FACTORS INFLUENCING MALAYSIAN PINEAPPLE SMALLHOLDERS INTENTION TO ADOPT MYGAP AND MPIB ROLES TO INSPIRE THE GROWERS TO OBTAIN MYGAP CERTIFICATION

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Abstract

Purpose of the study: The study aims to identify the factors influencing growers' intention to adopt MyGAP and MPIB roles and to inspire the pineapple growers to obtain MyGAP certificate.

Methodology: Questionnaires were distributed to a sample of 52 pineapple smallholder respondents in the study area. Descriptive analysis and binary logistic regressions were conducted using IMB SPSS version 23.

Main Findings and Novelty: The results of this study show that the three factors influencing pineapple smallholders' intention to adopt MyGAP are training, attitude and barriers. The odd ratios show growers who received training are four times more likely to adopt MyGAP.

Applications of this study: MPIB has to conduct more training in order to inspire pineapple growers to obtain MyGAP certification. Meanwhile, the growers also have to change their attitude to accept MyGAP and overcome the perceived barriers for adopting MyGAP.

Keywords: Socioeconomic Inequality, Sustainable Agriculture Economy, Pineapple, MyGAP

INTRODUCTION

Pineapple is scientifically known as Ananas comosus and its local name is nanas. It is one of the well-known tropical fruits besides mango, papaya and bananas. According to The Star (2016), Malaysia recorded an export value of RM161 millions and targets to increase it to RM254 millions by 2020. In achieving this target, food safety will be a concern among consumers and environmentalists. Nowadays, individuals are turning out to be more worried about their food intake and place better accentuation on food safety for their consumption. Synthetic perils, whether acute or chronic, in the sustenance supply has been a major concern among consumers. Today, pesticide buildups with chemical sustenance increases these worries since they could contain certain cancer-causing or carcinogenic possibilities (Ames & Gold, 1997). The main issue reported by the purchasers is the absence of transparency in the synthetic inputs like fertilizers, herbicides, and pesticides during the process and the amount applied into the agricultural items (Coff et al., 2008).

Since the procedure of nourishment creation has little transparency at field level, it is hard to monitor the synthetic inputs utilized in terms of timing, recurrence, and points of confinement of utilization (Coff et al., 2008). This could be because of the absence of precise learning about pests and their control and subsequently frequently a reason for the excessive use of synthetic inputs and the usage of unmanaged input. The expansion in the utilization of fertilizers and pesticides has brought serious issues on environment. In order to avoid this problem, sustainable agriculture practices should be introduced (Coff et al., 2008). Sustainable agriculture practices are both consumer- and producer-oriented where consumers are extremely specific about their food safety and agriculturists likewise should be concerned. The manner in which the agriculturists produce agriculture products will impact food security as well as the agriculturists' health (Tilman et al., 2002).

In Malaysia, in 2002 the good agricultural practices and standards were implemented with the introduction of Farm Accreditation Scheme by the Ministry of Agriculture and Agro-Based Industry (MoA). The scheme is a plan designed to certify farms that have adopted Malaysian Good Agricultural Practice (MyGAP). In order to be certified with MyGAP, the farm is required to operate in an environmentally friendly and sustainable way, and yield quality products that are safe according to the three main aspects of MyGAP Farm Accreditation Scheme. "The evaluated aspects include the

environmental setting of the farm, verification of farm practices and safety of farm products, incorporating traceability and ensuring adequate workers' welfare within the farm" (Department of Economics Malaysia, 2009).

