



Sustainable Cultivation: Decoding Smallholders' Beliefs And Intentions Towards Sustainable Certification Scheme

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ABSTRACT

In 2018, the European Union parliament unanimously voted to prohibit and oppose the importation of palm oil for the purpose of producing bio-oil in 2020. As a result, in 2013, the Malaysian government introduced Sustainable Palm Oil Certification Scheme, also known as the Malaysian Sustainable Palm Oil (MSPO) certificate. This certificate was established with the purpose of assisting actors in the oil palm business, particularly smallholders, in adhering to the laid out requirements for sustainable oil palm farming, thus ensuring a more sustainable cultivation. Originally, MSPO was an optional certification, but in 2017, the MSPO were mandatory by the end of 2019, in accordance with the criteria for sustainable agricultural practices. This mandate applies to small-scale oil palm farmers. Objectives of this study are 1) To assess the preparedness of small-scale farmers to embrace and adhere to the Malaysian Sustainable Palm Oil (MSPO) standards 2) To understand factors that influence individuals' intended actions with regards to the implementation of MSPO. This study conducted semi-structured surveys to smallholders who own or cultivate oil palm plantations that do not exceed 40.46 hectares or 100 acres. A total of 304 small holders were picked using a random sampling procedure. Both qualitative and quantitative analysis (mixed method) are conducted. Data were collected from both questionnaires and in-depth interviews. This study indicate that small-scale oil palm growers in Johor are not ready in adhering to the Malaysian Sustainable Palm Oil (MSPO) certification. The reason for this is the lack of comprehension, awareness, and exposure of the Malaysian Sustainable Palm Oil (MSPO) standards among small-scale oil palm growers in Johor. Nevertheless, the impact of apprehensive and uninformed peers partially impedes their aspirations. Thus, it can be asserted that oil palm smallholder farmers in Johor possess the necessary readiness in terms of their attitudes, but they require additional instruction to adhere to the Malaysian Sustainable Palm Oil (MSPO) standards.

Keywords: Readiness, Sustainable Palm Oil industry, Smallholders, Certification Scheme

1. Introduction

Palm oil is a significant agricultural commodity sector in Malaysia. In 2018, palm oil made a significant contribution to Malaysia's GDP through the agriculture sector, accounting for 7.9 percent, equivalent to RM 99.5 billion [1]. In 2019, palm oil accounted for 37.7 percent of the agriculture sector's in Malaysia [1]. In 2018, the European Union parliament unanimously voted to prohibit and oppose the importation of palm oil for the purpose of producing bio-oil in 2020 [2]. Europe is the second largest importer of Malaysian palm oil, following India. In 2018, Europe imported 1.92 million metric tonnes of Malaysian palm oil [3]. This ban will have a significant impact on 492,000 small-scale oil palm growers in Malaysia [4]. The limitation arises due to the detrimental impact of oil palm farming on the environment. The WWF [5] states that oil palm agriculture activities result in the destruction of areas inhabited by endangered wildlife such as orangutans, tapirs, and Sumatran rhinos. Furthermore, it leads to deforestation for oil palm farming, exploitation of workers, and significant greenhouse gas emissions.

In 2013, the Malaysian government introduced the Malaysian Sustainable Palm Oil Certification Scheme, also known as the Malaysian Sustainable Palm Oil (MSPO) certificate. This certificate was established with the purpose of assisting actors in the oil palm business, particularly smallholders, in adhering to the prescribed requirements for sustainable palm oil farming, thus ensuring a more sustainable future. Originally, MSPO was an optional certification, but in 2017, the government decided MSPO to be mandatory by the end of 2019, in accordance with the criteria for sustainable agricultural practices [6]. This mandate applies to all type of holders including small-scale oil palm farmers.

2. Objectives

This study aims 1) To assess the preparedness of small-scale farmers to embrace and adhere to the Malaysian Sustainable Palm Oil (MSPO) standards and 2) To comprehend the aspects that influence individuals' intended actions with regards to the implementation of MSPO.

3. Literature Review

Aziz et al. [7] define oil palm smallholders as people who cultivate oil palm plantations with an area of less than 40.46 hectares or 100 acres. The Malay Literature Reference Centre (PRPM) defines smallholders as individuals who farm land of limited size [8]. While oil palm smallholders experience significant socio-economic and social mobility [9], small private oil palm farmers, as highlighted by Ni et al. [10], are reluctant to adopt sustainable practices due to concerns about the associated rise in costs.

Smallholders, as defined by Khalil et al. [11], are individuals who face structural limitations such as limited resources, minimal technology, and small marketplaces. Khalil et al. [11] also asserted that the categorization of smallholders can be classified into four distinct types, namely: (a) reliance on production factors such as land and market; (b) the manner in which the company is managed; (c) the connection between the farm and the market; and (d) the economic scale of the enterprise, as measured by its production value.

According to Kirsten and Van Zyl [12], smallholders are defined as individuals with small-scale operations who are vulnerable to difficulties in accessing services from authorities, thereby necessitating an increase in their production. This definition emerged from a research conducted in South Africa. In such location, the small-scale agriculturalists experience oppression as each governmental policy disproportionately favours the large-scale agriculturalists. Thus, this study examines the inclination of smallholders to adhere to MSPO. RSPO [13] states that smallholders comprise fewer than 40 percent of the participants in the palm oil business. However, their involvement is crucial for achieving sustainability in the industry.

Previous research has demonstrated that smallholders exhibit vulnerability, susceptibility to manipulation, and resistance to adopting sustainability practices [14–17]. Terlau et al. [17] discovered that smallholders face a significant challenge in comprehending and implementing sustainable practices. Rohadi [15] corroborates this discovery by demonstrating that smallholders are already acclimated to conventional farming methods, making it arduous for them to transition to sustainable techniques. This is primarily due to their lack of crucial knowledge, particularly on sustainable agriculture techniques [16].

