

The Adoption of MyGAP among Pineapple Smallholders: Case Study in Muar, Johor Malaysia

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To Link this Article: <http://dx.doi.org/10.6007/IJARSS/v12-i10/14812> DOI:10.6007/IJARSS/v12-i10/14812

Published Date: 10 October 2022

Abstract

Malaysian Good Agricultural Practices Scheme (MyGAP) is a certification designed to give recognition for farms that practice good agricultural practices with an environmentally friendly concept, safeguard the welfare and safety of workers to produce quality, safe and edible products. Even though MyGAP certificate give a huge benefit in improving the quality of fresh produce and expand the market, surprisingly the adoption level of MyGAP among pineapple smallholders are relatively low. Therefore, this study was conducted to examine the relationship between factors that influence the adoption of MyGAP among pineapple smallholders in Muar, Johor. Data collection through questionnaires were obtained from 130 pineapple smallholders using online methods. This study used simple random sampling approach to obtain useful data and information from respondents. Theory of Planned Behaviour (TPB) was employed to study the factors influencing the adoption of MyGAP among pineapple smallholders. Descriptive, Pearson correlation and multiple regression analysis were used to analyse the gathered data. The result indicates that knowledge, attitude, perceived behavioural control and subjective norms have a relatively significant relationship with the adoption of MyGAP at farm. Furthermore, perceived behavioural control was identified as a dominant factor that influence smallholders' adoption of MyGAP. The adoption of MyGAP at farm will significantly contribute to sustainable agriculture economy development and subsequently increase the income of smallholders.

Keywords: Malaysian Good Agricultural Practices Scheme (MyGAP), Adoption, Smallholders, Theory of Planned Behavior (TPB), Pineapple

Introduction

Malaysia is one of the world's largest pineapple producers, with acreage increasing steadily from 12,898 hectares in 2017 to approximately 14,068 hectares in 2019. Approximately 84 percent of the yield is used for domestic consumption, 10% for processing, and another 6%

for fresh market export. The small pineapple farm sector accounts for 47% of the planted area, while large-scale pineapple growers account for 54.5 percent (Ruslan et al., 2017). Recently, pineapple development continued to expand peatland areas, especially in Johor, Selangor and Perak. Malaysian Department of Agriculture (DoA) has introduced commonly grown pineapple variety namely Moris (AC1), Yankee (AC6), Moris Gajah (AC7), Sarawak (AC2), Maspine (AC4), Josapine (AC5), Gandol (AC3), N36 (AC8), MD 2 (AC9), View of Sunset (AC10), Madu Kaca (AC11) and Keningau Diamond (AC12). Some varieties, including Josapine and N36, are produced locally for the local fresh fruit market and not grown outside Malaysia, while MD2 is classified as a cash crop variety to serve the market under the scheme need. This strain has also been identified as an EPP7 catalyst for the premium fruit market, as MD2 is better in several qualities. The attributes are: uniform bright colour, sweeter flavour, four times in amount of vitamin C, lower fibre, lower acidity, thinner skin, smaller fruits with an average of 1.5kg each, and no longer shelf life Thalip et al (2015) Suhaimi & Fatah (2019) At present, due to the huge market demand of Malaysian pineapples in Japan, the United Arab Emirates, European countries, Singapore, West Asia and other countries, Malaysian Pineapple Industry Board (MPIB) has promoted the MD2 variety for industrial planting to enter the global market and ensure national food security (Jaji et al., 2018).

The pineapple sector in Malaysia is dominated by smallholders. As a result, pineapple production is usually unreliable, with variable crop quality. Additionally, smallholder farmers rely heavily on buyers for financial support and agricultural supplies. Growing demand for high-quality products has created an opportunity for smallholder farmers to increase their revenue (Terano et al., 2015). Besides that, the growing awareness of food safety has resulted in the pineapple-importing nations enforcing stringent restrictions. Hence, in 2002, Ministry of Agriculture and Agro-Based Industry (MOA) had established the Farm Accreditation Scheme to certify farms that adhere to Malaysian Good Agricultural Practices (MyGAP). MyGAP adoption requirements include ecologically responsible and sustainable operations, as well as safe and high-quality goods. By implementing MYGAP, Malaysia's agricultural products will receive more recognition and acceptability on a national and worldwide level (Fam et al., 2019). According to the Department of Economics Malaysia, in June 2006, a total of 182 fruit and vegetable farms were accredited (from about 1,000 applicants) under the Farm Accreditation Scheme in Malaysia. In 2014, the number of farmers awarded with MyGAP certification increased to 746 out of 278,628 farmers.