The increasing awareness about food safety has caused strict regulations to be imposed by the pineapple importing countries. Thus, the application of MyGAP allows Malaysia's agricultural produce to gain better recognition and acceptance both domestically and internationally, since MyGAP is a replica of GlobalGAP where Good Agriculture Practice (GAP) refers to sustainable agriculture practices across the world. According to the Department of Economics Malaysia (2009), 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. Since this number is still small and is about only 0.3% of the total farmer population, effort needs to be made to encourage farmers to change their mindset and adopt sustainable agricultural practices. This problem also includes the pineapple sectors, where from 2011 until 2015, only 45 pineapple growers were awarded MyGAP. If no effective actions are taken, Malaysia's goal to be a better country that consistently produces quality and safe foods to consumers could not be achieved. On top of that, the socioeconomic agricultures communities at the suburban and rural areas are hardly to be upgraded too. Fam et al. (2018, 2017, 2014, 2011a, 2011b) have highlighted the existence of area deprivation and varying living standards that brings up the issue of area socioeconomic inequality in Peninsular Malaysia. In their finding, the most deprived areas are located in suburban and rural administrative districts in Peninsular Malaysia, where the main income activity is agriculture. Imbalance of socioeconomic situation among the administrative districts is a pressing concern as deprived area becomes the underlying issue. The need to balance an average household income and living standards among areas is important because the inequality of socio economics carries many negative consequences. Malaysian pineapple smallholders should respond to the MPIB's call.

In an effort to understand and uphold pineapple growers in the Malaysian economy, it is important to understand the factors that affect a grower perceived intention to obtain MyGAP. These factors will be used to determine appropriate strategies to be implemented to assist pineapple growers. The five major factors that will be discussed are knowledge and awareness, attitudes, perceived barriers, personal norms and training courses. Each factor also holds a set of variables that bring deeper understanding of growers' mindsets. Besides that demographic characteristics have also been discussed.

LITERATURE REVIEW

There are several factors that influence the intention to adopt MyGAP. Using the Theory of Planned Behaviour (TPB) stated by Ajzen (2011), factors that influence the intention to adopt MyGAP were identified to understand the intention of respondents.

Knowledge and Awareness

Knowledge can threaten the adoption of MyGAP. According to Asuamah et al. (2013), in their study 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. Besides that, there are many research that found awareness and knowledge as an influential variable (Terano et al., 2015).

Attitudes

According to Ajzen (2011), based on TPB models, attitudes toward a behavior are determined by their accessible beliefs about the behavior, where a belief is defined as the subjective probability that the behavior will produce a certain outcome. Particularly, evaluation of outcome contributes to the attitude to the person's subjective possibility that the behavior produces the outcome in question. From previous research on sustainable agriculture practices, the attitude was indicates value of sustainable agricultural concept.

Perceived Barriers

Perceived Barriers can be defined as "a person's estimation of the level of challenge of social, personal, environmental, and economic obstacles to a specified behavior or their desired goal status on that behavior" (Glasgow, 2008). 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.

Personal Norms

Personal norms means the expectations that people hold for themselves and are different from social norms (Olbrich, 2011). Gom et al (2015) stated that personal norms is one of the important factors that influence uncertified MyGAP of vegetable farmers which are heterogeneous across individuals.

Training Courses

In the current study, the researchers included training courses as an extra factor in influencing the farmers' intention to adopt MyGAP. According to Mitsui et al. (2017), undergoing training to seek more information can enhance the interest and intention of the growers. In addition, Reocjardt and Jurgens (2009) also highlighted that specialized training courses could help to improve the situation in adopting and future perspective of precision farming in Germany's agricultural engineering industry.

