered weak and reliability value 0.70 is considered

acceptable. Meantime, the Cronbach's alpha has more than 0.8 be considered good and valid (Andale, 2014).

Table 1
Reliability Test

Variables	Cronbach's Alpha	Status
Harvesting	0.824	Reliable
Fertilizing	0.749	Reliable
Landscape conservation	0.617	Reliable
Mechanization	0.647	Reliable
Farmer's productivity	0.601	Reliable

Relationship between Factors Contributed to employee absenteeism

Pearson Correlation Analysis was used to identify the relationship between the independent variables (harvesting, fertilizing, landscape conservation and mechanization) that affect the dependent variable (employee absenteeism). The correlation value is as presented in Table 2 below: -

Table 2
Correlation value Interpreted according to Hinkle, Wiersma and Jurs (1988)

Correlation Value	Relationship Strength
± 0.90 - 1.00	Very Strong
± 0.70 – 0.90	Strong
± 0.50 – 0.70	Averagely Strong
± 0.30 – 0.50	Weak
± 0.01 – 0.30	Very Weak
0	No relationship

Table 3
Analysis of a Correlation between GAP and rubbers production

Farmers productivity			
Factors	Significant (p)	Correlation value (r)	Relationship strength
Harvesting	0.002	0.591**	Averagely strong
Fertilizing	0.006	0.587**	Averagely strong
Landscape conservation	0.004	0.604**	Averagely strong
Mechanization	0.003	0.615**	Averagely strong

From table 3, Pearson Correlation test was conducted. Based on the findings, it was found that mechanization showed a averagely strong correlation value $r = .615$ compared to other factors. Meanwhile, landscape conservation showed value $r = .604$. Based on the result of

this study, the farmers believed choosing the right mechanization can improve the latex productivity. They also urge the state agency to reveal more about mechanization to the farmers.

Coefficient of determination

Table 4

Model of summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	0.748	0.559	0.543	0.39643

R² value is said to be strong when in explaining the variation of the independent variables on the dependent variable the value is between 0 (zero) and 1 (one). According to Table 4, the Coefficient of determination (R²) was 0.386; meaning that all the four (4) variables can explain its effect on rubber productivity in Kuala Ketil Kedah equal to 56%. The remaining 44% was influenced by other factors that are not been investigated, or out of this research framework. These findings are consistent with the predicted relationships and provide support to our conceptual framework.

Multiple Linear Regressions analysis

Table 5

Results of Multiple Regression Analysis

Model	Unstandardized coefficients		Standardized coefficients			Collinearity Statistics	
	B	Standard error	β	t	significance	Tolerance	VIF
Harvesting	.242	.097	.207	0	4.00	.588	1.70
Fertilizing	.219	.070	.251	2.49	0.01	.636	2.00
Land Conservation	.191	.080	.207	1	4.00	.548	1.57
Mechanization	.241	.075	.268	3.14	0.00	.572	3.00

Next, multiple regression analysis was applied to see which factor impact employee productivity. Regression analysis aids to measure the relative strength of independent variable on dependent variable. Due to three predictors are correlated, multicollinearity must be diagnosed using tolerance and Variance inflation factors (VIF). Values of VIF that exceed 10 and tolerance below 0.25 are regarded as multicollinearity. It is discovered the regression model is fit. All direct positive relationship between variables and employee's performance were examined using multiple regression analysis to ascertain the extent to which they explain that the variance in rubbers production. Two variables significantly impact the rubbers production with mechanization (B=0.241) providing the largest level of impact and followed by fertilizing (B=0.219). This indicate that if the rate of each factor increases, then rubbers production in Kuala Ketil Kedah will also increase.

Conclusion

In conclusion, the farmers believed that GAP have a strong role in boosting the rubber production. It is supported from the correlation analysis that indicate all the GAP elements

have a significant positive relationship with a moderate strong correlation. Overall, all the four factors contribute to 56 percent to the latex productivity. In this regard the farmers conclude the mechanization is the main aspect in escalating the rubber production. Thereby, the Kedah agency and team management shall introduce more machine to increase the productivity. The farmers also need to be encouraged to apply the GAP by joining the seminars and on-site training to strengthen their knowledge.

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