Food safety issues are becoming more prevalent, and consumers' growing health awareness has resulted in an increase in demand for safe agricultural goods. Simultaneously, customers have become more conscious of environmental issues and the way food is produced, particularly agricultural methods (Krause et al., 2016). Malaysia has implemented MyGAP, which is a system for adopting local sustainability requirements. In Malaysia, despite the government's extensive marketing and distribution efforts, MyGAP adoption remains low. As a result, the number of smallholder farmers ready to implement MyGAP in the pineapple sector remains relatively low (Rajendran, 2018). This is owing to poor understanding of MyGAP among the smallholders, despite its optional adoption, free registration and auditing, and free training. Thus, this study was carried out to measure the relationship between knowledge, attitude, subjective norms and perceived behavioural control with the adoption of MyGAP among pineapple smallholders.

Materials and Methods

The study was conducted in Muar, Johor as it has the highest population of pineapple smallholders in Malaysia. A total number of 130 pineapple smallholders filled-in the structured questionnaires: thereby, providing their demographic, farm profiles and other information. The questionnaire consists of 5 sections; Section A, B, C and D. Section A consists of demographic questions such as gender, age, income, education level and experience. Section B had questions on farm profile include types of varieties and farm size. Followed by section C consists of statements measured by using a 5-point Likert scale (1=Strongly Disagree, 5=Strongly Agree) to assess the knowledge, attitude, perceived behavioural control and subjective norms. Lastly section D consists of statements on the adoption of MyGAP among pineapple smallholders. This study employed Theory of Planned Behaviour (TPB) to measure the relationship between factors influencing the adoption of MyGAP at farm (Figure 1).

Pilot test was conducted among 30 pineapple smallholders to check the reliability of the questionnaire. The results showed that all the questions were relevant with Cronbach's Alpha is 0.975. The raw data was captured and analysed using IBM SPSS. The raw data was pooled in for statistical analyses. Descriptive, correlation and multiple regression analysis were performed to achieve the objective of study.

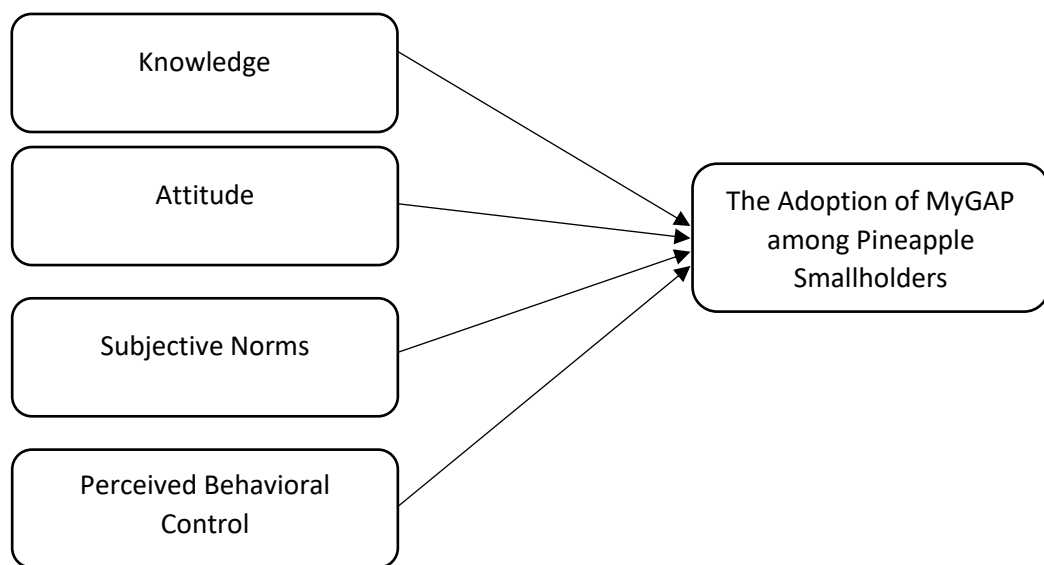


Figure 1. Conceptual Framework of Pineapple Smallholders to Adopt MyGAP in Muar, Johor Sources: Modified from Theory of Planned Behavior, Ajzen (2011).

Results and Discussion

Demographic Profile of Respondents

Table 1 shows the demographic profile of 130 pineapple smallholders at the study area. The finding indicates that majority of pineapple smallholders were male (77%) while 23% are female. The highest category of respondent's ages is between 41 – 50 years old (42.3%) followed by age category between 51 – 60 (31.5%) and 11.5% of the respondent's ages between 61 – 70 years old. Besides that, most of the pineapple smallholders have income ranged between RM4001 – RM6000 (36.2%), 21.5% have income between RM6001 – RM8000 and 5.4% have income ranged above RM10001. Furthermore, there were 45.4% of pineapple

smallholders have a farm size between 6.1 – 9.0 hectares, 21.5% of the respondents have between 3.1 – 6.0 hectares and only 0.8% of them have a farm size below 3.0 hectares. Moreover, 64.6% of the respondents had gone through secondary education, 12.3% had completed with primary education and 23.1% had graduated with tertiary education. The finding also suggested that majority of the pineapple smallholder have 6 – 10 years' experience in pineapple farming and only 5.4% of the respondents have experience below 5 years. Lastly, most of the pineapple smallholder planted variety Josapine (42.3%), followed by variety Moris (39.2%) and 18.5% of them planted variety MD2.