Johor is widely recognised as a state in Peninsular Malaysia that has a substantial amount of land dedicated to agricultural activities. In the overall context of Malaysia, Johor holds the fourth position, following Sabah, Sarawak, and Pahang. The Johor Socioeconomic Report 2019, published by the Department of Statistics Malaysia, states that palm oil is the primary source of revenue in the agricultural sector of Johor in 2019 [18]. Palm oil accounts for 37.4 percent of the agricultural sector in the state of Johor, contributing RM 16.4 million, which is slightly higher than the RM 16.2 million contribution in 2018. Furthermore, data from MPOB [18] and FELDA [19] indicates that the state of Johor has a higher number of small-scale oil palm producers. Johor has a collective count of 43, 337 small-scale oil palm producers. According to the Malaysian Palm Oil Board (MPOB) in 2020, the oil palm plantations in Johor cover an area of 740, 828 hectares [18].

The research conducted by Sanchez-Planelles et al. [20] demonstrates that sustainability encompasses not only environmental concerns but also extends to all facets of existence. This encompasses various aspects such as social, economic, and local culture. Sustainability certification provides a guarantee of safety for all factors involved. Sustainability certification not only safeguards the environment, but also ensures the protection of all facets of life from devastation. The MSPO accreditation was established with the aim of safeguarding the sustainability of the Malaysian palm oil sector [6]. It encompasses all phases of the oil palm business, ranging from farming to the manufacturing of the end product. The smallholders' commitment to adhere to and implement the Malaysian Sustainable Palm Oil (MSPO) standards is crucial for the government's endeavours to safeguard the palm oil sector. While smallholders make up only 40 percent of the palm oil sector, they nevertheless have a significant role to play in achieving overall sustainability, as stated by RSPO [13].

4. Methods

a. Methods of Sampling

This study employs a sampling technique to gather data from a group of oil palm smallholders located in the state of Johor. We are conducted research to smallholders who own or cultivate oil palm plantations that do not exceed 40.46 hectares or 100 acres. There exist two distinct categories of smallholders, specifically independent smallholders and organised smallholders. Both categories of small-scale farmers are used as sample criteria for this study.

The state of Johor was selected due to the data provided by MPOB [18] and FELDA [19], which indicate a higher population of oil palm smallholders in Johor. Given the global invasion of the Covid-19 epidemic during the study, this will help for identification of respondents. In Johor, there is a settlement area where numerous oil palm smallholders reside in close proximity to one another. In addition, Johor was selected as the study location due to its status as the state with the highest palm oil production in Peninsular Malaysia and the largest smallholders palm oil plantation. Johor's crude palm oil production in 2021 amounted to 4,170,999 tonnes, according to MPOB [21].

b. Sample Size Determination

The sample size for this study was obtained by comparing the sample size chart provided by Krejcie and Morgan [22] with the table provided by Cohen and Manion [23]. Given that there are 75,000 small oil palm producers in Johor according to MPOB's 2020 data, the sample size needed for this study is 382 individuals. However, given the circumstances during the time of this study, there was a COVID-19 outbreak and government-imposed movement restrictions. According to Singh and Masuku [24], this study has the potential to decrease the number of participants, provided that the overall population size is reduced. Furthermore, as stated by Henry [25], this study has the potential to decrease the alpha value in order to get statistically significant results. Therefore, a sample size of 304 respondents is deemed adequate. Among the total of 304 individuals, exactly half, or 152 people, are classified as organised smallholders, while the other half are categorised as independent smallholders.

c. Method for Selecting Samples

This study examines the sample selection approach used by Abdullah and Darusalam [26], which employs a straightforward random sampling strategy. The researcher is seeking smallholders who possess or cultivate oil palm plantations that do not exceed an area of 40.46 hectares or 100 acres. The desired qualities and criteria for selection are based on this specific land size limit. A total of 304 individuals will be picked using a random drawing procedure. Initially, this study assigned a numerical value to the sample by utilising a compiled list of names. The roster of names was acquired from participating agencies such as the PELADANG and FELDA. Next, the numbers are inserted into a container in order to be selected randomly. To mitigate bias, this study administered a questionnaire that involved drawing names and matching the third number from a list of names provided by the responsible party. The study continued until a sufficient sample of 304 responses was obtained. The qualitative interview strategy includes selecting a sample of specialists who had direct involvement with MSPO. The three professionals are well informed about MSPO due to their expertise and aligned responsibilities. The key informants comprises of an MPOB official, an MPOCC official, and an academic who is actively engaged in the development of the MSPO.

This study employs two research instruments, specifically questionnaires and interview prompts. Both instruments are detailed in the following section. The questionnaire was designed by including the 7 principles of MSPO and key features from the theory of planned behaviour, including attitudes, subjective norms, and awareness of controlled behaviour.

d. Methods for Collecting Data

For this investigation, the data collection was accomplished using two method. The two approaches available for data collection are questionnaires and interviews. Data collecting for the questionnaire was carried out in the state of Johor Darul Takzim. The choice of a questionnaire as a method for collecting data is based on the fact that it is widely recognised in the social sciences, particularly in the empirical study of sociology, as an effective means of gathering information about the characteristics and internal relationships of a subject of samples. Given that this study focuses on investigating the willingness of smallholders to adhere to the MSPO, the use of the questionnaire approach for data collection is suitable. The essence of this is that respondents, when completing the questionnaire, provide answers effortlessly and without experiencing any feelings of shyness or embarrassment. The questionnaire method is particularly noteworthy for its ability to generate precise and accurate data [27]. The questionnaire method, as described by [27], is conducted in an unscripted and natural environment. This approach ensures that the data collected through this method is both precise and accurate. This will yield advantages to the research endeavour as participants are more inclined to provide their honest responses.

