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ACCEPTANCE LEVEL OF INDEPENDENT OIL PALM SMALLHOLDERS IN MALAYSIA TOWARDS EXTENSION SERVICES

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Abstract:

The main objective of the extension group is to disseminate the oil palm technologies to the independent oil palm smallholders (ISH). However, since the beginning of the establishment of the extension group in the Malaysian Palm Oil Board (MPOB) in 2002, there is no clear information on the acceptance level of ISH toward extension service activities by this group. Therefore, the main objectives of this study are to determine the perception and attitude of ISH toward the extension service activities by extension group and to identify the association between the level of perception and attitude of ISH toward extension activities with ISH personal profile and farm background. Based on the total population in the study area, the number of samples to be selected in this study is 384 respondents. Interview administrated questionnaires were employed to obtain the relevant data. The study revealed that the total average mean of respondents' perception and attitude towards extension service activities is 3.99 which belongs to the category of high score range (3.67 – 5.00). Therefore, it shows that ISH has a positive perception and attitude towards extension service which can lead to the high acceptance level of extension service activities by extension group among ISH. Other than that, based on the chi-square analysis, it shows that different demographic profiles significantly influence the level of perception & attitude of ISH toward extension activities. The findings of this study will assist the extension group in MPOB to re-strategize and further improve its extension service while contributing to future studies.

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Keyword:

Extension Services, Independent Oil Palm Smallholder, Extension Group

Introduction

Overall, the global flare-up of the COVID-19 pandemic made 2020 a difficult year for the Malaysian oil palm industry. The industry experienced a temporary slowdown in export demand and prices in the first half of 2020, but the scenario changed in the second half due to the re-opening of global economic sectors with the relaxation of movement restrictions (MCO), combined with the Government's initiative under the National Economic Recovery Plan (PENJANA). The year 2020 ended with higher export revenue of RM73.25 billion, largely due to a higher average CPO price of RM2, 685.50 per ton and low closing stock of 1.27 million tons. However, other key industry indicators, such as CPO production, yield of fresh fruit bunches (FFB), national oil extraction rate (OER), palm oil exports and imports (tons), and palm oil stocks reported lower performance. (MPOB, 2020). Malaysia also accounted for 25.8 percent of global palm oil production and 34.3 percent of global palm oil exports in 2020. Malaysia accounted for 9.1 percent and 19.7 percent of the world's total production and exports of oils and fats in the same year when other oils and fats produced in the country were taken into account. (MPOC, 2020)

The Malaysian palm oil industry is the national economy's fourth-largest contributor and covers a value chain ranging from upstream to downstream processing. The Government is committed to sustainable production with a focus on improving the social aspect, efficient use of resources balanced with an environment favorable to humans and other species because of the limited amount of land available to further expand the oil palm plantations. (Roslan et al., 2013). Disseminating good agricultural practices and oil palm technology to independent oil palm smallholders (ISH) is one of the strategies towards sustainable agriculture. Oil palm smallholders were defined as individual who owns an oil palm holding which is less than 40.46 hectares or oil palm holding which in aggregate amount is less than 40.46 hectares. In Malaysia, smallholders can be divided into two categories: organized smallholders and independent smallholders. Organized smallholders were developed or supervised by a government agency or the private sector such as FELDA, RISDA, and SALCRA while independent smallholders manage their land independently on their own.

Malaysia's smallholding sector has recently seen tremendous expansion, and in the last decade, it has emerged as a substantial contributor to the country's oil palm industry. As of December 2020, there were about 249,652 independent oil palm smallholders in Malaysia with a total oil palm planted area of 955,811 hectares. In peninsular there were about 176,648 smallholders (508,130 hectares); Sabah: 33,035 smallholders (215,034 hectares) and Sarawak: 39,969 smallholders (232,647 hectares). (MPOB, 2020). In terms of hectarage, ISH constitutes about 955,811 ha or 16.3 % of the total oil palm planted area in Malaysia (Figure 1). (TNR, 12, single spacing, justify)