Table 1
Demographic Profile of Respondents

Characteristics	Frequency (N=130)	Percentage (%)
Gender		
Male	100	77
Female	30	23
Age (years)		
30 – 40	19	14.6
41 – 50	55	42.3
51 – 60	41	31.5
61 – 70	15	11.5
Education level		
Primary	16	12.3
Secondary	84	64.6
Tertiary	30	23.1
Income (RM)		
2000 – 4000	26	20.0
4001 – 6000	47	36.2
6001 – 8000	28	21.5
8001 – 10000	22	16.9
Above 10001	7	5.4
Farm size (hectares)		
Below 3.0	1	0.8
3.1 – 6.0	28	21.5
6.1 – 9.0	59	45.4
9.1 – 12.0	27	20.8
Above 12.1	15	11.5
Experience (years)		
Below 5	7	5.4
6 – 10	57	43.8
11 – 15	35	26.9
16 – 20	23	17.7
Above 21	8	6.2
Types of variety		
Moris	51	39.2
Josapine	55	42.3
MD2	24	18.5

Smallholders' Perspective on The Adoption of MyGAP at Farm

Based on the findings from Table 2, majority of respondents (55.4%) strongly agree with statement "I am confident I can maintain MyGAP certificate with the knowledge gained from agricultural extension and related agency/body" with the highest mean score (M = 4.49). Besides that, there were 50.0% of respondents strongly agree with statement "I believe with adequate equipment and proper facilities will facilitate me in adopting MyGAP practices" with the mean score (M = 4.49). Furthermore, about 53.1% of respondents agree with the adoption of MyGAP at their farm can ensure the quality of fresh produce and increase their farm productivity. Moreover, respondents strongly agree (50.0%) that they confident to adopt MyGAP practices due to the increment in farm profit and 53.9% of respondents agree that they can export their fresh produce when they have MyGAP certificate.

Table 2

Mean on the Perspective of Smallholders

Statements	1	2	3	4	5	Mean
I am confident I can maintain MyGAP certificate with the knowledge gained from agricultural extension and related agency/body.	0	0	6.2% (8)	38.5% (50)	55.4% (72)	4.49
I believe with adequate equipment and proper facilities will facilitate me in adopting MyGAP practices.	0	0	0.8% (1)	49.2% (64)	50.0% (65)	4.49
I believe with the adoption of MyGAP at my farm can ensure the quality of produce and increase the farm productivity.	0	0	6.2% (8)	53.1% (69)	40.8% (53)	4.35
I am confident to adopt MyGAP due to the increment in farm profit.	0	0.8% (1)	4.6% (6)	44.6% (58)	50.0% (65)	4.44
I can export my produce when I adopt MyGAP practices at my farm.	0	0	4.6% (6)	53.9% (70)	41.5% (54)	4.35
TOTAL						4.424

Pearson Correlation Analysis

Table 3 indicates the correlation coefficient where it measures the strength of the correlation between two variables. Pearson correlation analysis was used in this study because it is widely used to assess the degree of correlation between two correlated linear variables. From the result, correlation coefficient for attitude is 0.440 indicates a moderate relationship with the adoption of MyGAP among pineapple smallholders. The *p*-value is less than 0.05, hence there is a significant relationship between attitude and the adoption of MyGAP. From previous research on sustainable agriculture practices, the attitude was significantly influencing the sustainable agricultural concept (Fam et al., 2019).

Next, the correlation coefficient for subjective norms is 0.500 which it shows a moderate relationship with the adoption of MyGAP among pineapple smallholders. The p -value is less than 0.05, hence there is a significant relationship between subjective norms and the adoption of MyGAP. According to a study conducted by Gom et al., 2015, subjective norms is one of the important factors that influence uncertified MyGAP among smallholders which are heterogeneous across individuals. Furthermore, the correlation coefficient for perceived behavioural control is 0.543 indicates a moderate relationship with the adoption of MyGAP among pineapple smallholders. The p -value is less than 0.05, hence there is a significant relationship between perceived behavioural control and the adoption of MyGAP. Gom et al (2015) in their research of opinion indicated that perceived barrier is one of the main factors which influence endorsing MyGAP and acts as a barrier towards the adoption of MyGAP in vegetable sector.

