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PARTICIPATION OF SMALLHOLDERS SCHEME IN EAST COASTMALAYSIA TOWARDS CATTLE INTEGRATION – OIL PALM PROJECT

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Abstract

The oil palm industry is one of the important pillars of the Malaysian economy and has generated and strengthened the country's economy that is resilient to global economic changes. In the NKEA, agriculture focuses on transformation of the agriculture industry and one main aspect of the agenda is to encourage large scale cattle integration in oil palm plantation (NKEA, 2013). At present, total planted hectares of oil palm in Malaysia is 5.39 million hectares (MPOB, 2015). The sufficient land and availability and forages existing under the oil palm plantation can become cost free cattle feed. The cattle can benefit the industry, as it can contribute to soil fertility, reduce the weed population and thus, reduces labour cost associated with weeding. Oil palm-cattle integration is very encouraging and profitable and also the practice is highly recommended for oil palm owners. This study aims to investigate the participation of smallholder's scheme on perception, inclination and repulsion factors in the implementation of the cattle integration project with oil palm. A survey method through a self-completion questionnaire was used in collecting the required data from the 69 respondents among the smallholder scheme throughout the Malaysia East-Coast in the participation level in cattle integration project with oil palm by using descriptive and inferential statistic. This study can conclude that the government intends to plan the strategy in encouraging and promoting the cattle integration project among the smallholder scheme.

Keywords: Cattle Integration, Participation, Oil Palm, Smallholders.

1. Introduction

Oil palm industry is a major contributor in the export of Malaysian agriculture. As of 2014, the total planted oil palm in Malaysia is 5.39 Million hectares (MPOB, 2015) Palm oil was exported to 145 countries around the world, thus placing it as an economic generator in the agriculture sector. The increase in this commodity is expected to continue based on its advantages and its ability to generate income to oil palm cultivation in Malaysia.

Even though most of the agricultural lands are being planted with oil palm, there are still some opportunities to optimize the land without causing detrimental effects to oil palm production which one of them is through oil palm-cattle integration (Mohammad et al., 2013.) Based on MPOB statistics in 2014, 2.01 million hectares of oil palm area is cultivated by the smallholders from government agencies and private smallholders (MPOB, 2015). For the ratio of stocking rate of 1.9 hectare to 2.5 hectare per head, depending on forage availability under the palm and on-going replanting program at the respective farm, this implementation can accommodate 1.05 million heads of cattle (Ayob & Kabul, 2009). This implementation and practice can fulfill the National Agri food Policy (2011-2020) to increase the self-sufficiency in red meat for the nation. In addition, Oil palm-cattle integration is very encouraging and profitable and the practice is highly recommended for oil palm owners

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(Jusoh & Mohd Noor, 2002; Kamil Azmi et al., 2008; Ayob & Kabul, 2009), especially to save in labor and maintenance cost, such as weeding and fertilizer (Samsuddin, 2002).

2. Method

Research data had been collected from 69 respondents which were oil palm smallholders located in the selected area of East-Coast Peninsular Malaysia through a research survey using the descriptive analysis based on a set of questionnaire that has been designed for the study.
Descriptive analysis was conducted to analyse the demographic factor information study which consisted of the respondent's background, size of plantation, cattle-oil palm integration practices, and the factors of involvement on cattle-oil palm integration project were also analysed descriptively. The Mean score analysis on perception, repulsion and inclination of respondents towards the cattle integration in oil palm project and the inclination on economic perspectives in the cattle integration have also been analysed.

Also, a Reliability analysis was done to estimate the consistency of the data and the Cronbach Alpha was used as the index for reliability of the data (Tavakol & Dennick, 2011). As suggested by Nunnaly (1978), the Cronbach's Alpha reliability test should have a minimum value of 0.6 for the data to be considered as consistent in the early stage of research.

KMO and Barlett's test was also been done for participation toward the cattle-oil palm system in plantation that consist of three components as such perception, repulsion and inclination.