Figure 1 shows the conceptual framework of the study which was based on the Theory of Planned Behaviour (TBP) in order to identify the effect of awareness and knowledge, attitude, perceived barriers, training and personal norms on the pineapple growers' intention to adopt MyGAP.
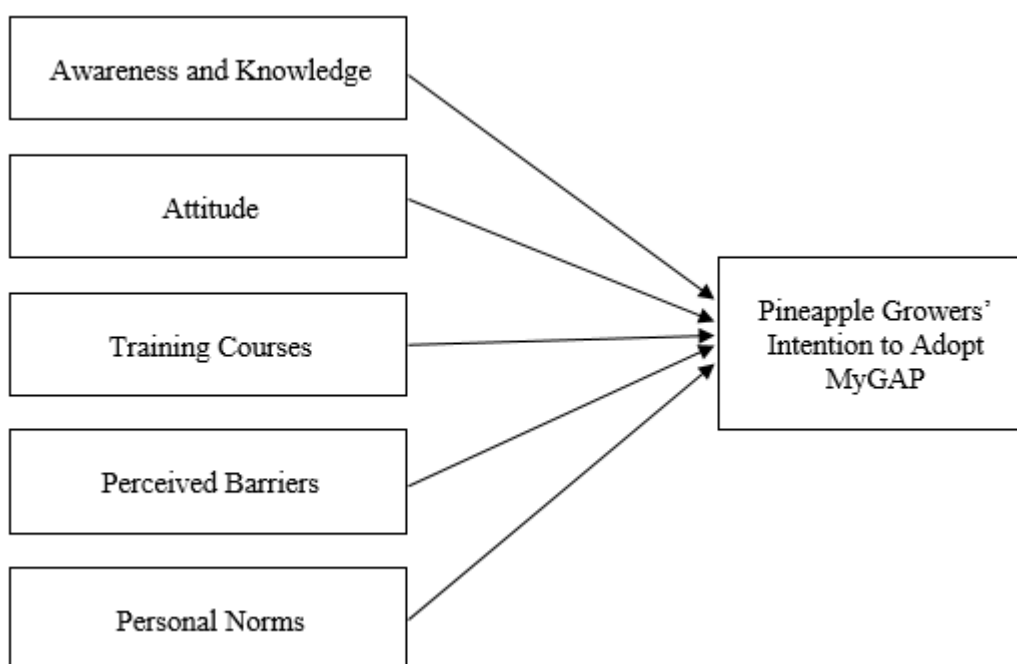

Figure 1. Conceptual Framework of pineapple smallholder intention to adopt MyGAP in Johor

Sources: Modified from Ajzen (2011), Gom et al. (2015) and Terano et al. (2015)

MATERIALS AND METHODOLOGY

The location of the study is Pontian, Batu Pahat and Muar in Johor state. This study is conducted mainly on pineapple growers who were invited by MPIB in May 2017. A total number of 52 pineapple growers filled-in the structured questionnaires; thereby, providing their demographic profiles and other information. The questionnaire consisted of 5 sections; Section A, B, C, D, and E. Section A consisted of demographic questions. Section B had questions related to awareness and knowledge among pineapple smallholders. Followed by section C which is on attitude, Section D on perceived barrier and section E on personal norms. The questionnaire was designed to include mainly closed ended questions. Items in section B, C, D, and E were measured using a 7-point Likert scale where 1 represented strongly disagree and 7 represented strongly agree.

Pilot test was conducted to check the reliability of the questionnaire. The results showed that all the questions were relevant. The questionnaire was then distributed to 52 focus group respondents from Pontian, Batu Pahat and Muar respectively. The raw data was captured and analyzed using IBM SPSS version 23. The raw data was pooled in for statistical analyses. Binary logistic regression analysis was performed to achieve the study objective.

FINDINGS AND ARGUMENT

Descriptive Analysis

The demographics as well as the basic information about the 52 study participants are provided in Table 1. The respondents can be divided into three categories based on their age, early adulthood (18-40 years old), middle age (40-60 years old), and senior citizens (over 60 years old). Most of the pineapple farmers are in middle age (58%) but the adulthood and senior citizen farmers also participated in a good proportion, 24% and 22% respectively. The education level of the participants are mainly up to secondary school education and lower (92%). Only around 8% were found to be highly educated. More than half of the pineapple smallholders have not attended any training courses but strive on their own. The rest who had attended the courses showed interest in pineapple planting, marketing and adopting new technology for pineapple planting. Most of the respondents had 11 to 20 years of experience in farming. On the other hand, majority of the pineapple growers owned 6 to 20 acres of land. Further, 78.85% of the respondents hired labor to help them in their pineapple farm and 50% of them had hired between two to five workers for full-time and part-time labor.