The questionnaire that was created consists of three distinct sections, specifically referred to as part A, part B, and part C. Part A pertains to the demographic information of the respondents. Part B constitutes one of

the four factors in the theory of planned behaviour, specifically intention, attitude, subjective norms, and awareness of controlled behaviour. Part C consists of an open-ended inquiry segment. The utilisation of the open question method aims to gain insights directly from smallholders regarding the determinants that impact their willingness to adhere to the MSPO. The questionnaire for this study was constructed using the 7 principles of MSPO as a foundation. The questions are arranged in a random order. Three enumerators were recruited, informed, and trained to conduct the questionnaire session for this study. The survey was done in person, although with a restricted duration, as a result of the Covid-19 pandemic. The appropriate measure was implemented in to mitigate the transmission of the infection.

Furthermore, this study conducted in-depth interviews with three (3) experts that had a key role in the development of MSPO, in order to get in-depth information on the subject and issues pertaining to MSPO. Prior to scheduling the interview, all experts were contacted via email to request their attention. Subsequently, each expert was interviewed individually. During the interview, the participants were presented with a varying number of questions, ranging from 8 to 15, depending on the specific information needed and their ability to provide it. The duration of the interview session is anticipated to be between 40 minutes and 1 hour. The interview questions focused on the development and execution of the MSPO.

5. Results and Discussion

A fieldwork effort was conducted for this research from September 3, 2020, to September 7, 2020. The fieldwork was conducted in the state of Johor Darul Takzim, specifically in the districts of Johor Bahru, Muar, Kota Tinggi, and Segamat. The survey was completed by a total of 304 respondents. The Table 1 presents the demographic information regarding the genders of the respondents.

Table 1. Gender

| No. | Gender | Number | Percentage (%) |
|-------|--------|--------|----------------|
| 1. | Male | 277 | 91.1 |
| 2. | Female | 27 | 8.9 |
| Total | | 304 | 100 |

Table 2. Type of Smallholders

| No. | Type of farmers | Number | Percentage(%) |
|-------|-----------------|--------|---------------|
| 1. | Organised | 107 | 35.2 |
| 2. | Independent | 197 | 64.8 |
| Total | | 304 | 100 |

Out of the respondents, 64.8 percent, or 197 persons, were classified as independent small-scale farmers, while the remaining 107 individuals were categorised as organised small-scale farmers. The trend data suggests that independent small-scale farmers are more inclined to cooperate than organised small-scale farmers.

This study investigated the average farm yields of the respondents in relation to agricultural production. As a result, 161 farmers achieved returns between RM 1000 and RM 2000 per month, which accounts for 53 percent of the respondents. Additionally, five individuals earned yields higher than RM 6000, representing 1.6 percent. Although there has been a considerable infusion of funds, it does not automatically ensure huge financial gains.

Table 3. Income

| No. | Income(RM) | Number | Percentage(%) |
|-------|------------|--------|---------------|
| 1. | 1000-2000 | 161 | 53 |
| 2. | 2000-3000 | 83 | 27.3 |
| 3. | 3000-4000 | 40 | 13.2 |
| 4. | 4001-5000 | 13 | 4.3 |
| 5. | 5001-6000 | 2 | 0.7 |
| 6. | >6000 | 5 | 1.6 |
| Total | | 304 | 100 |

6. Results from the qualitative analysis

a. Objective Establishment

The primary theme centres on the establishment of objectives. During this discussion, the participating officers were queried on the formulation of the MSPO's goals for this investigation. Officer P3's interrogation disclosed that there are five objectives for the foundation of MSPO. The objectives encompass acknowledgment, criteria, recommendations, accreditation, and durability standards. The main objective of

Malaysia's implementation of MSPO certification is to provide a benchmark that acts as a foundation for the progress of the palm oil sector.

"During the initial development of MSPO, with a specific emphasis on... our objective was to establish compulsory criteria." - P3

While the concept of creating our own certification was present during the existence of the Roundtable on Sustainable Palm Oil (RSPO), RSPO itself was not a compulsory certification during that period. Therefore, the MSPO was implemented as a compulsory certification that must be followed by all sectors of the palm oil business.

Furthermore, at that period, the government recognised the necessity of implementing a certification system with specific criteria to guarantee consistency in the palm oil production processes. To add, the palm oil industry holds the position of being the most significant economic sector in Malaysia. MPOCC [28] states that the purpose of establishing MSPO is to ensure sustainability in every aspect of palm oil production.

"...the government at that time sought to acknowledge the nation's most significant investment and aimed to establish a benchmark." - P3

The standard that the Malaysian government aimed to set was exceptional, surpassing the ordinary. The Malaysian government's objective at that time was to establish a sustainability standard to protect the palm oil business. Therefore, it is necessary for small palm oil growers in Johor to adhere to proper agricultural techniques and methods [28].

"...to ensure adherence to sustainability criteria, we introduced the MSPO initiative." - P3

In order to construct the Malaysian Sustainable Palm Oil (MSPO) standard, the creators and technical team of MSPO used the Roundtable on Sustainable Palm Oil (RSPO) as their point of reference and guidance.

"RSPO is a voluntary organisation from which we derive significant guidance." - P3

Malaysia, as a palm oil-producing country, seeks international recognition as stated by P3.

"What are the anticipated outcomes of MSPO and what is the long-term goal of MSPO in terms of gaining international recognition and other related aspects?" - P3

Hence, the primary goal and aspirations of MSPO are to achieve global acknowledgment.