Moreover, knowledge had shown a moderate relationship with the adoption of MyGAP among pineapple smallholders (r -value = 0.468). The p -value is less than 0.05, hence there is a significant relationship between knowledge of smallholders and the adoption of MyGAP. Knowledge may influence the decision of smallholders towards the adoption of MyGAP at their farm (Joshi et al., 2019). Besides that, there are many past studies that found knowledge as an influential variable (Terano et al., 2015).

Table 3
Correlation Analysis

Elements	Correlation (r -value)	Significant (p -value)
Attitude	.440**	.000
Subjective norms	.500**	.000
Perceived behavioral control	.543**	.000
Knowledge	.468**	.000

**Correlation is significant at the 0.01 level (2-tailed).

Multiple Regression Analysis

According to Achen (1982), multiple linear regression typically explains the relationship between an independent or predictor variable and one of the dependent or standard variables. Based on the survey results collected from respondents, the analysis also analysed and identified the dominant factor that influence the adoption of MyGAP among pineapple smallholders at their farm. Tables 4 indicates the model summary for multiple regression analysis. The finding indicates that the value of R square is 0.409 which shows 40.9% of the variation in the dependent variable, which is the adoption of MyGAP was explained by the independent variables which are knowledge, attitude, perceived behavioural control and subjective norms.

Table 4
Model Summary

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.639 ^a	.409	.390		.31946

a. Predictors: (Constant), Knowledge, Attitude, Norms, Perceived

Table 5 shows the coefficients for multiple regression analysis which indicates two independent variables namely subjective norms and perceived behavioural control were significant. Based on the data, the result shows the most dominant factor is perceived behavioural control with the beta value is 0.316. Therefore;

$$Y = 0.620 + 0.099X_1 + 0.242X_2 + 0.316X_3 + 0.155X_4 + \varepsilon$$

where,

Y = Adoption of MyGAP

X1 = Attitude

X2 = Subjective norms

X3 = Perceived behavioural control

X4 = Knowledge

ε = Error

Table 5
Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.620	.422		1.470	.144
	Attitude	.102	.088	.099	1.158	.249
	Subjective norms	.257	.090	.242	2.868	.005
	Perceived behavioral control	.313	.084	.316	3.746	.000
	Knowledge	.173	.095	.155	1.814	.072

The result indicates for every one unit increase in attitude, the adoption of MyGAP will increase by 0.099 units. Next, for every increasing unit in subjective norms, the adoption of MyGAP will increase by 0.242 units. Furthermore, in every one unit increase in perceived behavioural control, the adoption of MyGAP will increase by 0.316 units which means when smallholder feels easy to perform sustainable practices at farm, the adoption also will increase. Finally, in every increasing unit in knowledge, the adoption of MyGAP will increase by 0.155 units. In the study conducted by Jaji et al (2018) on sustainable agricultural practices, knowledge can be one of the factors that influence the adoption of sustainable agriculture. Similarly, knowledge of MyGAP can have a significantly positive or negative influence on the adoption of MyGAP. Some studies also show that the respondents did not have enough knowledge on sustainable agriculture which in turn may have an influence on the adoption of MyGAP (Fam et al., 2019).

Conclusion

The purpose of this study was to examine the relationship between factors that influence the adoption of MyGAP among pineapple smallholders in Muar, Johor. Prior to this, the relationship in the study area were determined. The result of pearson correlation analysis showed that all factors examined in this study namely, attitude, subjective norms, perceived behavioural control and knowledge have a significant moderate relationship between the adoption of MyGAP among pineapple smallholders. The regression analysis result revealed that perceived behavioural control ($\beta=0.316$) as the dominant factor influencing pineapple

smallholders to adopt MyGAP at their farm. Smallholders incline to adopt certain practice or behaviour when they believe they can perform a certain behaviour with a proper equipment, facility and adequate capital.

MyGAP is an agricultural practice that addresses environmental, economic, and social aspects to ensure healthy and excellent quality of fresh produce. In order to achieve efficiency, safety, consistency, and healthy processing, MyGAP is an interconnected framework for handling the hazards associated with the aspects of land, input, processes, and performance of agricultural production. By adopting MyGAP practices at farm, pineapple smallholders have power to expand into the export market and increase rural communities' incomes. Based on research finding and literature, knowledge, attitude, perceived behavioral control and subjective norms have been recognized as a significant factor to the adoption of MyGAP among pineapple smallholders in Muar, Johor. Therefore, it is important for every player in pineapple industry to pay attention on the factors as they have a direct effect and relationship with the adoption of MyGAP. Furthermore, research and development which is the basis of agricultural productivity should be strengthened for the maximum development in the pineapple industry.

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