ANALYSIS OF FARMERS INTENTION TO IMPLEMENT GOOD AGRICULTURAL PRACTICES ON COCOA FARMS BY USING THEORY OF PLANNED BEHAVIOUR

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ABSTRACT

The development of the concept of sustainable agriculture in the cocoa farming system is the conception of Good Agricultural Practices (GAP) on Cocoa. The purpose of this study is to determine the factors that influence farmers' intentions to implement Good Agricultural Practices on cocoa in Bupon Sub District, Luwu Regency. Previous studies on the adoption of agricultural innovation often consider socio economic characteristics and overlook underlying psychological factors influencing farmers 'intention. This study's framework is based on Ajzen's theory of planned behaviour (TPB) to evaluate variables antecedent to farmers' intention to implement Good Agricultural Practices on cocoa, such as attitude, subjective norm, knowledge, and perceived behaviour control. Using a self-administered questionnaire, a quantitative research approach was used to collect responses from 130 farmers from three villages in the Bupon Sub District of Luwu Regency. According to the findings, TPB antecedent variables: attitudes, subjective norms, and perceived behavioural control have significant effect and positively correlated to the farmer's intention to Implement Good Agricultural Practices (GAP) on study area.

Keywords: Cocoa, Good Agricultural Practices, theory of planned behaviour

1) INTRODUCTION

Ecosystem preservation is basic of implementation of agricultural development in Indonesia in the context of sustainable development programs. Sustainable agriculture is management of resources for agricultural businesses meet human needs to improve quality of life and environment. The ICCO (International Cacao Organization) Council agreed to adopt the definition of the *Brundtland* Commission from their work in 1987, which describes sustainable development to be "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*". In practice, the Consultative Board proposed that the objective of ICCO Members should be working collectively towards a world cocoa economy that is "*economically viable, ecologically sound and socially acceptable*" (ICCO, 2007). The approach and implementation must be multi-sectoral and holistic (Kementerian Pertanian, 2014). Good Agricultural Practices (GAP), as defined by FAO, are a "collection of principles to apply for on-

farm production and post- production processes, resulting in safe and healthy food and non-food agriculture products, while taking into account economic, social and environmental sustainability (FAO, 2016). Many importing countries as well as domestic buyers, especially organized retailers, are now requiring producers to implement GAP as a prerequisite for procurement to ensure the quality and safety of their produce and because of which there is now a greater focus on implementing this system (Kementerian Pertanian, 2020). Cocoa is a cash crop that plays an important role in the Indonesian economy. It is estimated that there are no less than 1.84 million families whose main income depends on cocoa. This position has shown that the role of cocoa farmers in the national economy is quite significant and economic driver in rural areas (ICCO,2007). Indonesia is the third largest producer of cocoa beans, thus placing it as one of the main cocoa producers in the world after Ivory Coast and Ghana (Kementerian Pertanian, 2020). South Sulawesi's Gross Regional Domestic Revenue (GRDP) growth, the plantation sector in 2013-2017 experienced a significant increase with a growth value of 17.84 Trillion Rupiah. From 9 export commodities, cocoa is the highest export value of US\$ 67,521 or contributes 66.19% of the total export value of South Sulawesi, becoming the second largest cocoa producer in Indonesia. The smallholder cocoa area in South Sulawesi Province is 91.24% spread over 10 regencies with the largest contribution above 10% coming from 2 regencies namely North Luwu (21.139%) and Luwu (19.72%) (Direktorat Jenderal Perkebunan, 2020). However, since 2017 the productivity of cocoa plantations in this area has declined due to pest attacks by Cocoa Pod Borer] and its role has begun to fade due to the attack of the Cocoa Fruit Borer (CPB) *Conopomorpha cramerella* Snell. (Lepidoptera; Gracillariidae). This condition is a very serious threat to the sustainability of cocoa plantations in South Sulawesi, pest and disease attacks can reduce cocoa plantation production by more than 80%, so it is very detrimental to farmers. Various efforts have been made by farmers, but have not yielded results as expected, even the intensity of pest and disease attacks is increasing and farmers' losses are getting bigger (Herman, at.al., 2006). To combat this pest farmers still using chemical insecticides. Inappropriate use of chemical insecticides will have a negative impact, more detrimental than the benefits generated, among others, can lead to the emergence of pest resistance, the emergence of secondary pests, environmental pollution and product rejection due to residue problems that exceed the tolerance threshold. Intensive use of chemical insecticides also has various unwanted impacts, related to damage to agricultural land ecosystems, disruption of the existence of flora and fauna around agricultural land and the health of working farmers (Roger, 2005). The industry is currently emerging from a period of relatively trouble free 'boom' production with good soil fertility and few pest/disease problems, to a period of stagnation in the face of declining fertility and build-up of pests and diseases. The adoption of Good Agricultural Practices has to be measured to ensure sustainable and profitable farming for the long-term viability of the industry: farmers have to change from being pioneer cocoa planters to sustainable cocoa farmers. Previous studies have primarily focused on the adoption of technological innovations, little work has been done on the socio-psychological behaviour of farmers with regard to sustainable practices on cocoa farm. Understanding the farmers' intention towards Good Agricultural Practices is 'new way" to improve cocoa sustainability on smallholders level. Therefore, need a study to analyse the antecedent variables farmers' intention to implement the GAP on their cocoa farms by using theory of planned behaviour. The Theory of Planned Behaviour (TPB) is a socio-psychological model that seeks to understand the human behavioural intention and assesses how individuals' intentions transform into specific behaviours (Ajzen, 1988). According to the theory, human behaviour is guided by three kinds of considerations: beliefs about the likely consequences of the behaviour (behavioural beliefs), beliefs about the normative expectations of others (normative beliefs), and beliefs about the presence of factors that may facilitate or impede performance of the behaviour (control beliefs). In their respective aggregates, behavioural beliefs produce a favorable or unfavorable attitude toward the behaviour; normative beliefs result in perceived social pressure or subjective norm; and control beliefs give rise to