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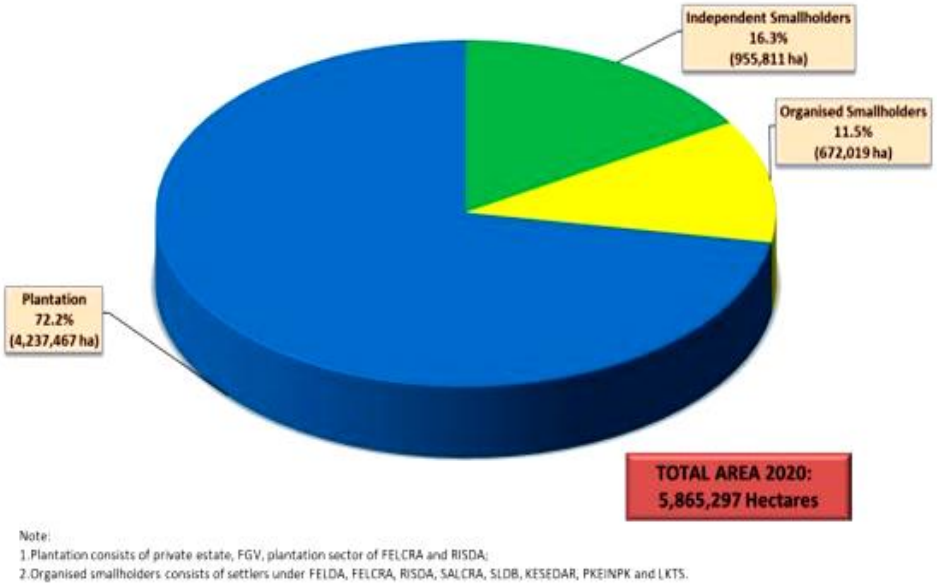

Figure 1: Oil Palm Planted Area by Category, 2020

MPOB was formed to promote the growth and management of Malaysian palm oil sector including the smallholding sector. Thus, in late 2002, MPOB was entrusted to deliver advisory services and disseminate oil palm technologies to the independent oil palm smallholders under an extension group (Idris et al., 2009). The first recruitment of 50 extension officers was made in September 2002. As of December 2020, there is a total of 318 extension officers all over Malaysia including in Sabah and Sarawak with 54 offices and 162 Sustainable Palm Oil Clusters (SPOC) as shown in Table 1 below. (MPOB, 2020). One of MPOB's approach to managing MSPO certification for oil palm independent smallholders is to develop SPOC all over the country to group smallholders under small clusters of between 1000-2000 smallholders for each cluster. (Parthiban et al., 2020). This group also established the 30-Tonner Club, which is consists of smallholders who have achieved FFB yields of more than 30 tan/ha/year. As of December 2020, there are a total of 1,751 members of 30- Tonner Club.

Various activities that have been implemented in the last ten years since the establishment of extension group have had a positive impact on the oil palm smallholders. (Khairuman et al., 2014). According to Nur Hanani et al. (2010), extension officers disseminate oil palm technologies to the smallholders through technical lectures, methods demonstration and distribution of technical publication under several programs such as one day course for smallholders, one day program for 30 toners club members, ad-hoc course with YB minister and MPIC Program, study tour for smallholders, assistance scheme roadshow, briefing program of GAP, KPSM, MSPO, & MSPO mobile counter program (Table 2). Technical lectures frequently cover topics such as effective fertilizer utilization, pest and disease control for oil palm, government assistance schemes, integrated pest management (IPM), land preparation for new planting and replanting of oil palm, oil palm agronomic practices, selection of high-quality seedling, licensing of smallholders, and the role of cooperatives.

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Table 1: Numbers of Extension Officers, Offices, SPOC, Smallholders by Zone

Zone	No. Extension Officer	No of Extension Offices	No of SPOC	No. Of Smallholders
Central Zone	34	6	17	29,349
North Zone	53	6	27	50,393
East Zone	29	6	14	20,468
South Zone	84	10	43	76,438
Sabah Zone	56	12	29	33,035
Sarawak Zone	62	14	32	39,969
Total	318	54	162	249,652

Source: MPOB, 2020

Table 2: Extension Activities by Extension Group from 2016 Until 2020

Year	2016	2017	2018	2019	2020
Extension Activities	No of Activity (No of ISH)	No of Activity (No of ISH)	No of Activity (No of ISH)	No of Activity (No of ISH)	No of Activity (No of ISH)
One Day Course for Smallholders	52 (3,299)	24 (1,412)	18 (1,317)	7 (566)	5 (430)
One Day Program for 30 Toners Club Members	4 (269)	4 (205)	1 (87)	1 (58)	0
Ad-hoc Course with YB Minister and MPIC Program	26 (28,440)	14 (5,352)	12 (4,340)	34 (12,756)	16 (4,924)
Study Tour for Smallholders	6 (197)	9 (1,344)	22 (3,444)	5 (243)	3 (131)
Assistance Scheme Roadshow	6 (188)	5 (490)	7 (280)	29 (2,318)	5 (208)
Briefing Program of GAP & KPSM	67 (2,827)	103 (5,087)	207 (18,907)	36 (3,160)	19 (1,912)
Briefing Program of (MSPO)	0	0	0	285 (45,099)	84 (7,577)
MSPO Mobile Counter Program	0	0	0	0	43 (1,448)
Total	161 (35,220)	159 (13,890)	267 (28,375)	397 (64,200)	175 (16,630)

