

Driving Sustainability Forward: Unveiling the Transformative Impact of MSPO Certification on the Management of Malaysia's Palm Oil Supply Chain

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ABSTRACT

The Malaysian palm oil industry has experienced significant growth and plays a crucial role in the global vegetable oil market. However, the rapid expansion of palm oil production has raised concerns about its environmental and social impacts. In response, the Malaysian Sustainable Palm Oil (MSPO) certification scheme was introduced to promote sustainable practices and address these concerns. This study explores the impacts and effectiveness of MSPO on sustainable supply chain management in the Malaysian palm oil industry. A qualitative approach was employed, involving semi-structured interviews with five purposively selected informants from MSPO-certified organizations and smallholdings in Melaka and Johor. Thematic analysis was used to identify recurring themes and patterns related to the benefits and challenges of MSPO certification. The findings reveal that the implementation of MSPO has led to improved management systems, operational efficiency, and sustainability practices across the industry. It has addressed critical issues such as forced labor, enhanced worker welfare, and improved environmental stewardship. Smallholders have benefited from more structured approaches to production, resulting in higher-quality output and potentially increased market value. However, challenges remain, particularly for small producers adapting to new standards and the lack of significant economic incentives for certified products. The study concludes that MSPO certification has demonstrated significant effectiveness in promoting sustainable supply chain management within the Malaysian palm oil industry, fostering a culture of continuous improvement and compliance. As the scheme continues to evolve, it is poised to play an increasingly crucial role in shaping the future trajectory of Malaysia's palm oil sector towards greater sustainability and global competitiveness.

Keywords: MSPO certification, Sustainable supply chain management, Malaysian palm oil industry

INTRODUCTION

The dominance of palm oil in the global vegetable oil industry is a result of its versatility and high yield compared with other oil crops (Butler et al., 2009, Pye and Bhattacharya, 2012). Their widespread use extends beyond food products to cosmetics, personal care items, and industrial applications (Robert & Menon, 2017; Maretna et al., 2021; Mutsaers, 2019). Industry growth has been particularly pronounced in Southeast Asia, with Malaysia and Indonesia emerging as the world's largest producers (Murphy, 2014, 2015, 2019; Statista, 2020; Goggin and Murphy, 2018). This rapid expansion has been driven by the economic importance of crops, providing employment and income for millions of people in these regions (Intan et al., 2022, Murphy 2015; Euler et al. 2016). However, the environmental costs associated with palm oil production have become increasingly apparent, with large-scale deforestation leading to habitat destruction for numerous species, including endangered orangutans and sumatran tigers (Paterson, 2021e, Tonks et al. 2017; Cook 2018; Veloo et