perceived behavioural control. In combination, attitude toward the behaviour, subjective norm, and perception of behavioural control lead to the formation of a behavioural intention. As a general rule, the more favorable the attitude and subjective norm, and the greater the perceived control, the stronger should be the person's intention to perform the behaviour in question. Finally, given a sufficient degree of actual control over the behaviour, people are expected to carry out their intentions when the opportunity arises. Intention is thus assumed to be the immediate antecedent of behaviour. The following schematic representation of the theory (See Fig.1) (Ajzen, 2006).
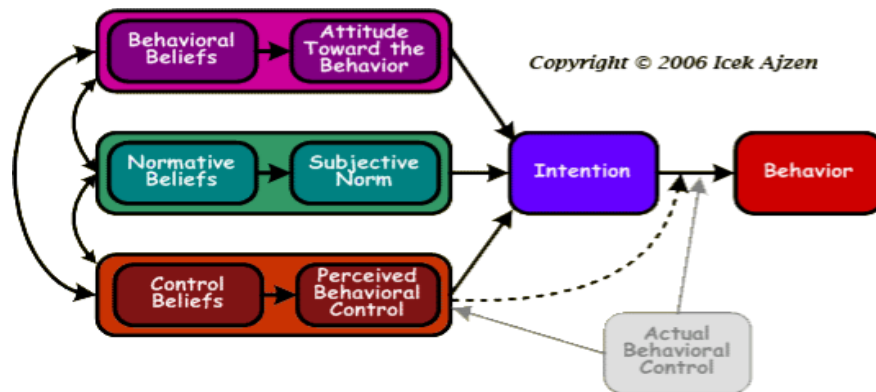

Fig.1. Schematic representation of theory planned behaviour

2) METHODS

This study was conducted in Bupon sub Ditrict, Luwu Regency, South Sulawesi Province in Indonesia. This is one of the main cocoa production . In this light, several community-based development programs have been implemented in the study area and farmers have been encouraged to adopt a number of sustainable practices to improve yields and to overcome decline of cocoa production. Bupon Sub distric is composed of 12 villages. 3 villages were chosen as study area, and farmers in these three villages, like in all other parts of Bupon sub district, mainly rely directly on cocoa farms as their livelihood. Stratified random sampling is used to measure the attitude, subjective norms, perceived behavioural control, perceived risk and intention to conserve their cocoa farms. Using Stratified random sampling, a total of 130 respondents, comprising cocoa smallholders from cocoa growing areas in Bupon Sub district i.e Buntu Batu, Noling, Kamanre, participated in this survey. In consultation with agricultural experts in the region, many Good Agricultural Practices (GAP) on Cocoa practices were identified, including soil and water conservation, shading tree planting, application of compost, use of farm- yard manure, zero- weed management, pest and disease control, pruning, frequently harvesting, etc.