Source: MPOB Annual Report 2016-2020

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Literature Review

Samarasinghe (1990) define agricultural extension as a service or system that aids farmers through educational procedures in improving farming methods and techniques, increasing production efficiency and income, raising their standard of living, and raising their social and educational standards rural life. Agricultural extension is a powerful vehicle for conveying knowledge from researchers to smallholders and inputs from smallholders to researchers for researchers to conduct productive & impactful research (Cloete *et al.,* 2019). According to Hasan and Faruq (2011), government extension programs have highlighted increased production, and an extension is a policy tool for promoting agricultural product safety and quality. Extension services can thus improve the livelihoods of the poor by promoting agricultural innovation and information. Pedro *et al.* (2008) in his study also stated that in brief, there is generally positive evidence of the effects of extension services on agricultural productivity and technological acceptance while Cloete *et al.* (2019), in her study stated that smallholders are empowered through extension services that are generally based on the public extension model. However, according to Trail (1985), the success of extension work is largely dependent upon clear goals, principles, teaching methods, and teaching tools for smallholders. On the other hand, another study from Cloete *et al.* (2019) shows that there are significant differences in perceptions of what agricultural extension entails or should entail, the principles of extension, and what is effective or ineffective in terms of information delivery or teaching methods as most of the farmers' perception toward extension services is to supply or assist with agricultural input not to deliver technical information or new technologies to help farmers improve their productivity

Attitudes and perception are inextricably linked. According to Allport (1935), an attitude is a mental or neural state of readiness that is organized through experience and exerts a directive or dynamic influence on the individual's response to all objects and situations to which it is related. A mindset or proclivity to act in a certain way as a result of an individual's experience and temperament is a simpler definition of attitude. Attitudes help us define how we see situations and how we behave in response to those situations or objects. Perception is the process by which organisms interpret and organize sensations to create a meaningful experience of the world (Lindsay & Norman, 1977). However, what an individual interprets may differ significantly from reality. Interpretation of the mean scores for the perception and attitude were adapted from Nazri Muslim *et al*. (2011) as there are three mean score levels of perception and attitude which are low (1.00-2.33), moderate (2.34-3.67), and high (3.68-5.00).

Various study has highlighted the importance of extension program and the main objective of extension group is to disseminate the oil palm technologies to the independent oil palm smallholders. However, there are no many studies on the acceptance level of ISH toward extension service activities by extension group in term of their perception and attitude and their association between personal profile and farm background. Therefore, assessment must be made to determine to what extent extension service activities by extension group and extension officer's services are accepted by the ISH. Therefore, this study was carried out to determine the perception and attitude of ISH toward the extension service activities by extension group and their association with ISH personal profile and farm background. The findings of this study will assist extension group to re-strategize and improve its extension service while contributing to future studies. Hasan and Faruq (2011) discovered that the productivity of private extension programs participants is approximately five times higher than that of government extension programs participants, and he indicates that this result may be explained by private extension programs being more up to date and better oriented toward farmers' needs than government

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extension programs. Other than that, Knickel *et al*. (2009) noted in a similar context that there is a gap between the need for change and farmers' desire to adjust, as well as an insufficient capability of innovation agencies and extension services to successfully assist changes