Therefore, it is clear that the purpose of implementing MSPO is to promote the progress of the palm oil business. The objective is to achieve not only short-term improvement but also to pursue sustainable progress in the long run. This is consistent with the sustainability objective that seeks to serve multiple stakeholders [29]. The establishment of MSPO is not primarily driven by Malaysia's desire for its own standard, but rather rooted in pre-existing norms. The implementation of mandatory MSPO aims to guarantee the enduring worldwide relevance of Malaysia's palm oil products by ensuring their sustainability and marketability, without causing any negative consequences. Consequently, the advantages of this are not limited to the government alone, but are also all actors along the production supply chain, particularly small-scale oil palm farmers.

b. Engagement Procedure

This section explore the procedure required for adopting MSPO. Prior to that, it is crucial to investigate the origins of the foundation of MSPO.

The Malaysian Sustainable Palm Oil Certification Scheme (MSPO) was registered as MS2530:2013 with the Department of Standards Malaysia in September 2013. It was launched by the Deputy Prime Minister on November 19, 2013. Pilot audit sessions were conducted in 2014 to test the effectiveness of the MSPO certification system. After undergoing improvement sessions, the Malaysian Minister of Plantation Industries and Commodities officially implemented MSPO in January 2015.

From an interview excerpt with P2, it is evident that the establishment of MSPO was not a simple process. The creators and formulators of MSPO had to overcome various problems, impediments, and bureaucratic hurdles in order to bring it into existence. In addition, the process of obtaining the MSPO (Malaysian Sustainable Palm Oil) certification also required a significant amount of time, lasting for a duration of seven years starting from 2013. MSPO conducted numerous trials prior to being mandatory for all participants in the palm oil sector.

"During the initial phase, the Malaysian Sustainable Palm Oil (MSPO) was formulated by the Malaysian Palm Oil Board (MPOB) with the participation of all stakeholders, whether directly or indirectly." - P1

Prior to its implementation for public use, MSPO underwent a meticulous drafting procedure. The Malaysian Palm Oil Board, along with many other players in the palm oil business, conducted this procedure. Therefore, it can be asserted that MSPO is a specialised certification designed specifically for the palm oil business. This is due to the fact that the individuals who created it are also directly involved in the palm oil industry.

The Malaysian Palm Oil Board (MPOB), as the governing body of the palm oil sector, has devised a four-step process to guarantee that participants in the business have a comprehensive understanding of MSPO.

MPOB aims to enhance its social media presence, regularly hold MSPO briefings around Malaysia, carry out MSPO exploration programmes to disseminate information and engage with target audiences, and establish partnerships with relevant agencies and organisations.

In the era of digitization, MPOB actively utilised all of their social media platforms to disseminate information about MSPO. In addition, they organised MSPO briefing programmes around Malaysia as part

of the JOM MSPO initiative. MSPO information was not only presented during the programme, but it was also regularly distributed. During the JOM MSPO programme, in order to generate interest, a range of activities were organised, including both informational sessions and other engaging events. In order to ensure comprehensive coverage of information and knowledge within the palm oil business, MPOB established collaborations with all relevant organisations and agencies.

Prior to small-scale private oil palm growers joining the Sustainable Palm Oil Certification (SPOC) programme as members of the Malaysian Sustainable Palm Oil (MSPO) certification, they are required to undergo training and attend briefings on MSPO.

Participants in the palm oil sector must also participate in training sessions and briefings. Both of these operations are carried out by MPOB and the agencies concerned. The training and briefing sessions have furnished guidelines and modules.

One of the training modules requires individuals to consistently retain receipts for the sale of Fresh Fruit Bunches (FFB) oil palm, document sales and income, and keep a record of work expenses at all times in order to adhere to the second principle of the MSPO standard.

One of the programmes available is the training module for record-keeping and filing. Transparency, one of the cornerstones in MSPO, mandates participants to meticulously document their purchases and sells in order to thwart any fraudulent activities. Thus, in order to acquire MSPO accreditation, participants must maintain comprehensive documentation of all their purchases and sales in designated files.

Therefore, it is imperative for stakeholders in the palm oil sector to guarantee that their plants possess the Malaysian Sustainable Palm Oil (MSPO) certification. Owners or operators of oil palm plantations without MSPO accreditation will face severe repercussions.

"Currently, there is no enforcement in place, however, we recommend considering the possibility of conducting audits on mills. Mills should take measures to ensure that they exclusively accept certified mills. Consequently, any mills that are not certified should be rejected."

P3 suggests that plantations owned or controlled by individuals who do not possess MSPO certification may not undergo an audit. The audits carried out pertain to the licencing of plantation openings. To summarise, not having MSPO increases the likelihood of the licence being cancelled. The validity of this statement is substantiated by the evidence provided by P1.

"Failure to obtain MSPO certification can result in the suspension, cancellation, or non-renewal of a licence, as stipulated in Regulation 15 of the Licencing Regulations, MPOB." - P1

According to P1, individuals who do not possess MSPO certification might have their licences cancelled, suspended, or not renewed, as stated in Regulation 15 of the MPOB Licencing Regulations.

In order to ensure that all participants in the palm oil business are capable of obtaining MSPO accreditation, the process for achieving this should be tailored to individual circumstances.

"The working principle employed by major industry players such as Sime Darby cannot be directly applied to these smallholders. While the principles should remain the same, there should be some modifications in their practices. It is crucial to safeguard the workers and prevent their exposure to harmful chemicals. Additionally, it is imperative to establish strict criteria that prohibit any form of childbirth, regardless of scale, in order to ensure compliance and adherence by all parties involved." - P3

Players in the palm oil business with substantial influence are treated differently than small-scale oil palm producers. This is due to the fact that both categories of participants in the palm oil sector possess distinct talents.

c. Objective 1

Table 4. Respondents' Readiness to Comply MSPO?

| BIL | ANSWER | NUMBER | PERCENTAGE % |
|-----|--------|--------|--------------|
| 1. | YES | 76 | 25 |
| 2. | NO | 228 | 75 |
| | TOTAL | 304 | 100 |

According to the provided chart, it can be inferred that a significant majority, specifically 75 percent, of oil palm smallholder farmers in Johor indicated their lack of readiness to comply with MSPO (Malaysian Sustainable Palm Oil). The value represents a total of 228 participants, with 25 percent, or 76 individuals, indicating their willingness to comply with MSPO by choosing 'yes'. The results suggest that smallholder oil palm producers are more likely to be resistant to complying with the Malaysian Sustainable Palm Oil (MSPO) certification. Dharmawan et al. [30] have provided evidence that palm oil smallholder farmers are disinclined to prioritise social and environmental factors due to their emphasis on economic considerations. This can be demonstrated by the results of previous research conducted by Ali et al. [31], Faisal et al. [32], Mutyasir et al. [33], and Yutika et al. [34].