Designing the questionnaire

In order to collect data in this study, structured questionnaire was used, to analyse driver factors of the farmers' behavioural intentions towards implementation of Good Agricultural Practices on cocoa farm, i.e., knowledge, attitude, subjective norm, and perceived behavioural control. Assessing these factors will be fruitful to formulate the strategy to implement GAP on cocoa smallholders .

Data analysis

Statistical Package for the Social Sciences (SPSS) version 20 was employed to analyse the data. Using hierarchical regression analyses to determine most important factors affecting farmers' intention to implement Good Agricultural Practices on cocoa farm in Luwu regency. Besides

descriptive statistics, to measure relationship between variables, partial test with T-Test was used with criteria are if the significant value (sig.) is smaller than the error level of 5% (0.05), then the hypothesis is accepted and also Simultaneous testing using the F-test. The test criteria are if the significant value (Sig.) is less than 5% (0.05), it can be concluded that the hypothesis is accepted.

3) RESULTS

Characteristic of Respondents on Study Area

Characteristics of respondents as shown on table 1. The age of the sample on this study ranged from 15 to 78 years with the average age of the sample was 32 years. Based on data (26.9%) are in the early adult category, with an age range of 18 to 40 years. The middle adult category (41-60 years) is 66.9 percent. The late adult category (>60 years) which is 0.8 percent The characteristics of the sample age are mostly at the age that has reached work and income maturity, so that in general the sample has the ability to implement good farming practices. The education level of the sample was very diverse.. The average length of. This shows that most of the samples have finished the junior hight school 44.6 %, it can be classified as medium category. Farmer experiences of the samples was category medium 49.2 %.. It shown that the farmers has more than enough experience on cocoa farming but still on conservative or traditional. Farm size on study area was dominated medium category (0.5 – 1.0 ha) 48.0%, tipically smallholders farm and mostly farmers on study area rely on their cocoa farm for living. Frequency of training was medium category. This related to cognitive factor to absorb the knowledge of GAP. It was assumed that more frequent the farmers attend the training and more knowledge they have. It was expected to adopt the GAP to be implemented on their cocoa farm.

Table 1. Characteristic respondents on study area

Variables	Description	Frequency	Percentage (%)
Age (years)	Teenager (13-17 years)	7	5.4
	Early adult (18- 40 years)	35	26.9
	Middle adult (41-60 years)	87	66.9
	Late adult (.60 years)	1	0.8
Education Level	Not finish Elementary school (SD)	9	6.9
	Elementary school (SD)	23	17.7
	Junior High School (SMP)	58	44.6
	Senior High School	37	28.4
	Bachelor and above	3	2.3
Farmer experience (years)	1-10 years	48	36.9
	10 – 20 years	64	49.2
	> 20 years	18	13.8
Farm Size	Small (0.4 ha)	28	18.7
	Medium (0.5-1 ha)	72	48.0
	Large (> 1 ha)	30	23.1
Frequency training	Low (<3)	47	36.1
	Medium (4-6)	50	33.3
	High (>6)	33	22.0

Factors Affecting Intention of Farmers to Implement Good Agricultural Practices

Factors affecting farmers intention as described on table.2. On this study, factors were self-determined based on theory planned behaviour (Ajzen, 2006), as follows : GAP Knowledge, Attitude, Subjective Norm, Perceived Behavioural Control and Intention. GAP knowledge showed that the knowledge of samples GAP knowledge was mostly medium category 43.1% and