Methodology

The population for this study comprises of registered independent oil palm smallholders that had been either contacted by extension officers or participated in extension group activities. As of December 2020, there were a total of 249,652 smallholders registered with MPOB. Based on population studies, the number of samples to be selected in this study are 384 respondents. A proportionate sampling method was used to determine the number of samples from each state in Malaysia. It is to ensure that the entire population of samples had an equal chance of being selected to be part of the study. The calculation for the sample size was based on Krejcie and Morgan formula (1970). To collect data, face-to-face interview with independent smallholders and field observation was carried out based on the prepared questionnaire. The questionnaire was developed by reviewing literature and criteria related to perception & attitude towards training. Noe (2016) items were used to assess the perception & attitudes of ISH towards extension services. Instruments for smallholder's perception and attitude were conceptualized into six dimension; perceived training benefit in (perception item 01, 03, 05 & attitude item 02, 03), social support (perception item 04, 09 & attitude item 06, 09, 10), evaluation of development experience (perception item 06, 08, 10 & attitude item 07, 08), general attitude/perception towards training (perception item 02, 07), motivational to transfer (attitude item 01) and motivation to learn (attitude item 04, 05). The data were analyzed by using SPSS version 20.0. Descriptive statistics such as frequency, percentage, mean and standard deviation were used for the first objective which is to determine the perception and attitude of Independent oil palm smallholders toward extension service activities by calculating the mean score for perception and attitude on a Likert 5- point scale ranging from (1= Strongly disagree, to 5= Strongly agree). Chi-Square analysis was used to meet the second objective which is to identify the association between ISH personal profile and farm background with the level of perception and attitude of ISH toward extension activities. For this study, the significant alpha (α) is set at 0.05.

Before the actual study, a pilot study had been conducted to determine the relevancy of the questionnaire. The pilot study was conducted with the involvement of 38 respondents which representing 10 percent of the total sample size (384 respondents). After the real study was fully conducted, the data obtained from the 384 respondents were tested for its reliability. Reliability analysis was used to test the internal consistency of Perception and attitude instrument. According to Nunnally (1978), Cronbach's Alpha with more than 0.70 is acceptable for an exploratory study. Results of the test are presented in Table 3. The perception and attitude instrument which was made of ten items was found to be reliable as the Cronbach's Alpha of (0.753) and (0.712) is higher than the acceptable level (.70)

Table 3: Reliability Coefficient of Study Instruments

Instrument	No.of Item	Cronbach's Alpha
Perception of ISH	10	0.753
Attitude of ISH	10	0.712

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Result and Discussion

Personal Profiles and Farm Backgrounds of Respondents

Table 4 & 5 shows the distribution of respondent's profile and farm backgrounds. The majority of the respondents were male (84.1 %) and (15.6 %) were female. The age of respondents was divided into four groups, i.e. group I (<30 years old), group II (31- 40 years old), group III (41-50 years old), group IV (>51 years old). Majority of the respondents (66.7%) were above 51 years old while only 3.1% were in the age range of less than 30 years old. In terms of smallholder's status and ethnicity, majority of them are full-time smallholders, 233 (60.7 %) and Malay, 241 (62.8) respectively. From this study, most of the smallholders attended secondary school, 190 respondents (49.5 %), followed by primary school, 114 respondents (29.7 %), College /University, 61 respondents (15.9 %), and only 19 respondents have no formal education, (4.9 %).

Farm income per month was divided into five groups, i.e. group I (< RM 1,000), group II (RM 1001 – 2,000), group III (RM 2,001 – 3,000), group IV (RM 3,001 – 4,000), and group V (> RM4, 000) while oil palm planting area (ha) was divided into five groups, i.e. group I (< 8.08 ha), group II (8.09 - 16.17 ha), group III (16.18 - 24.25 ha), group IV (24.26 - 32.34 ha) and group V (>32.34 ha). The results in Table 5, shows that most of the respondents have farm income between the range of RM 1,000 – RM 2,000 (32.8 %) and only 30 smallholders have farm income from oil palm land of more than RM4,000 (7.8 %). In terms of the range of oil palm planting area and oil palm yield, the majority of the respondents have a range below 8.08 ha (91.7 %) and below 15.99 t/ha/year (66.1%) respectively while most of the palm age is below 13 year (79.2%).

Table 4: Personal Profile of Respondents

n = 384	Frequency	Percent	Mean	SD
Gender				
Male	323	84.1		
Female	61	15.9		
Age of Smallholder			55.65	12.387
<30	12	3.1		
31-40	33	8.6		
41-50	83	21.6		
> 51	256	66.7		
Status of Smallholders				
Fulltime	233	60.7		
Partime	151	39.3		
Ethnic				
Malay	241	62.8		
Chinese	66	17.2		
Indian	10	2.6		
Iban	17	4.4		
Kadazan	12	3.1		

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Others	38	9.9
Education Level		
Primary School	114	29.7
Secondary School	190	49.5
College/ University	61	15.9
No formal education	19	4.9