al. 2015, Scriven et al. 2019). In response to these environmental concerns (Paterson et al. 2017), there has been a growing push for sustainable palm oil production (Murphy 2015; Paterson 2020a, b, 2021a, Paterson 2021a, b, c, d; Indexamundi 2021; Paterson et al. 2015, 2017). Various certification schemes such as the Roundtable on Sustainable Palm Oil (RSPO), Roundtable on Sustainable Palm Oil (RSPO), Malaysian Sustainable Palm Oil (MSPO), and Indonesian Sustainable Palm Oil (ISPO) have been established to promote responsible cultivation methods (Gunarso et al. 2013; Chase et al. 2012; Dalal and Shanmugam 2015; Tonks et al. 2017; Cook 2018). These initiatives aim to balance the economic benefits of palm oil production with environmental conservation and social responsibilities (MPOCC, 2019). Some of the key focus areas include reducing deforestation, protecting high conservation value areas, improving worker welfare, and engaging with local communities. Despite these efforts, challenges remain in implementing and enforcing sustainable practices across the entire industry, particularly among smallholder farmers who may lack the resources or knowledge to adopt more environmentally friendly methods. According to data from the United States Department of Agriculture (2022) and Statista (2020), in 2019, approximately 85% of palm oil production was concentrated in Indonesia (58%) and Malaysia (26%). In Indonesia, smallholder farmers generate 40% of palm oil without a standardised method (Shell et al., 2009). The Malaysian palm oil industry has contributed significantly to the growth of the country's agricultural sector through its contribution to Gross Domestic Product (GDP), foreign exchange, and employment. Although the growth of oil palm declined in 2020, it remained the largest contributor to the agricultural sector's value-added in GDP, at RM36.9 billion or 37.1% (DOSM, 2021). Furthermore, according to Naidu and Moorthy (2021), Malaysia is one of the largest palm oil exporters, with 5.87 million hectares of oil palm planted, accounting for 34.3% of worldwide palm oil commerce and 18.3% (17.37 million tons) of the global oil and fats industry in 2020. Consequently, the increasing demand for palm oil, a perennial crop with a production lifespan of approximately 30 years, minimal land requirements, and cost-effectiveness, raises concerns regarding the sustainability of the palm oil industry (Yap et al., 2021). This has led to heightened sustainability concerns, particularly in the European market, which mandates certified and sustainable palm oil for imports (Pacheco et al., 2017). Furthermore, there is a current trend wherein consumers are willing to pay a premium for products that demonstrate a positive environmental impact (Kusrini & Primadasa, 2018). According to the United Nations (UN), sustainability is considered one of the pillars of social, environmental, and economic development (Begum et al., 2019). Sustainable development aims not only to protect resources and the environment but also to promote social and economic growth. Since 2015, sustainability issues have been addressed, driven by the Sustainable Development Goals (SDGs), to foster a more responsible agricultural commodities supply chain that adheres to environmental norms (DeFries et al. 2017, United Nations, 2020). Initially, such standards were implemented voluntarily. However, third-party certification has increasingly become a prerequisite for access to many international markets (Aziz et al., 2021). Several organisations have advocated sustainable palm oil certification, notably the Roundtable on Sustainable Palm Oil (RSPO), which was established as an organisation independent of any national government interference (Apriani et al., 2020). The Roundtable on Sustainable Palm Oil (RSPO) certification is held by Indonesia, Malaysia, and Thailand, and these countries generally adopt RSPO certification prior to the development of sustainability certification provided by their respective governments (Ivancic & Koh, 2016). For example, Indonesia has established the Indonesian Sustainable Palm Oil (ISPO) certification. Consequently, exporters, such as Malaysia, are under increasing pressure to meet the standards of sustainable production and development in the palm oil supply chain for trading in the European market (Naidu & Moorthy 2021). Malaysian Sustainable Palm Oil (MSPO) was subsequently created as a national benchmark to track the growth of the sustainable palm oil industry (Majid et al., 2021). While the importance of sustainable certification is frequently associated with preserving palm oil quality, obtaining market access, protecting labour well-being, improving efficiency, reducing costs, and providing systematic management procedures to conserve the environment, a critical issue that remains is the extent to which sustainable certification will benefit palm oil stakeholders in the long term (Aziz et al., 2021). Thus, Kusrini and Primadasa (2018) suggest that the sustainability principle should be properly applied when it is shared by all industry participants, and that sustainable supply chain management (SSCM) is necessary. This research explored two key objectives: (1) to study the impacts of Malaysian Sustainable Palm Oil (MSPO) on sustainable supply chain management in the Malaysian palm oil industry, and (2) to investigate the effectiveness of Malaysian Sustainable Palm Oil (MSPO) on sustainable supply chain management in the Malaysian palm oil industry.

LITERATURE REVIEW

Malaysia Palm Oil Industry

Malaysia's prominence in the global palm oil industry is underscored by its position as one of the world's largest exporters of fats and oils and the second-largest producer and exporter of palm oil (Rahman, 2020). The country, along with Indonesia, dominates the global palm oil market, accounting for nearly 85% of the world's production (McCarthy, 2020; Murphy, 2014, 2015, 2019; Statista, 2020; Goggin and Murphy, 2018). This versatile oil has extensive applications in various sectors including food manufacturing, cosmetics, and chemical derivatives for detergents (Robert & Menon, 2017; Maretna et al., 2021; Mutsaers, 2019). In the competitive edible oil market, palm oil contains other vegetable oils, such as soybean, canola, sunflower oils, and animal fats (Robert & Menon, 2017). The palm oil industry plays a crucial role in Malaysia's economy, contributing significantly to foreign exchange earnings and providing a competitive edge in the global market (Mark et al., 2018). The sector's importance extends beyond economic metrics, as it supports the livelihoods of over one million people, including more than 500,000 plantation workers and their dependents (RSPO, 2020). The rapid expansion of palm oil plantations has led to it becoming the largest plantation crop in Malaysia, covering an impressive 5.865 million hectare in 2020 (MPOB, 2021). The distribution of these plantations is notably concentrated in the eastern states, with Sabah and Sarawak accounting for 53.3% (3.127 million hectares) of the total planted area, whereas Peninsular Malaysia comprises the remaining 46.7% (2.737 million hectares) (Fig.1).