followed less category 40.0% and good category was only 16.9%. Attitude of farmers toward of Good Agricultural Practices (GAP) was presented in table, the result mostly attitude was medium category 55.3%. The components of attitude on this study were belief to implement GAP and evaluation of GAP. Subjective norm was shown that mostly samples medium category 50.7%, and followed by high category 30.7% and low category 17.6%. This indicated that subjective norm was strong to affecting farmer's intention. Based on data perceived behavioural control, to implement the GAP is depend on control belief strength. The perceived behavioural control, mostly medium category 53.0% and followed high category 36.9% , and low category 10 %. Components of perceived behavioural control consisted of two aspects, i.e. control belief control and control belief power. Based on data, shown that almost all samples have intention to implement the GAP. The result shown that 48.4% was high category, 37.7% medium category, and 13.8% low category. This indicated, there were positively effects of antecedent variables to affecting farmer intention to implement of GAP.

Table 2. Factors Affecting Intention of Farmers to Implement Good Agricultural Practices

Variable	Category	Frequency	Percentage (%)
GAP Knowledge	Less (<60%)	52	40.0
	Medium (60-80%)	56	43.1
	Good (>80%)	22	16.9
Attitude	Low (30--60)	9	6.9
	Medium (61-90)	23	17.7
	High (>90)	58	44.6
Subjective Norm	Low (30--60)	23	17.6
	Medium (61-90)	67	50.7
	High (>90)	40	30.7
Perceived Behavioural Control	Low (30--60)	13	10.0
	Medium (61-90)	69	53.0
	High (>90)	48	36.9
Intention	Low (30--60)	18	13.8
	Medium (61-90)	49	37.7
	High (>90)	63	48.4

Intention Factors Analysis of Implementation of Good Agricultural Practices

Analysis of the factors that influence the intention was analysed by multiple linear regression test. In this model the independent variables included are knowledge, attitude, subjective norms, and behavioural control. Based on the results of the regression test, it is known that the variables of the knowledge, attitudes, subjective norm, and perceive behavioural control of the sample have a real and significant effect. The adjusted R square value of this model is 0.267. This shows that this model only explains 26.7 percent of the influence of sample characteristics, while the rest (73.3%) is influenced by variables from other studies not examined in this research, as table.3. below:

Table.3. R Square value

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.517[a]	.267	.244	11.93755

a. Predictors: (Constant), Pbc, Subjnorm, Knowledge, Attitude

Partial Test

Testing the relationship between variables using a partial test with T-test. The test criteria are if the significant value (sig.) is smaller than the error level of 5% (0.05), then the hypothesis is accepted. The partial test for the independent variables, as shown table.4. below:

Tabel.4. Partial Test Result (T. Test)

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.038	6.479		.315	.754
	Knowledge	.140	.085	.129	1.635	.104
	Attitude	.349	.095	.329	3.692	.000
	Subjnorm	.431	.126	.289	3.407	.001
	Pbc	.255	.095	.221	2.670	.009

Referring to table. 4. above and the Error value in the R-Square value table, the multiple regression equation can be arranged as follows:

Y = 0.140 KNO + 0.349 ATT + 0.431 SN +0.255 PBC + 11,937

The interpretation of the T-test results in the Multiple Regression Tables and Equations can be described as follows: The regression coefficient on the condition of the value of the independent variable remains (constant) of 2.038 with a significant value of 0.754.

1. The regression coefficient of the Knowledge (KNO) variable is +0.140 and a significant value of 0.104. Based on the coefficient value, it can be seen that each increase in KNO can increase the farmer's intention by 0.140 units. Referring to the significant value which is greater than the 5% error level (0.05), it can be concluded that the hypothesis is rejected that knowledge has no significant effect on farmer's intention to implement Good Agricultural Practice (GAP).

2. The regression coefficient for the Attitude (ATT) is +0.349 and a significant value of 0.00. Based on the coefficient value, it can be seen that each increase in ATT farmer's intention rate by 0.349 units. Referring to the significant value which is lower than the error level of 5% (0.05), it can be concluded that the hypothesis is accepted that the area of the attitude has significant effect on farmer's intention to implement Good Agricultural Practice (GAP).

3. The regression coefficient of the Subjective Norm(SN) is +0.431 and a significant value of 0.01. Based on the coefficient value, it can be seen that each increase in SN farmer's intention by 0.431 units. Referring to the significant value which is lower than the error level of 5% (0.05), it can be concluded that the hypothesis is accepted that Subjective Norm has no significant effect on farmer's intention to intention to implement Good Agricultural Practice (GAP).