In his study, Mutyasir et al. [33] identified the elements that influence the inclination of smallholder farmers to embrace excellent agricultural practices. The findings unveiled key elements such as availability of information and advisory services, accessibility to agricultural financing, preparedness of land, and availability of agricultural machinery. After analysing these characteristics, it can be deduced that

smallholder farmers prioritise solely their financial sustenance. This is additionally corroborated by the discoveries made by Ni et al. [10]. The study findings suggest that smallholder farmers prioritise participation in activities that offer them a lot of advantages, particularly financial benefits, even though they have limited knowledge of effective agricultural practices [10]. Yutika et al. [34] discovered that financial factors pose a hindrance to smallholder farmers, as the expenses associated with implementing effective agricultural practices are higher in comparison to traditional farming methods. Perhaps, this is also the reason why oil palm smallholder farmers in Johor are reluctant to adhere to MSPO.

Moreover, Ali et al. [31] discovered that smallholder farmers are reluctant to adhere to appropriate agricultural techniques due to their belief that these practices would bring them harm. According to Ali et al.'s [31] research, small-scale farmers expressed that the application of organic stimulants would result in significant drought damage to their crops. Therefore, they have a preference for utilising artificial stimulants rather than organic ones. This emotion is also apparent in the situation of smallholders that cultivate oil palms in Johor. They may view the adoption of MSPO methods as having negative impacts on their crops.

d. Objective 2

i. Intention

The main factors being examined in this study are attitude, subjective norms, and perceived behavioural control. These three variables are intrinsically interchangeable with the Theory of Planned Behaviour (TPB). Mutyasira et al. [33] found that the intention of small oil palm farmers in Johor to comply with MSPO are influenced by their attitude, subjective norms, and perceived behavioural control. Consequently, the creation of these variables necessitates appropriate elements. In order to evaluate the preparedness, mindset, subjective norms, and perceived ability of small oil palm farmers in Johor to adopt sustainable agriculture, a descriptive analysis is carried out as part of the second objective. Nasution [35] outlines that descriptive analysis is conducted in accordance with defined and predetermined procedures. This study also analyses the minimal score data for measurement purposes.

Table 5. Mean score

| Mean Score | Interpretation |
|------------|----------------|
| 1.00-2.33 | Low |
| 2.34-3.66 | Moderate |
| 3.67-5.00 | High |

This study establishes the three primary independent variables, attitude, subjective norms, and perceived behavioural control, by carefully choosing appropriate items. The study identifies and chooses these items using research conducted by Dharmawan et al. [30]. The researchers utilised concepts derived from the Indonesian Sustainable Palm Oil (ISPO) in that study. Thus, this study used a comparable methodology to create and choose items for the three primary variables. The components comprising these three primary independent variables are selected from the seven principles that exist under MSPO.

Table 6. Items obtained from Dharmawan et al. [30]

| ISPO Principle | ISPO Criteria |
|--------------------------|-----------------------------|
| Compliance with Laws | Land Laws |
| | Estate Administration |
| Smallholder Management | Crop Management |
| | Good Agricultural Practices |
| Environmental Management | Biodiversity Conservation |

Readiness pertains to the willingness of small-scale oil palm producers in Johor to adhere to the Malaysian Sustainable Palm Oil (MSPO) standards. As mentioned by Ajzen [36], intention refers to an individual's preparedness to carry out a specific activity. In this study, "intention" specifically refers to the level of willingness exhibited by small oil palm growers in Johor to adhere to the MSPO regulations. Furthermore, according to Mutyasira et al. [33], intention is the most accurate indicator of real-life actions. This study employs the Theory of Planned Behaviour (TPB) as the theoretical framework to evaluate the preparedness of small oil palm producers in Johor to adhere to MSPO.

The criteria assessed according to MSPO principles include best practices, natural resource environment, biodiversity, and ecosystem services. The minimum threshold for measuring intention is 2.938. According to Table 1.7, in general, small-scale oil palm growers in Johor are still hesitant about adhering to the Malaysian Sustainable Palm Oil (MSPO) certification. This is demonstrated by the analysis of the minimum score table, which shows that the minimum score for the intention variable is at a moderate or ambiguous level. When examining the distribution of Likert scale responses, it is evident that the largest proportion, specifically 35 percent, of responses fall into scale one, which signifies disagreement. Nevertheless, the reason why the overall minimum score is 2.938, which falls under the moderate range, is because 25 percent of the Likert

scale responses were at scale five, suggesting a significant level of agreement. The slight disparity between scale one and scale five leads to the minimum score being situated at a modest level.

Based on the data gathered from Table 1.7 on the intention of small oil palm farmers to comply with MSPO, it can be concluded that the majority of respondents do not intend to comply with MSPO.

Regarding the statement "I am aware of the prohibition on planting oil palm on steep land slope areas," (32.9 percent) of respondents expressed agreement with this statement. These findings suggest that most small-scale oil palm producers are just cognizant of the ban on planting oil palm on steep slopes, without any intention of adopting additional measures.