OIL PALM PLANTED AREA 2020						
OIL PALM PLANTED AREA AS AT DECEMBER 2020 (HECTARES)						
STATE	MATURE (HA)	%	IMMATURE (HA)	%	TOTAL (HA)	%
JOHOR	688,291	92.9	52,537	7.1	740,828	12.6
KEDAH	80,210	89.3	9,572	10.7	89,782	1.5
KELANTAN	131,768	78.6	35,831	21.4	167,599	2.9
MELAKA	51,672	91.7	4,689	8.3	56,361	1.0
NEGERI SEMBILAN	173,490	91.1	16,972	8.9	190,462	3.2
PAHANG	702,163	89.8	80,084	10.2	782,247	13.3
PERAK	352,557	90.0	39,211	10.0	391,768	6.7
PERLIS	689	99.3	5	0.7	694	0.0
PULAU PINANG	12,540	97.7	289	2.3	12,829	0.2
SELANGOR	113,911	90.0	12,614	10.0	126,525	2.2
TERENGGANU	148,244	83.0	30,384	17.0	178,628	3.0
PENINSULAR MALAYSIA	2,455,535	89.7	282,188	10.3	2,737,723	46.7
SABAH	1,344,608	87.1	198,446	12.9	1,543,054	26.3
SARAWAK	1,431,600	90.3	152,920	9.7	1,584,520	27.0
SABAH & SARAWAK	2,776,208	88.8	351,366	11.2	3,127,574	53.3
MALAYSIA	5,231,743	89.2	633,554	10.8	5,865,297	100.0

Fig. 1: Oil Palm Planted Area by State as at December 2020 in Malaysia

Source: Malaysian Palm Oil Board (MPOB)

The oil palm industry in Malaysia is predominantly driven by private estates, accounting for 72.2% of the total planted area, equivalent to 4.237 million hectares. This category encompasses a diverse range of entities, including FGV (an affiliate of the Federal Land Development Authority (FELDA)), plantation sectors of the Federal Land Consolidation and Rehabilitation Authority (FELCRA), and Rubber Industry Smallholders Development Authority (RISDA). These large-scale operations play a crucial role in shaping the country's palm oil production landscape and contribute significantly to Malaysia's position as a major global producer of palm oil. The remaining portion of Malaysia's oil palm plantation area is divided into independent and organised smallholders. Independent smallholders occupy the second largest share, with 0.956 million hectares, or 16.3% of the total planted area. These individual farmers operate on a smaller scale but collectively form an essential component of the industry. Organised smallholders, on the other hand, account for 0.672 million hectares or 11.5% of the planted area, as shown in Figure 2.1. This group likely includes smallholders who are part of cooperative schemes or receive support from government agencies. The distribution of planted areas among these three categories - private estates, independent smallholders, and organised smallholders - reflects the complex structure of Malaysia's oil palm industry, which combines large-scale commercial operations with smaller individual farming efforts.