4. The regression coefficient for the Perceived Behaviour Control (PBC) is +0.255 and a significant value is 0.009. Based on the coefficient value, it can be seen that each increase in PBC can increase the farmer's intention by 0.255 units. Referring to the significant value which is lower than the error level of 5% (0.05), it can be concluded that the hypothesis is accepted that Perceived Behaviour Control has a significant effect on farmer's intention to intention to implement Good Agricultural Practice (GAP).

Simultaneous Test

Simultaneous testing using the F-test. The test criteria are if the significant value (Sig.) is less than 5% (0.05), it can be concluded that the hypothesis is accepted. The F Test result as shown table 5. below.

Table 5. Simultaneous Test Based F Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6497.365	4	1624.341	11.398	.000[b]
	Residual	17813.127	125	142.505		
	Total	24310.492	129			
a. Dependent Variable: Intention						
b. Predictors: (Constant), Pbc, Subjnorm, Knowledge, Attitude						

Based on the table.5. it is shown that the significant value is 0.000. Therefore, it can be concluded that the hypothesis is accepted (Sig. < 0.05) that the factors of Knowledge, Attitude, Subjective Norm, Perceived Behaviour Control when applied simultaneously will have a significant effect on intention of farmers to implement Good Agricultural Practice (GAP).

4) DISCUSSION

Good Agricultural Practices (GAP) knowledge is all information about principles to apply for on-farm production and post- production processes, resulting in safe and healthy food and non-food agriculture products, while taking into account economic, social and environmental sustainability. Based on the results of the study, it can be seen that GAP knowledge was medium category. Meanwhile, regression result that the knowledge has a positive effect but not significant on farmer's intention to implement Good Agricultural Practice (GAP). And the other three antecedent variables (attitude, subjective norm and perceived behavioural control) have positive effects and significant value to the farmers' intention to implement GAP. This means that the better the attitude, subjective norm and perceive behavioural control, the greater the intention to implement GAP. According to Fishbein and Ajzen (2011) in general, people who believe that performing certain behaviours with a high probability can give the most positive results. This will cause the person to have an attitude that supports the behaviour. Furthermore, Ajzen (1988) explained that a person's behaviour is not only controlled by himself, but also controls the availability of certain resources and opportunities. In conclusion, a person's intentions towards certain behaviours are influenced by three variables, namely attitudes, subjective norms, and behavioural control. Sutisna (2001) attitudes are developed over time through a learning process that is influenced by family, peer groups, information, experience, and personality. The attitude of a farmer is one of the factors that will influence farmer decisions. Attitude formation often describes the relationship between beliefs, attitudes, and behaviour. The attitude component in this study consisted of two aspects, namely the belief in GAP and the evaluation of GAP. Attitudes towards behaviour have two main aspects, namely: behavioural beliefs and evaluations. Behavioural belief is an individual's belief that displaying or not displaying certain behaviours will produce certain consequences or results, and is an aspect of individual knowledge about the object of attitude which can also be in the form of individual opinions about things that are not necessarily in accordance with reality. Evaluation is a person's assessment of the results that arise from a behaviour. Evaluation will result in the behaviour of the assessment given by the individual to each result or result obtained by the individual (Fishbein & Azjen, 2011).

Inspiration behind this study was started from the hadith **Innamal A'malu Binniyat** (HR. Bukhari) Prophet Muhammad sallallaahu 'alaihi wa sallam has described intention and all its aspects. *From the Amirul Mu'minin, Abi Hafs Umar bin Al Khattab, radhiallahuanhu, he said, "I heard the Prophet Muhammad sallallaahu 'alaihi wa sallam said: Indeed, every action depends on his intention. And verily every soul (will be rewarded) according to what he intended. Whoever migrates because of Allah and His Messenger, then he migrates to Allah and His Messenger. And whoever migrates because he wants a decent life in the world or because of the woman he wants to marry, then his migration (will be worth as) that he intended.*

Limitation of this study is about the instrument measurement. Since, developed by the author himself and it was first tested on samples study area. Variable knowledge needs further development to get more valid and reliable results as expected.

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