The results of this study indicate that small-scale oil palm growers in Johor have no intention of adhering to the Malaysian Sustainable Palm Oil (MSPO) certification. The reason for this is the lack of comprehension, awareness, and acknowledgement of the Malaysian Sustainable Palm Oil (MSPO) standards among small-scale oil palm growers in Johor. The demographic profile of the survey indicates that the majority of respondents are aged 60 and above, which aligns with this finding. Marzukhi et al. [37] found that small-scale oil palm farmers exhibit a lack of information regarding the oil palm sector, a limited understanding of its development, and a lack of awareness regarding acceptable farming practices. In addition, as stated by Marzukhi et al. [37] once more, small-scale oil palm growers also possess a deficiency in understanding regarding Good Agricultural Practices (GAP). This is supported by the fact that most of them simply concur with the statement "I am aware of the prohibition on planting oil palm on steep land slope areas." Planting oil palm on steep land slopes has certainly been a traditional practice among small-scale oil palm producers [13].

| INTENTION | Frequency (Percentage %) | | | | | Mean (SD) |
|--|--------------------------|-------------|--------------|--------------|---------------|------------------|
| | 1 | 2 | 3 | 4 | 5 | |
| "I have plans to improve the quality of oil palm to be more sustainable (B6)" | 115 (37.8) | 21 (6.9) | 28 (9.2) | 52 (17.1) | 88 (28.9) | 2.924 (1.707) |
| "I have implemented what is necessary for MSPO (B8)" | 120 (39.5) | 23 (7.6) | 58 (19.1) | 57 (18.8) | 46 (15.1) | 2.625 (1.521) |
| "I have encouraged all parties involved to practice best practices (B24)" | 99 (32.6) | 17 (5.6) | 42 (13.8) | 75 (24.7) | 71 (23.4) | 3.007 (1.596) |
| "I am knowledgeable about the types of soil in my plantation (B26)" | 92 (30.3) | 30 (9.9) | 50 (16.4) | 54 (17.8) | 78 (25.7) | 2.987 (1.587) |
| "I am aware of the prohibition on planting oil palm on steep land slope areas (B28)" | 99 (32.6) | 14 (4.6) | 34 (11.2) | 57 (18.8) | 100 (32.9) | 3.148 (1.685) |
| TOTAL | | | | | | 2.938 (1.619) |

Table 7. Intention

ii. Attitude

Attitude Descriptive Analysis refers to the process of examining and describing attitudes in a thorough and precise manner. Abdullah and Hussin [38] define attitude as an individual's view or belief about something, influenced by the opinions of others over whether to engage in or refrain from a particular action. Therefore, attitude can be understood as a factor that takes into account the potential outcomes or repercussions of an action prior to its execution. According to Abdullah and Hussin [38], attitude refers to the evaluation of an activity as either positive or negative. Thus, in this study, the items for the attitude variable are derived from the perspectives of small-scale oil palm producers regarding sustainable agricultural practices.

According to Table 1.8, small oil palm growers have a favourable attitude towards the implementation and adherence to MSPO. According to the frequency of Likert scale selections, the total number of selections for scale four and scale five is higher than the total number of picks for scale one and scale two. The pairing of scale four and five yielded a total of 673 picks, whereas the pairing of scale one and scale two resulted in 635 selections.

Table 8. Attitude variable statistics

| ATTITUDE | Frequency (%) | | | | | Mean (SD) |
|--|---------------|-------------|--------------|--------------|---------------|-------------------|
| | 1 | 2 | 3 | 4 | 5 | |
| "I keep all records related to oil palm (B7)" | 124 (40.8) | 25 (8.2) | 54 (17.8) | 45 (14.8) | 56 (18.4) | 3.818 (1.5688) |
| "My plantation practices proper waste management (B17)" | 107 (35.2) | 21 (6.9) | 40 (13.2) | 71 (23.4) | 65 (21.4) | 3.355 (1.6005) |
| "I use renewable resources (B20)" | 102 (33.6) | 25 (8.2) | 51 (16.8) | 58 (19.1) | 68 (22.4) | 3.315 (1.5827) |
| "I am aware that I need to protect endangered species from extinction (B21)" | 96 (31.6) | 21 (6.9) | 32 (10.5) | 50 (16.4) | 105 (34.5) | 3.998 (1.6923) |
| "I practice the best farming practices (B23)" | 93 (30.6) | 21 (6.9) | 35 (11.5) | 68 (22.4) | 87 (28.6) | 3.995 (1.6299) |
| TOTAL | | | | | | 3.696 (1.648) |

According to the data in Table 1.8, it is clear that small oil palm farmers in Johor have the highest inclination to safeguard endangered species, as indicated by a mean value of 3.998. Thus, by increasing the consciousness of small-scale oil palm farmers in Johor about the importance of conserving habitats for endangered animals, we can effectively tackle the concern raised by WWF regarding the necessity to limit oil

palm cultivation as a means of mitigating habitat destruction. By being conscious of this, small-scale farmers will exercise greater care when engaging in oil palm activities, particularly when these activities involve endanger wildlife. The second item with the highest mean, "I practise the best farming practices" (mean: 3.995, SD: 1.6299), suggests that small oil palm producers have a conscientious approach to implementing effective farming methods.

The mean (Standard Deviation) for the items "I use renewable resources", "My farm practices proper waste management", and "I keep all records related to oil palm" are 3.315 (1.5827), 3.355 (1.6005), and 3.318 (1.5688) correspondingly. Additionally, these items were chosen more frequently for scales one and two. Small oil palm growers exhibit a pessimistic disposition towards the practice of maintaining records, managing waste, and utilising renewable resources.