Table 1: Pineapple Smallholders Profiles

Characteristics	Frequency	Percentage	Characteristics	Frequency	Percentage
Age			**Joined Training Courses of Pineapple**		
18-40	12	24	Yes	22	42.3
41-60	29	58	No	30	57.7
Over 60	11	22			
			Dependency on Pineapple Farm		
Education Level			Fulltime	42	80.8
Non-Formal Education	4	8	Part time	10	19.2
Primary Education	11	21			
Secondary Eduaction	32	63	**Hire Labour**		
STPM/Diploma	3	6	Yes	41	78.8
Bachelor's Degree and higher	2	4	No	11	21.2
Suggestion Courses of Interest			**Number of Labour**		
Pineapple planting	23	44.2	0	11	21.2
Pineapple marketing	10	19.2	1	12	23.1
New Technology for Pineapple Planting	10	19.2	2-5	26	50.0
Capital Loan and Subsidies	5	9.6	6-10	2	3.8
Processiong of Pineapple	3	5.8	11-15	1	1.9
Others	0	0			
			Type of Labour		
Experience in Farming			Fulltime	26	50
Less than 6 years	8	15.4	Partime	25	48.1
6 years-10 years	13	25	Fulltime & Partime	1	1.9
11 years - 20 years	15	28.8			
21 years - 30 years	5	9.6	**Labour Cost**		
31 years - 40 years	7	13.5	Less than RM1,000	33	63.5
More than 40 years	4	7.7	R1,001-RM2,000	19	36.5
Pineapple Farm Size			**Used of Partime Labour**		
Less than 6 acres	10	19.2	Land Preparation	14	26.9
6 acres - 20 acres	33	63.5	Planting	34	65.4
21 acres - 50 acres	7	13.5	Fertilization	16	30.8
51 acres - 100 acres	1	1.9	Pesticide and Herbicide	11	21.2
More than 100 acres	1	1.9	Flowering Hormone	12	23.1
			Harvesting		

The percentage of hiring full-time and part-time labor are equally distributed and the labor cost of most of the pineapple smallholders are less than RM 1,000 a month. From the result, it can be seen that part-time labor will be mostly needed for the planting process which constitute about 65.4% of the usage of labor force for other jobs. However, the researcher believes that with the implementation of new technology, and encouraging young generation especially local people to involve themselves in the field of agriculture, the dependency on the foreign full-time and part-time workers can be reduced and the amount of senior citizens who worked can be lowered.

Binary Logistic Regression

Table 2 indicates that if there is no predictable variable to make a prediction, then 36 out of the 52 respondents will support or implement MyGAP. The overall model predicted with an accuracy of 69.2 percent without any predictor variable in the model. Step 1 results in Table 2 which shows that the overall percentage has increased to 76.90%, which is nearer to 100%; thereby, showing that the predicted model is a good model.

Table 2: Classification table

Observed			Predicted		
			Intention		Percentage Correct
			Not Support MyGAP	Support MyGAP	
Step 0	Intention	Not support MyGAP	0	16	.0
		Support MyGAP	0	36	100.0
	Overall Percentage				69.2
Step 1	Intention	Not support MyGAP	9	7	56.3
		Support MyGAP	5	31	86.1
	Overall Percentage				76.9

The cut-off value is .500

Table 3 shows that joining training courses, attitudes and barriers have p value less than 0.1 significance level. This indicates that these three variables are the significant predictors influencing pineapple farmers' intention to implement MyGAP. On the other hand, variables such as awareness and personal norms with the p-value > 0.1, were dropped from the model. Therefore, joining training courses, attitudes and barriers were used in further statistical analysis.

Table 3: Significant value of explainable variables to be chosen to build model

			Score	df	Sig.
Step 0	Variables	Join Training	3.861	1	.049
		Awareness	.960	1	.327
		Attitudes	2.680	1	.090
		Barriers	4.341	1	.037
		Personal Norms	1.995	1	.158
	Overall Statistics		13.033	5	.023

The last row in Table 4, the contingency table for Hosmer and Lemeshow test, demonstrates that the observed subject for small group is 7 and the expected subject is 6.899, showing that these two values are close to each other. This indicates that the model is good and the model predict that about 7 (6.899) out of the 7 smallholders will implement MyGAP, where actually 7 of them really have the intention to implement MyGAP.