3. Result and Discussion

Table 1: Demographic analysis of respondent background

Variable		Frequency	Percent %
Age	<30	1	1.45
	31-50	12	17.39
	51-70	50	72.46
	>71	6	8.70
Marital Status	Married	59	85.50
	Single Parent	6	8.70
	Bachelor	2	2.90
	Divorce	2	2.90
Race	Malay	67	97.10
	Chinese	2	2.90
Knowledge Level	Non Formal Education	5	7.20
	UPSR	42	60.90
	SPM/STPM	16	23.20
	Diploma	5	7.20
	Degree/Master/PhD	1	1.40
Farm Categories	Farm Company	6	8.70
	Government Agencies Company	3	4.30
	Owned Farmed	60	87.00

Table1 shows the demographic information for all 69 respondents that involved in this research. All respondents were taken from the selected areas which were in East-Coast of Peninsular Malaysia that have status as small-holder of oil palm plantation. The average age for the respondent is 56 years old. In ranges below 30 years old, respondent (1.40%) while range 31-50 years old of age is 12 respondents (17.40%), range 51-70 years old 50 are

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respondents (72.46%) and 6 respondents (8.70%) are above 71 years old. 59 respondents that involved in this research are married (85.50%), 6 respondent are single parents (8.70%), 2 are bachelors (2.90%) and 2 respondent were divorce (2.90%). Most of respondents involved in this research are Malay with frequency of 67 (97.10%).Chinese with frequency of only 2 (2.90%). For education level sections, 5 respondents (7.20%) never attended any formal knowledge institution. 42 (60.90%) respondents were finished their primary school. 16 of respondents (23.20%) finished secondary school, 5 persons (7.20%) have Diploma certificate and 1 respondent (1.40%) have high education level. From this data, the entire respondent that only finished their primary school which an average age 51 years old and above shows the inclination toward the oil palm sector. For farm categories, 6 (8.70%) of the respondents are managing the private sector farm, 3 persons (4.30%) are manage the farm under Government scheme while 60 respondent (87.00%) are managing their owned farm.

Table 2: Analysis of Oil Palm Plantation Background

Variable		Frequency	Percent %
Size (Acre)	<10	4	5.80
	10-20	57	82.61
	>21	8	11.60
Plantation Opening Year	Before 1990	56	81.16
	1990 and above	13	18.84
Number of Labour	<10	68	98.55
	10-20	0	0
	21-30	1	1.45
Origin of Labour	Local	20	29.00
	Foreign	44	63.00
	Both	5	7.20
Topographic	Hill area more than 12 degree	1	1.40
	Hill area more than 25 degree and 150 meters from sea level	7	10.10
	Flat land area	66	95.70
	River valley area	1	1.40
	Coastal area	N/A	N/A
Involving cattle-oil palm integration	Yes	27	29.13
	No	42	60.87

Based on Table2, the area size of the plantation was sorted into three categories. The first category is area size below than 10 acres (5.80%), the second is between 10 acres to 20 acres (82.61%) and the third category is more than 20 acre (11.60%). Most of the respondents owned or managed a plantation within range 10 to 20 acre. There are two groups of data for the year of plantation opening which are before year 1990 (81.16%) were opened and after year 1990 (18.84%) of oil palm plantation were opened. The number of labour involved in the sector also recorded and were divided into three groups, the first group is below than 10 workers which represent 98.55% the second groups number of labour between 10 to 20 workers that do not have any figure represent and the third group is more than 30 number of workers that represent 1.45%. Most of the plantation owners can hire only less than 10 workers based on the quota for foreign labour to work in their plantation. The origin of the labour was also collected through the questionnaire and classified into two which are local labour (29.00%) and foreign labour (63.00%). Most of the smallholders incline to hire

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foreign labours compared to local labours due to local people, especially the youth not interested to work in the plantation and livestock sector.

From table 2 most of the smallholders area were flat area which represented 66 respondents (95.70%). 1 respondent (1.40%) more than 12 degrees and for high land more than25 degree, 150 above sea level have 7 respondents (10.10%) while in river valley have 1 respondent (1.40%) and nil in coastal area.