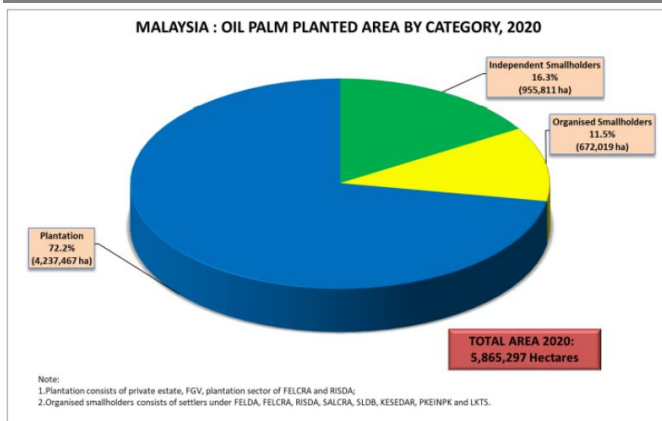


Figure 2: Oil Palm Planted Area According to Category in 2020 of Malaysia

Source: Malaysian Palm Oil Board (MPOB)

The oil palm industry has emerged as a crucial component of Malaysia's economic landscape, with far-reaching impacts on its socioeconomic development. Additionally, Feintrenie et al. (2010), Basiron (2007), and Zen et al. (2005) highlight the significant role of palm oil production in driving economic growth and improving livelihoods. As a major contributor to the Malaysian economy and a key driver of agro-industry, the palm oil sector has been instrumental in shaping the country's agricultural and industrial policies (Nambiappan et al., 2018). The Malaysian Palm Oil Industry (MPOI), under the guidance of the Malaysian Palm Oil Board (MPOB), is responsible for developing and implementing comprehensive policies, guidelines, and procedures to ensure the sustainable growth and management of the sector (Alam et al., 2015).

The success of Malaysia's oil palm industry has garnered international recognition, particularly for its role in poverty alleviation and promotion of equitable income distribution (Ayompe et al., 2021). This achievement positioned Malaysia as a model for other developing countries seeking to leverage agricultural resources for economic development. The industry's impact extends beyond mere economic indicators, encompassing social development, rural infrastructure improvement, and the creation of employment opportunities across various skill levels. As a result, the oil palm sector has become an integral part of Malaysia's strategy for sustainable development, balancing economic growth with social progress and environmental stewardship.

Sustainable Palm Oil Standard

The significant economic contributions of the palm oil industry have led to increased focus on sustainable cultivation practices to mitigate environmental impacts while maintaining productivity. To address these concerns, several certification standards have been established, such as the Roundtable on Sustainable Palm Oil (RSPO), Malaysian Sustainable Palm Oil (MSPO), and Indonesian Sustainable Palm Oil (ISPO), which have been widely adopted in the ASEAN region (Majid et al., 2021, Gunarso et al. 2013; Chase et al. 2012; Dalal and Shanmugam 2015; Tonks et al. 2017; Cook 2018). These certifications aim to ensure responsible palm oil production by setting standards which stakeholders must adhere to throughout the supply chain. Implementation of these certification schemes involves a comprehensive approach to sustainability. As noted by Majid et al. (2021), citing Brandi et al. (2013) and Hutabarat et al. (2018), these standards encompass principles, criteria, and indicators designed to promote sustainable production while minimising negative social and environmental consequences. The key aspects of these certifications include establishment of traceability systems, promotion of best agricultural practices, improved management of natural resources, and environmental stewardship. Compliance with existing regulations is emphasised to ensure a holistic approach to sustainability in the palm oil industry (Rahmat & Yasin, 2021). By adhering to these standards, the industry aims to balance its economic growth with ecological preservation and social responsibility.

Malaysian Sustainable Palm Oil (MSPO)

Malaysian Sustainable Palm Oil (MSPO) certification, introduced in 2013 and made mandatory by the end of 2019, is a comprehensive framework designed to promote sustainable palm oil production in Malaysia (Aziz et