Table 4: Contingency Table for Hosmer and Lemeshow Test

		Intention = Not support MyGAP		Intention = Support MyGAP		
		Observed	Expected	Observed	Expected	Total
Step 1	1	2	3.602	3	1.398	5
	2	5	3.068	0	1.932	5
	3	2	2.645	3	2.355	5
	4	3	1.964	2	3.036	5
	5	0	1.621	5	3.379	5
	6	2	1.420	3	3.580	5
	7	2	.936	3	4.064	5
	8	0	.478	5	4.522	5
	9	0	.164	5	4.836	5
	10	0	.101	7	6.899	7

Table 5 shows the manipulated variables that are influencing the smallholder's intention to adopt and implement MyGAP in their pineapple farming. The outcome of the equation is the odd ratio in which higher the odds ratio, stronger will be the intention of smallholder to adopt MyGAP. Among all the variables studied, 'Join training' has the strongest effect which is expected to be 4.107 times as shown in Table 5. This indicates that more training should be given to the smallholder in order to promote MyGAP. Besides that, attitudes of the smallholder also play a supportive role in the final outcome, but this variable is uncontrollable as it exists within the smallholders' own ability. Smallholders with good

attitude will have about 2 times higher intention to implement MyGAP. In contrast, barriers are the variables that will resist the intention of smallholder to adopt MyGAP. However, the impact is inferior which is only 0.376. Smallholders who has joined training has a high effect on the model and show 4 times higher intention to implement MyGAP.

Table 5: Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Step 1[a]	Join Training	1.413	.768	3.381	1	.066	4.107	.911	18.515
	Attitudes	.668	.300	4.958	1	.026	1.950	1.083	3.510
	Barriers	-.978	.374	6.828	1	.009	.376	.180	.783
	Constant	.769	1.255	.375	1	.540	2.157		
	a. Variable(s) entered on step 1: A1TRAIN1, Attitudes, Barriers.								

Based on Table 5, the following predicted model was obtained:

$$Log\left(\frac{\hat{p}}{1-\hat{p}}\right) = 0.769 + 1.413 \text{ (Join Training)} + 0.668 \text{ (Attitudes)} - 0.978 \text{ (Barriers)}$$

where, $\hat{p}$ is the probability of the Malaysian pineapple growers who have the intention to adopt MyGAP.

The Negelkerke's R2 value equals to 0.363, which indicates that 36.3% of the variance of intention to adopt MyGAP is predicted by factors like training, attitudes and barriers. Meanwhile, Hosmer-Lemeshow goodness of fit test shows that the p-value is equal to 0.154, which is greater than the significance value 0.05; thereby, indicating that the predicted model is good.

CONCLUSION

The significance of this study is to provide useful information gathered from the survey which can assist in the formulation and planning of new strategies related to agencies like the Ministry of Agriculture and Agro-Based Industry (MOA) and Malaysian Pineapple Industry Board (MPIB) on the pineapple smallholders in Malaysia. The study provided useful information about the perspective of pineapple smallholders toward adopting MyGAP in Pontian, Batu Pahat and Muar, Johor state. Besides that, the study also identified factors that influence the growers' intention to adopt MyGAP. Growers who adopt MyGAP will find it easy to export their produce that will ultimately increase their socioeconomic status in terms of household income and standard of living. Therefore, the adoption of MyGAP by the pineapple industry will significantly contribute to sustainable agriculture economy development. MyGAP would be able to increase the knowledge of pineapple smallholders in terms of food safety and increase the market demand. Subsequently, this will be able to increase growers' household income and narrow down the spatial socio economics inequality between the areas which have been discussed in Fam et al. (2018, 2017, 2014, 2011a).

LIMITATION AND STUDY FORWARD

More research is required on the training programs that need to be implemented to increase pineapple smallholders' interest to obtain MyGAP certificate. A feasibility analysis on guaranteed financial benefits of the MyGAP certificate is also recommended for future research in order to enhance the pineapple smallholders' confidence level. Studies should also be taken to provide solutions, promote and encourage pineapple smallholders in adopting MyGAP to produce safe and quality fruit, and to improve their socio economics for sustainable agriculture economy development.

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