Overall, the prevailing sentiment among small-scale oil palm producers in Johor is one of favourability towards sustainability methods. This is apparent from the interpretation table of the minimum score, which shows that the overall minimum score for the attitude variable is 3.696, indicating a satisfactory level. While a few attitude items received low minimum scores and scales, there are also small oil palm farmers in Johor who demonstrate positive attitudes. These findings align with the demographic data of this study, which indicates that most respondents own their plantation land outright rather than renting it. This conclusion is further substantiated by a study carried out by Zeweld et al. [39]. The survey found that most small farmers included displayed favourable views towards sustainable practices. Merely 8% of the participants had unfavourable views towards sustainable practices. Zeweld et al. [39] determined that the negative sentiments exhibited by 8% of the participants might be attributed to a dearth of information and a scarcity of available workers for agricultural tasks. Zeweld et al. [39] also asserted that the primary factor contributing to the positive views of most small farmers towards sustainability measures is the financial support offered by the government. In addition, as stated by Nguyen et al. [40], certain farmers have transitioned from a negative to a positive stance on sustainability methods in order to ensure the viability of their crops.

iii. Subjective Norms

Kumar [41] defines subjective norm as the cognitive process in which an individual considers the opinions and beliefs of others before making a decision or taking action. According to Abdullah and Hussin [38], subjective norm refers to an individual's feeling of social pressure when deciding whether to take a certain action. Subjective norm in this study pertains to the impact of fellow oil palm smallholders in Johor on one another's decision to comply with MSPO. Furthermore, subjective norm also includes the conduct of oil palm smallholders in Johor when they hire labour. The MSPO provides a set of principles that define measures for safeguarding workers employed in oil palm plantations. The fourth principle is social responsibility, which encompasses the well-being, health, safety, and welfare of workers.

According to Abdullah and Hussin [38], subjective norm refers to an individual's impression of societal pressure while deciding to take a certain action. Therefore, the purpose of this study is to examine this issue.

Table 9. Statistical Table for Subjective Norm

| SUBJECTIVE NORM | Frequency (%) | | | | | Mean (SD) |
|--|---------------|-------------|--------------|--------------|--------------|-------------------|
| | 1 | 2 | 3 | 4 | 5 | |
| "I have received guidance on oil palm cultivation practices from all aspects (B10)" | 115 (37.8) | 19 (6.3) | 29 (9.5) | 63 (20.7) | 78 (25.7) | 2.901 (1.6759) |
| "My workers and I have attended safety courses (B12)" | 144 (47.4) | 24 (7.9) | 35 (11.5) | 47 (15.5) | 54 (17.8) | 2.484 (1.6064) |
| "My workers are happy to work (B13)" | 132 (43.4) | 26 (8.6) | 31 (10.2) | 49 (16.1) | 66 (21.7) | 2.841 (1.6530) |
| "I take care of the health of my workers (B14)" | 137 (45.1) | 20 (6.6) | 28 (9.2) | 55 (18.1) | 64 (21.1) | 2.635 (1.6635) |
| "I frequently exchange views with other farmers to enhance my knowledge of oil palm (B15)" | 114 (37.5) | 20 (6.6) | 23 (7.6) | 62 (20.4) | 85 (28) | 2.947 (1.7014) |
| TOTAL | | | | | | 2.761 (1.660) |

According to the data in Table 9, majority of respondents prefer scale one and scale two for all items in this category, making up 49 percent of the total. 40 percent of the scale choices are for scale four and scale five, however only 10 percent are categorised as 'undecided'. Small oil palm farmers in Johor are significantly impacted by their surrounding peers. Small-scale oil palm producers prioritise the opinions and advice of their peers when it comes to implementing sustainable agricultural practices. Another potential explanation is that they lack a workforce or do not have any affiliations with other agricultural producers. The subjective norm has a mean score of 2.761, as indicated by the interpretation table for mean scores. This indicates that the average score is at a level that may be described as 'moderate'.

The results of this survey align with the demographic information gathered, indicating that most participants are independent small-scale landowners. Private smallholders are susceptible to peer influence due to their lack of organisational constraints. The collective knowledge regarding oil palm is shared within their own community. Wu et al. [42] also affirm that subjective norms have a significant impact on human decision-making. Subjective norms, which are influenced by the opinions and behaviours of others, have a significant impact on the decision-making process of small oil palm farmers in Johor. These norms can either encourage or discourage certain actions among farmers. According to Yutika et al. [34], private small oil palm farmers are more susceptible to the influence of their peers when it comes to adopting sustainable farming

techniques, as opposed to corporate small oil palm farmers. This unequivocally demonstrates that independent small-scale oil palm growers lack the autonomy to make independent judgements about the use of sustainable agricultural methods.

iv. Perceived behaviour control

PBC, which stands for Perceived Behavioural Control, is an additional component introduced by Ajzen to enhance the Theory of Planned Behaviour. PBC is included due to its purported ability to elucidate activities that are beyond the control of individuals. Sukohar and Suharmanto [43] found that individuals had self-awareness and the ability to exert control over their behaviour. Sonnenfeld's [44] study offers more insight, suggesting that individuals' awareness of power might facilitate or impede their ability to engage in certain behaviours when faced with situational constraints or opportunities. This state of consciousness is referred to as felt power. In simple terms, Swaim et al. [45] assert that PBC refers to an individual's confidence in their capability to carry out a particular behaviour.