Table 5: Farm Backgrounds of Respondents

n = 384	Frequency	Percent	Mean	SD
Farm income per month				
< RM 1,000	102	26.6		
RM 1001 – 2,000	126	32.8		
RM 2,001 – 3,000	81	21.1		
RM 3,001 – 4,000	45	11.7		
> RM 4,000	30	7.8		
Oil Palm Planting Area (ha)			3.76	4.526
< 8.08	352	91.7		
8.09 - 16.17	24	6.3		
16.18 - 24.25	3	0.8		
24.26 - 32.34	3	0.8		
>32.34	2	0.5		
Oil Palm Yield (t/ha/year)			10.86	11.009
<15.99	254	66.1		
16 – 31	120	31.3		
>32	10	2.6		
Palm Age (year)			8	7.6
<13	304	79.2		
14-27	66	17.2		
>27	14	3.6		

Mean Score Measure for Perception towards Extension Service Activities

Table 6 shows the score measure of respondent's perception towards extension service activities by extension group where the perception of smallholders was assessed by using a 5 point Likert scale ranging from (1= strongly disagree, to 5 = strongly agree). There are ten instruments evaluated under this scale such as "extension program provide valuable and relevant information or content", "there is ample time for each session", "participation in the program help improve my knowledge & skill", "extension program frequently held in my area", "Q & A and discussion sessions help in giving understanding to me", "skill & knowledge acquired in the program can be used to manage my farm", "conducive & comfortable environment for the session", "extension officer is competent & well trained", "extension officer can provide a relevant answer to my question", "extension officer has a positive image and personality". The result shows that the majority of the respondents were agreed to all the

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variables stated in the table. However, according to the variable mean score, variable 5 (Q & A & discussion sessions help in giving understanding to me) has the lowest mean score of (3.77) followed by variable 9 (extension officer can provide a relevant answer to my question). It indicate that smallholders are less satisfied with the Q&A and discussion session and the way extension officers respond to their questions. It might be due to the reason that some of the extension officers are new and inexperienced thus they have a limited knowledge. Besides that, majority of the respondents found extension officer has a positive image and personality with highest score mean of 4.39. Based the result, it is important to train the trainer first because an extension officer needs to be properly equipped with the right knowledge and skills. The 'train the trainers' program is necessary from time to time for the technical developments of the extension officers. This training is important not only for new or contract officers but also for experienced and permanent officers because technology is constantly evolving and they need to stay abreast of new techniques and trends to address changes in the oil palm industry. The low satisfaction level recorded among ISH on the Q&A and discussion session might be due to the ineffective extension method used by extension officer. It is in line with the findings from Cloete *et al.* (2019) study who stated that the success of extension work needs clear goals, principles, teaching methods, and teaching tools for smallholders and she found that 58.95 % of farmers preferred discussion as their preferred primary teaching method, followed by short courses (53.68 percent) and other methods. This finding is also congruent with Samarasinghe (1990) that revealed numerous issues that could lead to people being dissatisfied with extension services are due to inadequate numbers of extension personnel, additional duties delegated to extension workers in addition to the advisory function, a lack of knowledge of extension methods and technical matters, inadequate supervision of lower-level workers, poor coordination within agricultural research, and the wrong target group approach are examples of such issues. Meanwhile, Zulkifli *et al.* (2018) stated that inviting smallholders to attend the non-supporting environment training program may waste investment in training as it does not fulfill their expectations.

Table 6: Score Measure of Respondent's Perception towards Extension Service Activity by Extension Group

Item	Statement	SD	D	N	A	SA	Mean
01	Extension programs provide valuable and relevant information or content.	(0) 0%	(0) 0%	(4) 1.0%	(266) 69.3%	(114) 29.7%	4.29
02	There is ample time for each session.	(9) 2.3%	(16) 4.2%	(31) 8.1%	(265) 69.0%	(63) 16.4%	3.93
03	Participation in the program help improves my knowledge & skill.	(0) 0%	(1) 0.2%	(3) 0.78	(273) 71.1%	(107) 27.9%	4.27
04	Extension programs are frequently held in my area.	(1) 0.2%	(3) 0.8%	(91) 23.7%	(229) 59.6%	(60) 15.6%	3.90
05	Q & A and discussion sessions help in giving understanding to me.	(21) 5.5%	(47) 12.2%	(28) 7.3%	(192) 50.0%	(96) 25.0%	3.77
06	Skill & knowledge acquired in the program can be used to manage my farm	(0) 0%	(6) 1.6%	(36) 9.4%	(266) 69.3%	(76) 19.8%	4.07