al., 2021). The MS 2530:2013 series consists of four parts, each addressing different aspects of the palm oil industry, including general principles, guidelines for independent smallholders, plantations, organised smallholders, and palm oil mills. This certification scheme aims to establish internationally recognised standards for sustainable palm oil management, ensuring good business practices among producers and growers, and improving market access. MSPO certification encompasses various aspects of palm oil production, including management and supply chain certifications. It sets forth criteria for certification, outlines the requirements of certification agencies, and establishes processes for certification audits. Additionally, the MSPO framework addresses supply chain traceability, provides guidelines for the audit and peer evaluation of audit reports, and includes procedures for issuing permits to use the MSPO label. Certification also incorporates mechanisms for handling complaints, ensuring a comprehensive approach to sustainable palm oil production (Kumaran, 2019). By implementing these standards, the MSPO certification seeks to balance economic development with environmental conservation and social responsibility in the Malaysian palm oil industry (Kannan et al., 2021; Karudan and Choy, 2020; Labansing et al., 2021; Mansor et al., 2019; MPOCC, 2017, 2018). The Malaysian Sustainable Palm Oil (MSPO) certification scheme is a comprehensive framework designed to ensure sustainable practices for palm oil production in Malaysia. This scheme encompasses a wide range of environmental and social standards that local palm oil producers must adhere to. A key requirement is the complete prohibition of chemical pesticides, which demonstrates commitment to environmentally friendly agricultural practices. Additionally, the MSPO scheme restricts large-scale land acquisition by foreign companies working in collaboration with the Malaysian government for palm oil production (Kamaruddin 2020). This measure aims to protect local interests and prevent the potential exploitation of land resources. The MSPO standard is based on three fundamental pillars of sustainability: economic viability, social acceptability, and environmental soundness (Malaysian Palm Oil Certification Council 2019). These pillars are reflected in seven principles that form the core of the MSPO management system framework (Roundtable on Sustainable Palm Oil, 2018Kumaran, 2019), as shown in Figure 3 . These principles cover various aspects of palm oil production including management practices, social equity, environmental protection, and economic progress. To obtain MSPO certification, entities must meet specific criteria and indicators associated with each principle assessed by Certification Bodies (CB) during the audit process (Kamaruddin, 2020). Once certified, the MSPO certificate is valid for five years, with annual surveillance audits conducted to ensure ongoing compliance (Kumaran & Singh, 2016). This rigorous certification process and continuous monitoring demonstrate Malaysia's commitment to promoting sustainable practices in the palm oil industry while balancing economic, social, and environmental considerations.



Figure 3: Seven Principle of Malaysian Sustainable Palm Oil (MSPO) Standard

Source: Vogelgesang et al., (2018)

Impact of Implementing Malaysian Sustainable Palm Oil (MSPO)

The Malaysian Sustainable Palm Oil (MSPO) certification scheme has emerged as a significant factor in the palm oil industry with complex implications for environmental sustainability and economic development. While Saieed (2017) suggests that MSPO may be used to downplay the environmental impact of palm oil production, the scheme's transition from voluntary to mandatory status in 2020 indicates a growing recognition of the importance of sustainability in the sector (Shahida et al., 2019). This shift reflects the Malaysian government's efforts to balance economic interests with environmental and social responsibilities, potentially improving the industry's reputation and practices. However, the impact of the MSPO certification on the Malaysian palm oil industry remains debatable and requires further investigation. The lack of extensive empirical studies specifically focusing on MSPO's effects highlights a critical gap in our understanding of its effectiveness. As the certification scheme continues to evolve, it is likely to bring about positive changes, such as improved sustainability practices, increased market access, and potential challenges, including implementation costs and the need for industry-wide adaptation. Future research should aim to comprehensively assess the MSPO's impact on environmental conservation, social welfare, and economic performance within the Malaysian palm oil sector.

Positive Impact of Implementing Malaysian Sustainable Palm Oil (MSPO) Certification

The implementation of Malaysian Sustainable Palm Oil (MSPO) certification provides numerous social, environmental, and economic benefits to the palm oil industry and its stakeholders. Socially, the certification process exposes the industry to quality management principles, fostering the adoption of new technologies and improved systems and creating job opportunities in local communities (Aziz et al., 2021; Senawi et al., 2019). This not only enhances the country's income, but also contributes to skill development among smallholder producers (Brandi, 2017). Studies have shown that sustainability certification has led to increased awareness among smallholder farmers regarding their children's health and education, ultimately raising their overall standards of living in rural communities (Begum et al., 2018; Senawi et al., 2019). Environmentally, MSPO certification has a significant positive impact on the ecological footprint of the palm oil industry. The implementation of certification has led to the wider adoption of organic fertilisers by smallholder farmers (Furumo et al., 2020) and encouraged more environmentally friendly agricultural practices. These include increased awareness of tree diversity, protection of watershed activities, and enhanced reforestation processes (Aziz et al., 2021). The industry has shown a greater tendency towards critical ecosystem conservation measures as a result of sustainable certification (Brandi, 2016). Economically, while initial concerns about the cost of implementing sustainable cultivation practices exist (Leonard, 2019), their benefits have proven substantial. Stakeholders who acquire sustainability certifications enjoy enhanced market access, marketing advantages and improved global competitiveness (Van et al. 2020; Apriani et al. 2020). Notably, the most significant economic benefit of MSPO certification is an increase in sales prices (Begum et al., 2018), with smallholder farmers experiencing greater productivity and yield (Yusof et al., year not provided).