Analysis of cattle oil palm integration practices (N=27)

Table 3: Cattle–Oil Palm Integration System in Plantation

Variable		Frequency	Percent %
Cattle Breed Used*	Kedah Kelantan (K.K) Breed	20	74.07
	K.K Mixed Breed	13	48.15
	Brahman Breed	2	7.42
	Australian Commercial Crosses Breed	N/A	N/A
	Others	1	3.70
Grazing Farming Technique	Free Gazing	27	100
	Intensive	N/A	N/A
	Semi-intensives or integrated	N/A	N/A
	Feedlot	N/A	N/A
	Green Looting	N/A	N/A
Push-factor	Own Expenditure	25	92.60
	Agencies such as MPOB, FELDA and FELCRA,	2	7.40
	Subsidies from Government	N/A	N/A
Profitable	Yes	27	100
	No	N/A	N/A

Table3 shows that the responses of those who practised the cattle-oil palm integration system in their farm. Based on the analysis, 20 of respondents (74.07%) prefer the Kedah-Kelantan Breed (K.K) which is a local breed compared to other breed, due to this local breed can adapt the environment and disease resistance. All the respondents (100%) applied the free grazing technique in their farm or plantation. 92.60% of respondent stated that the push factor for implement the integration system is by their own expenditure and 7.40% of respondent supported by MPOB (Malaysia Palm Oil Board), FELDA (Federal Land Development Authority) and FELCRA(Federal Land Conservation and Rehabilitation Authority) with all 27 respondents (100%) implementing and practicing the cattle integration project due to this project can be contributed extra income and more profitable based on two enterprises .

Participation of respondents in cattle - oil palm integrated system

Table 4: Respondents in Cattle-Oil Palm Integrated System

Participation in Cattle-Oil Palm Integration	Frequency (N=27)	Percentage %
Involved	27	39.13
Not Involved	42	60.87

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In Table4, from the data obtained, 27 respondents (39.13%) is involved in integration of cattle-oil palm in their plantation while 42 respondents (60.87%) did not participate in cattle integration from a total of 69 respondents.

Table 5: Factors of Involvement in Cattle-Oil Palm Integration System

Factors of Involvement in Cattle-Oil Palm Integration System	Frequency (N=27)	Percentage %
Self-Interest to Obtain Extra Income	25	92.60
Support from Government Agencies such MPOB, FELDA and FELCRA	2	7.40
Subsidies Scheme From Government	N/A	N/A
Other Factor	N/A	N/A

Table5 showed the factors involvement in cattle integration indicated that 25 respondents (92.60%) implement these practices because of their own self-interest and their own effort to get extra and side income while 2 of the respondents (7.40%) were supported by the governments agencies such as MPOB, FELDA and FELCRA

Table 6: Factors Not Involve in Cattle-Oil Palm Integration System

Factors Not Involve in Cattle-Oil Palm Integration System	Frequency (N=42)	Percentage %
Suitability Plantation Condition	4	9.52
High Risk of Diseases	1	2.40
Low of Skill and Lack of Knowledge	16	38.10
Causing of Soil Compaction	3	7.14
Need Extra Working Time	7	16.67
Need High Infrastructure Cost	11	26.19
Lack of Government Support	N/A	N/A
Insignificant Program Scheme	N/A	N/A

Table6 showed the highest frequency factors of non-involvement in the cattle-oil palm integrated system in plantation because of their technical know-how and skill are low in animal husbandry followed with this project need high infrastructure to implement and practising cattle integration in oil palm plantation

Respondents perception regarding their interest toward cattle-oil palm plantation system

Table 7: Mean Score Respondents' Perception toward Cattle-Oil Palm Plantation System

	Mean Score	Percent %
Lowest (1.00-2.00)	N/A	N/A
Moderate (2.01-3.99)	47	68.10
High (4.00-5.00)	22	31.90

The mean was tabulated as a mean score as shown in table 7. The mean score was classified into 3 rank; Low (1.00-2.00), Moderated (2.01-3.99) and High (4.00-5.00). The mean score for respondent's perception regarding their perception toward cattle-oil palm integration plantation system were moderate seem the moderate mean score have the highest score which is 47.