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07	Conducive & comfortable environment for the session	(0) 0%	(4) 1.0%	(14) 3.6%	(287) 74.7%	(79) 20.6%	4.15
08	Extension officer is competent & well trained	(0) 0%	(1) 0.2%	(9) 2.3%	(230) 59.9%	(144) 37.5%	4.35
09	Extension officer can provide a relevant answer to my question	(17) 4.4%	(42) 10.9%	(17) 4.4%	(202) 52.6%	(106) 27.6%	3.88
10	Extension officer has a positive image and personality.	(0) 0%	(0) 0%	(4) 1.0%	(226) 58.9%	(154) 40.1%	4.39

Mean Score Measure for Attitude towards Extension Service Activities

Table 7 shows the score measure of respondent's attitude towards extension service where the attitude of smallholders was also assessed by using a 5 point Likert scale ranging from (1= strongly disagree, to 5 = strongly agree). There are ten instruments evaluated under this scale such as “i apply the knowledge from the program to manage my farm”, “i join the extension program to get new knowledge & skill”, “i attend the program not only to know about the ISH incentive scheme”, “i constantly join every extension program held at my area”, “i attend the program not only if i have time”, “i build a good relationship with others smallholder in the program”, “i get more knowledge by attending program than depending on my reading and support media”, “i trust the extension officer's reliability and expertise on the subject matter”, “i always contact extension officer outside the program for guidance”, and ‘ i am comfortable and confident in asking extension officer questions throughout the session”. From this table, the majority of the respondents agreed on most of the variables state in the table while part of them are strongly agreed on item no 2 (i join the extension program to get new knowledge & skill) which is under perceived training benefit and item no 9 (i always contact extension officer outside the program for guidance) which is under social support. This result is in line with Zulkifli *et al.* (2018) finding that revealed training would be effective if smallholder perceived support from the appropriate authorities and perceived training benefits. These results further emphasize the importance of extension officer’s role in ensuring smallholders have sufficient information, skills and stay updated in agricultural knowledge and abilities. (Cloete *et al.,* 2019). However, according to the variable mean score, the last variable which is “i am comfortable and confident in asking extension officer questions throughout the session” has the lowest mean score (3.51) compare to the others variables. It indicates that most of the smallholders might not comfortable or confident in asking questions during the session due to some of the methods used not preferable to most of the old smallholders. However, majority of the smallholders preferred to contact and seeking advice from extension officers outside the program individually based on the highest mean score of item 9 (I always contact extension officers outside the program for guidance).

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Table 7: Score Measure of Respondent's Attitude towards Extension Service Activity by Extension Group

Item	Statement	SD	D	N	A	SA	Mean
01	I apply the knowledge from the program to manage my farm	(12) 3.1%	(13) 3.4%	(2) 0.5%	(227) 59.1%	(130) 33.9%	4.17
02	I join the extension program to get new knowledge & skill.	(31) 8.1%	(52) 13.5%	(5) 1.3	(144) 37.5%	(152) 39.6%	3.87
03	I attend the program not only to know about the ISH incentive scheme.	(6) 1.6%	(42) 11.0%	(51) 13.3	(239) 62.2	(46) 12.0%	3.72
04	I constantly join every extension program held in my area.	(8) 2.1%	(102) 26.6%	(211) 55.0%	(63) 16.4%	(0) 0%	3.86
05	I attend the program not only if i have time.	(5) 1.3%	(49) 12.8%	(65) 17.0%	(164) 42.7%	(101) 26.3%	3.80
06	I build a good relationship with others smallholder in the program	(14) 3.6%	(24) 6.3%	(10) 2.6%	(209) 54.4%	(127) 33.1%	4.07
07	I get more knowledge by attending the program than depending on my reading and support media.	(4) 1.0%	(16) 4.2%	(109) 28.4%	(195) 50.8%	(60) 15.6%	3.98
08	I trust the extension officer's reliability and expertise on the subject matter.	(9) 2.3%	(45) 11.7%	(32) 8.3%	(155) 40.4%	(143) 37.2%	3.98
09	I always contact extension officer outside the program for guidance	(28) 7.3%	(18) 4.7%	(15) 3.9%	(109) 28.4%	(214) 55.7%	4.21
10	I am comfortable and confident in asking extension officer questions throughout the session.	(36) 9.4%	(69) 17.9%	(54) 14.1%	(113) 29.4%	(112) 29.2%	3.51

The Level of Perception and Attitude of ISH towards Extension Service Activities by Extension Group

Data in Table 8 provides an overview of the level of perception and attitude of ISH towards extension service activities by extension group. According to this table, majority of the respondents have a high range of perception and attitude towards extension service activities by extension group with scores of 91.4 % and 71.9 % respectively. The mean score for perception and attitude is 4.098 and 3.895 respectively giving the total average mean score for both is 3.99 which is under the high score range.