Negative Impact of Implementing Malaysian Sustainable Palm Oil (MSPO) Certification

The implementation of the Malaysian Sustainable Palm Oil (MSPO) standard presents significant challenges for smallholders in the palm oil industry despite its relative ease of adoption for large plantation companies. Smallholders face numerous obstacles, including limited human resources, increased paperwork requirements, and time constraints, which hinder their ability to adopt quality assurance systems effectively (Liu et al., 2010; Benahem, 2019). Financial burdens pose a substantial barrier, with high implementation costs, high certification fees, and a lack of financial resources, making it difficult for smallholders to obtain MSPO certifications (Qijun et al., 2016). The certification cost, estimated at around RM3,000 per hectare, is considered "unreasonable" by many smallholders, especially given the limited foreign recognition of the standard (Kok, 2019; Trade, 2019; Ganeshwaran, 2017). Furthermore, the long-term sustainability of government assistance for MSPO certifications remains questionable (Kannan et al. 2020). Despite the growing global market share of palm oil, certified palm oil has only a modest premium price (Byerlee and Rueda 2015). This situation is exacerbated for smallholders who, even after obtaining MSPO certification, often receive no premium price for their palm fruits because of their reliance on intermediaries and collecting centres as well as their need to maintain equitable relationships with mills. These challenges highlight the need for a more comprehensive approach to support smallholders in achieving and benefiting from the MSPO certification, ensuring that the implementation of the

standard does not disproportionately burden this crucial segment of the palm oil industry.

Effectiveness of Malaysian Sustainable Palm Oil (MSPO) in Malaysia Palm Oil Industry

The efficacy of the Malaysian Sustainable Palm Oil (MSPO) standard in its current implementation phase is challenging to ascertain owing to the paucity of independent scientific research, as MSPO is relatively nascent compared to more established international sustainable certification standards, such as the Roundtable on Sustainable Palm Oil (RSPO) (Ahmed, 2020). Malaysia's sustainable palm oil (MSPO) plays a pivotal role in Malaysia's national biodiversity conservation strategy by ensuring the preservation of High Biodiversity Value areas within the sustainable palm oil industry. (2018), Roundtable on Sustainable Palm Oil (RSPO) implements methods to enhance or maintain biodiversity in High Conservation Value (HCV) areas. In their research, Morgan et al. (2018) referred to Santika et al. (2017), noting that the presence and density of orangutans with the implementation of Roundtable on Sustainable Palm Oil (RSPO) are greater than in non-RSPO areas. Consequently, it appears that Malaysian Sustainable Palm Oil (MSPO) could be effective for biodiversity conservation in Malaysia's palm oil industry. This assertion is supported by the fact that, according to the Malaysian Sustainable Palm Oil (MSPO) Principle 5, the aspects of environment, biodiversity, natural resources, and ecosystem services are emphasised in the Malaysian Sustainable Palm Oil (MSPO) Principle 5 (Senawi et al., 2019). A potential indication of the effectiveness of the MSPO can be found in the assessment conducted by the WWF-Malaysia. Malaysian Sustainable Palm Oil (MSPO) was evaluated using the Certification Analysis Tool (CAT), and the results indicated that Malaysian Sustainable Palm Oil (MSPO) scored highly in community relations, biodiversity, and legality standard sections (Rahmat et al., 2021). The effectiveness of Malaysian Sustainable Palm Oil (MSPO) can be further demonstrated by the transformation of smallholders. Based on research conducted by Senawi et al. (2019), the high effectiveness of Malaysian Sustainable Palm Oil (MSPO) enhanced the productivity of oil palm fresh fruit bunches (FFB) when smallholders adhered to principle 6 mentioned in Malaysian Sustainable Palm Oil (MSPO). In Malaysian Sustainable Palm Oil (MSPO), principle 6 pertains to the necessity of smallholders to practice and implement best practices or good agricultural practices (GAP) with the aim of obtaining certification for Malaysian Sustainable Palm Oil (MSPO). Smallholders who make significant efforts to manage and maintain their farms by implementing good agricultural practices (GAP) ultimately contribute to the sustainability pillar of economics (Senawi et al., 2019). According to MPOB (2018), approximately 1,307 smallholders successfully generated more than 30 t ha⁻¹ yr⁻¹ FFB. The adoption of good agricultural practices (GAP) leads to improved estate quality and better yields that aid in economic development. This demonstrates the effectiveness of Malaysian Sustainable Palm Oil (MSPO) in contributing to the sustainable supply chain in Malaysia's palm oil industry. Consequently, by the end of 2020, Malaysia aimed to secure 100% palm oil certification; however, only 95% of palm oil plantations were certified as Malaysian Sustainable Palm Oil (MSPO) as of 28 February 2022 (MPOB, 2022). Moreover, mandatory implementation is also due to the perceived lack of effectiveness of soft voluntary initiatives such as voluntary private certification (CSPO, 2021). Hence, a series of internal audits of relevant indicators is being conducted to ensure the effectiveness of Malaysian Sustainable Palm Oil (MSPO) certification (Intertek, 2019).