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Repulsion factor analysis toward cattle - oil palm system

Table 8: Mean Score of Repulsion Factor of Respondents' toward Cattle-Oil Palm Plantation System

	Mean Score	Percent %
Lowest (1.00-2.00)	N/A	N/A
Moderate (2.01-3.99)	64	92.80
High (4.00-5.00)	5	7.20

The mean score for respondents' repulsion regarding their interest toward cattle-oil palm plantation system is moderate seem the moderate mean score have the highest score which is 64 which showed in Table 8

Inclination factor analysis toward cattle-oil palm plantation system

Table 9: Mean Score of Interest Inclination of Respondents' toward Cattle-Oil Palm Plantation System.

	Mean Score	Percent %
Lowest (1.00-2.00)	11	15.90
Moderate (2.01-3.99)	46	66.70
High (4.00-5.00)	12	17.40

The mean score for respondent's inclination of interest regarding their inclination of interest toward cattle-oil palm plantation system was moderate seem the moderate mean score have the highest score which is 46 which showed in Table 9

Table 10: Mean Score of Economic Perspective Inclination of Respondents' toward Cattle-Oil Palm Plantation System

	Mean Score	Percent %
Lowest (1.00-2.00)	N/A	N/A
Moderate (2.01-3.99)	56	81.20
High (4.00-5.00)	13	18.80

The mean score for respondent's inclination of interest regarding their inclination of economic toward cattle-oil palm plantation system were moderate seem the moderate mean score have the highest score which is 56 which showed in Table 10 Reliability test

Table 11: Cronbach' Alpha Table for Participation toward the Cattle-oil palm system in plantation

Components	Cronbach' Alpha	Based No of Item
Perception Factor	0.851	23
Repulsion Factor	0.930	35
Interest	0.924	7
Economic	0.925	9

In Table 11, the Cronbach' Alpha was used to check the positivity of consistency of the data. Based on the table 11 the Cronbach' Alpha value is 0.871, 0.930, 0.924 and 0.925. These values are higher than the index of reliability test which is 0.6. This shows that there is consistency among the smallholder toward the cattle-oil palm integration system based on their perception and it concludes that the research based on the questionnaire is suitable for this study.

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Analysis Test between components with education Level background and participation in cattle-oil palm integration system.

Table 12: KMO and Barlett's Test for Participation toward the Cattle-oil palm system in plantation

Variables	Perception	Repulsion	Inclination	
			Interest	Economic
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.595	0.668	0.773	0.819
Bartlett's Test of Sphericity Approximate Chi-Square	1661.893	2659.412	475.428	653.035
Df	263	595	21	36
Sig.	0.000	0.000	0.000	0.000

In Table 12, the Kaiser-Meyer-Olkin, Measure of Sampling Adequacy (MSA) shows that the value of perception in first components showed 0.595 which is higher than the minimum index, 0.5 (Brett, 2010). Theoretically, the overall MSA index shows an evidence of strong correlation for all components that involve in this research. The second component is related to the repulsion factor that carried value of 0.668. The third component is Inclination factor. The components were classified into two sub-components which are interest factor and economic factor. For an interest factor, the value shows 0.773 while for an economic factor, the value is 0.819. All this value is indicated as the components or factor analysis was suited to all the variable from all components. The Barlett's Test of Sphericity in all component shows value 0.000 means there were significance level that indicates the factor analysis were useful with the present of all the component data.

Conclusion

Cattle-oil palm integration system and practices need high commitment and interest from all the smallholders. Without full commitment from the smallholders and stakeholders which involved with oil palm industry this system cannot be implemented. Thus, the nation cannot increase the self-sufficiency in red meat and still depends on import beef. Based on the research, out of 69 smallholders in East-cost of Malaysia, only 27 of them implemented and practicing cattle integration The smallholders still rely on single cropping system with oil palm. This contributed to unhealthy condition in sustainability of oil palm industry in cost saving in weeding operation and eco-friendly. Through this research, the finding concludes that participation of smallholders in East-coast of Malaysia to participate in the implementation of- cattle-oil palm integration system still in moderate level. This scenario case indicated that they are already aware and willing to practice the system, but due to repulsion factors such as lack of skill and knowledge to implement this system, they refused in taking the risk to implement this system. Therefore, the Government needs to provide and expose the training in animal husbandry technical know-how to encourage the smallholders involve in cattle integration –oil palm project.

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