Ramli and Seman [46] propose that an individual's Perceived Behavioural Control (PBC) is influenced by their self-efficacy. In addition to self-efficacy, which refers to an individual's internal struggle over the difficulty or simplicity of carrying out a behaviour, Hassan et al. [47] also mention the inclusion of controllability belief (CB). CB refers to the psychological state in which an individual experiences a sense of competence and control over their own behaviour.

| Perceived Behaviour Control | Frequency (%) | | | | | Mean (SD) |
|---|---------------|--------------|--------------|--------------|---------------|-------------------|
| | 1 | 2 | 3 | 4 | 5 | |
| "I am aware of MSPO (B1)" | 151 (49.7) | 22 (7.2) | 29 (9.5) | 60 (19.7) | 42 (13.8) | 2.408 (1.5706) |
| "I understand the principles of MSPO (B2)" | 161 (53) | 38 (12.5) | 36 (11.8) | 48 (15.8) | 21 (6.9) | 2.112 (1.3766) |
| "I understand the procedures of MSPO (B3)" | 170 (55.9) | 23 (7.6) | 41 (13.5) | 49 (16.1) | 21 (6.9) | 2.105 (1.3985) |
| "I have a clear understanding of the requirements and policies of the MSPO scheme (B4)" | 155 (51) | 43 (14.1) | 38 (12.5) | 47 (15.5) | 21 (6.9) | 2.132 (1.3652) |
| "I am aware of the environmental impact of plantation waste (B18)" | 114 (37.5) | 12 (3.90) | 28 (9.2) | 76 (25) | 74 (24.3) | 2.947 (1.6642) |
| "I am aware of renewable resources (B19)" | 111 (36.5) | 17 (5.6) | 49 (16.1) | 61 (20.1) | 66 (21.7) | 2.849 (1.6035) |
| "I am aware that logging and burning activities are not allowed (B22)" | 102 (33.6) | 14 (4.6) | 13 (4.3) | 53 (17.4) | 122 (40.1) | 3.260 (1.7637) |
| "I am aware that planting any crop on land rich in biodiversity is not allowed (B25)" | 100 (32.9) | 19 (6.3) | 52 (17.1) | 53 (17.4) | 80 (26.3) | 2.980 (1.6166) |
| TOTAL | | | | | | 2.599 (1.544) |

Table 10. Perceived Behaviour Control Statistical analysis.

According to the data shown in Table 10.0, it is clear that small-scale oil palm farmers in Johor have a preference for scales one and two, which indicates a state of 'disagreement'. 51 percent of them choose scales one and two. Meanwhile, scales four and five account for 37 percent of the scale possibilities. Just 12 percent of the available scale selections correspond to scale three. Consequently, the majority of small-scale oil palm producers in Johor actively and passively refuse to adopt sustainable practices. The minimal score for controlled behaviour awareness is 2.599, as determined by the minimum score values. This suggests that the minimum score for controlled behaviour awareness is at a moderate level or 'uncertain'. Terlau et al. [17] have identified that small-scale farmers face significant challenges in comprehending and implementing sustainable methods, which is the primary factor contributing to this issue. Hence, their deliberate and unintentional behaviours pertaining to adherence and implementation of sustainability are unfavourable. Moreover, the predominant demographic of respondents consists of individuals aged 60 and above, who exhibit a lack of enthusiasm towards acquiring new knowledge. Upon examining item B22, it becomes evident that small-scale oil palm growers in Johor has knowledge of the prohibition on logging and burning activities.

These research findings are corroborated by the findings of Zeweld et al. [39] and Chin et al. [48]. Small-scale oil palm growers encounter challenges that hinder their ability to adopt sustainable techniques. According to Chin et al. [48], small-scale farmers are inclined to decline or reject tasks when they encounter difficulties or barriers. In the study conducted by Chin et al. [48], small-scale farmers declined to provide surplus oil palm fruits to manufacturers for reprocessing due to their inadequate oil storage facilities. According to Zeweld et al.'s [39] research, small-scale farmers were unwilling to implement sustainable agriculture due to its high energy consumption and prices. Conversely, in Hassan et al.'s [47] study, they discovered that small-scale farmers were able to readily embrace sustainable methods with the aid of support. Ultimately, small-scale farmers will be more inclined to embrace sustainability practices if they receive assistance and support.

7. Conclusion

The major objective of developing MSPO (Malaysian Sustainable Palm Oil) is to guarantee the long-term viability and commercial appeal of Malaysia's palm oil products internationally. Consequently, the advantages of this are not solely experienced by the government, but also by all individuals, particularly small-scale oil palm farmers. To add, the responsible parties have taken preliminary measures to ensure the efficient implementation and enforcement of MSPO. The rationale behind the establishment of MSPO is relevant, and its presence acts as a push factor to ensure sustainable practices in the palm oil business, particularly to overcome trade barrier imposed by the European Union. Therefore, the complex procedure requires efficient and well-thought-out preparation.

The study found that smallholders farmers in Johor who cultivate oil palm have a favourable disposition towards sustainable agricultural techniques. The lowest scores and scale selections for this variable indicate that oil palm smallholders in Johor possess a favourable level of attitude towards practicing sustainable agriculture. They can be easily categorised based on their willingness to adopt sustainable agriculture practices.

Nevertheless, there exist disparities in subjective norms and the level of awareness regarding controlled behaviour. The minimum scores and scale options for both variables suggest that the findings are interdependent. Both variables achieved scores below 3.0, indicating that they are still in a state of uncertainty. Oil palm smallholder are highly susceptible to the effect of their immediate environment when it comes to subjective norms. A potential contributing factor could be the absence of reliable benchmarks other than cohorts and family members. Additionally, their level of regulated behaviour on awareness is questionable, with a minimum score below 3.0. The primary factor contributing to this issue is their apprehension and limited understanding of how to adhere to MSPO regulations and adopt and adapt sustainable farming methods.

Ultimately, smallholders farmers in Johor exhibit a favourable disposition towards adopting sustainable farming techniques and adhering to the Malaysian Sustainable Palm Oil (MSPO) standards. Nevertheless, the impact of apprehensive and uninformed peers partially impedes their aspirations. Thus, it can be asserted that oil palm smallholder farmers in Johor possess the necessary readiness in terms of their attitudes, but they require additional instruction and guidance to adhere to the Malaysian Sustainable Palm Oil (MSPO) standards.

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