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Table 8: The Level of Perception and Attitude of ISH towards Extension Service Activities by Extension Group

Variables	Frequency	Percent	Mean	SD
Perception toward Extension Activities			4.0984	0.39672
Low (1 – 2.33)	0	0		
Moderate (2.34 – 3.66)	33	8.6		
High (3.67 – 5)	351	91.4		
Attitude toward Extension Activities			3.8951	0.54168
Low (1 – 2.33)	2	0.5		
Moderate (2.34 – 3.66)	106	27.6		
High (3.67 – 5)	276	71.9		
Total Average Mean			3.99675	

Relationship between Level of Perception and Attitude of ISH toward Extension Service Activities with ISH Personal Profile and Farm Background

Smallholders with different demographic characteristics were expected to have different perceptions and attitudes toward extension service activities. Therefore, the chi-square test of independence was utilized to determine the association between ISH personal profiles and farm background with the level of perception and attitude of ISH toward extension activities.

Table 9 specifically shows that there was a significant association between the perception level of ISH towards extension activities with education level of ISH, $X^2(3, N=384)$ 12.798, $p<.012$. These results reveal that the education level of ISH is statistically associated and has an influence on the level of perception of ISH towards extension activities. Various studies have shown that the individual education level affected the smallholder's readiness to accept new technologies considerably or the smallholder's perception towards training. It is in line with the finding from Taley and Khadase (2006) who reported that a lack of formal education is an impediment to distributing better knowledge, and adoption rates vary among smallholders depending on the circumstance and availability of information sources. The significant relationship between the perceptions level of ISH toward extension activities with education level shows that someone with a higher degree may have an entirely different perspective on extension than someone with no formal education. Meanwhile, Bahta *et al.* (2016) explained that smallholders with less education are more likely to lag in terms of access to information and technology. Furthermore, smallholders with no formal education might find that the scientific approach is a hurdle for them to understand the extension content (Afzal *et al.,* 2016). In contrast, there was no significant relationship between the perception level of ISH toward extension activities with age of ISH, $X^2(3, N=384)$ 2.054, $p<0.56$, gender, $X^2(1, N=384)$ 1.887, $p<0.17$, status of ISH, $X^2(1, N=384)$ .133, $P<0.716$, ethnic, $X^2(5, N=384)$ 7.620, $p<0.178$, farm income/month, $X^2(4, N=384)$ 4.944, $p<0.293$, oil palm planting area (ha), $X^2(4, N=384)$ 2.812, $p<0.590$, oil palm yield category, $X^2(2, N=384)$ 1.964, $p<0.375$, and palm age (year), $X^2(2, N=384)$ .157, $p<0.925$. The non-significant relationship between ISH perception levels toward extension activities and ISH age is similar to some studies indicating that smallholder age has a small impact on socioeconomic features, despite our assumption that experienced smallholders increase with age will have a big influence. (Michal, 2020)

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In term of the attitude level of ISH toward extension activities, results of the chi-square analysis revealed that there was a significant association between attitude level of ISH toward extension activities with ethnic, $X^2(10, N=384)$ 21.439, $p<0.018$, and farm income/month (RM), $X^2(8, N=384)$ 27.843, $p<0.001$. The significant result between attitude levels of ISH toward extension activities with ethnic and farm income/month (RM) is similar to the study from Mohamad *et al.* (2020) stated that higher-income smallholder was capable of recovering and ready to spend their money to obtain knowledge about agricultural innovation. However, there was non-significant relationship between attitude level of ISH toward extension activities with the age of ISH, $X^2(3, N=384)$ 3.898, $p<0.690$, gender, $X^2(1, N=384)$ 0.742, $p<0.690$, the status of ISH, $X^2(1, N=384)$ .117, $P<0.943$, education level, $X^2(1, N=384)$ 7.522, $P<0.482$, oil palm planting area (ha), $X^2(4, N=384)$ 5.6, $p<0.692$, oil palm yield category, $X^2(2, N=384)$ 4.405, $p<0.354$, and palm age, $X^2(2, N=384)$ .580, $p<0.965$. The non-significant relationship between the attitude levels of ISH toward extension activities with the oil palm yield category indicated that even though they have a high and positive attitude toward extension services activities, but the majority of them still fall under the low yield category. It is distinctly shown from table 10 that from 276 respondents that have the high score range of attitude, only 24 of them get the high yield. This table also illustrates that, from 351 respondents that have the high score range of perception before, only 34 of them were categorized under high yield. This result explains that numerous other factors had a significant impact on the productivity of oil palm that can be studied in other research.

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Table 9: Relationship between the Perception & Attitude Level on Extension Activities with ISH Personal Profile & Farm Background

Factor		Perception level on Extension Activities					Attitude level on Extension Activities				
		Low	Moderate	High	X^2	Sig- X^2	Low	Moderate	High	X^2	Sig- X^2
Age of ISH					2.054[a]	0.561				3.898[a]	0.690
	<30	0	1	11			0	4	8		
	31-40	0	5	28			0	10	23		
	41-50	0	6	77			0	17	66		
	>51	0	21	235			2	75	179		
Gender					1.887[a]	0.170				.742[a]	0.690
	Male	0	25	298			2	91	230		
	Female	0	8	53			0	15	46		
Status of ISH					.133[a]	0.716				.117[a]	0.943
	Fulltime	0	21	212			1	65	167		
	Partime	0	12	139			1	41	109		
Ethnic					7.620[a]	0.178				21.439[a]	0.018*
	Malay	0	21	220			1	67	173		
	Chinese	0	4	62			1	20	45		
	Indian	0	0	10			0	0	10		
	Iban	0	4	13			0	11	6		
	Kadazan	0	0	12			0	1	11		
	Others	0	4	34			0	7	31		
Education Level					12.798[a]	0.012*				7.522[a]	0.482
	Primary School	0	11	103			0	34	80		
	Secondary School	0	13	177			2	45	143		
	College/University	0	6	55			0	20	41		
	No Formal Education	0	3	16			0	7	12		

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Table 10: Relationship Between the Perception & Attitude Level on Extension Activities with ISH Personal Profile & Farm Background (Continued)

Factor		Perception level on Extension Activities					Attitude level on Extension Activities				
		Low	Moderate	High	X^2	Sig- X^2	Low	Moderate	High	X^2	Sig- X^2
Farm Income/Month					4.944[a]	0.293				27.843[a]	0.001**
	<RM 1,000	0	9	93			1	29	72		
	RM 1001 – 2,000	0	8	118			1	32	93		
	RM 2,001 – 3,000	0	9	72			0	12	69		
	RM 3,001 – 4,000	0	2	43			0	14	31		
	> RM 4,000	0	5	25			0	19	11		
Oil Palm Planting Area (ha)					2.812[a]	0.590				5.600[a]	0.692
	< 8.08	0	30	322			2	95	255		
	8.09 - 16.17	0	2	22			0	7	17		
	16.18 - 24.25	0	0	3			0	1	2		
	24.26 - 32.34	0	1	2			0	1	2		
	>32.34	0	0	2			0	2	0		
Oil Palm Yield Category					1.964[a]	0.375				4.405[a]	0.354
	Low	0	29	272			1	81	219		
	Medium	0	2	45			0	14	33		
	High	0	2	34			1	11	24		
Palm age (year)					.157[a]	0.925				.580[a]	0.965
	<13	0	27	277			2	83	219		
	14-27	0	5	61			0	19	47		
	>27	0	1	13			0	4	10		

Note: a = significant different.
* = $p < 0.05$.
** = $p < 0.001$.
ISH = Independent Oil Palm Smallholder

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Conclusion and Recommendations

Overall, it can be concluded that ISH has a high and positive perception and attitude towards extension service activities by extension group where it can lead to the high acceptance level of extension service activities among ISH. Despite the higher score range reported, several things needs to be improved especially related to the lowest mean score of perception and attitude for the Q&A and discussion session and extension officer's response. This study also concluded that the level of education among ISH is statistically associated and has an influence on the level of perception towards extension activities. Besides that, there is a significant association between the level of attitude toward extension activities in regards to ethnic and farm income per month.

It is suggested that extension officers be encouraged to use a variety of new teaching methods. Appropriate and diverse methods are required to encourage smallholder's interest. Active interactions between smallholders and extension officers should be encouraged through teaching methods such as allocating more time for Q&A and discussion sessions. Furthermore, extension officers must improve their skills and knowledge in extension service by participating in various courses and programs. Besides that, more attention is needed in improving the oil palm yield among smallholders who normally tend to have lower yield. Future research might need to look into the other factors that affect productivity such as quality of seedlings, proper planting techniques, balance and adequate fertilizer use, etc. Future studies also need to focus on the effectiveness of extension services.

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