RESEARCH METHODOLOGY

Given the exploratory nature of the research, a qualitative approach has been chosen to allow for in-depth insights into (1) the impacts of Malaysian Sustainable Palm Oil (MSPO) on sustainable supply chain management in the Malaysian palm oil industry; (2) the effectiveness of Malaysian Sustainable Palm Oil (MSPO) on sustainable supply chain management in the Malaysian palm oil industry, and a case study approach has been adopted to gain detailed perspectives on the MSPO's influence in the Malaysian palm oil industry, enabling an in-depth exploration of the experiences and insights of individuals actively involved in MSPO-certified organisations. This study specifically focuses on individuals working within companies and smallholdings across Melaka and Johor, two key states in Malaysia's palm oil production landscape. The sample was purposively selected to ensure that the informants had relevant experience with MSPO certification and its impact on sustainable supply chain management. The following criteria guided the informant selection: (1) the informant must be employed by companies or smallholders who have maintained the MSPO certification for at least one year, (2) have a minimum of two years of experience within their respective organisations, (3) demonstrate a thorough understanding of MSPO implementation, (4) be affiliated with or possess insights from the MSPO certification body, (5) be knowledgeable about the MSPO's impact on sustainable supply chain practices, and (6) have been

fully or partially involved in the process of obtaining the MSPO certification. Based on these criteria, a sample size of five participants was determined to be appropriate for this qualitative exploration, allowing for a balance between depth and manageability when conducting semi-structured interviews. Semi-structured interviews were selected as the primary data collection method to facilitate flexible yet focused discussions with informants. The interviews were designed to elicit rich qualitative data on informants' experiences, perceptions, and insights regarding MSPO certification and its influence on sustainable supply chain management practices. The interview sessions were conducted in person or virtually, depending on participant availability, and were held in Melaka and Johor, where MSPO-certified organisations and smallholders were prevalent. Thematic analysis was used to analyse the qualitative data collected through the interviews. This method allows the identification of recurring themes, patterns, and insights related to the benefits and challenges of MSPO certification for supply chain sustainability. The analysis process included data familiarisation, coding, theme identification, and interpretation, ensuring a comprehensive understanding of how MSPO certification influences sustainable practices in Malaysia's palm oil industry.

FINDING AND DISCUSSION

The Impact of Malaysian Sustainable Palm Oil (MSPO) Towards Sustainable Supply Chain Management in Malaysia Palm Oil Industry

Reasons of Implementation of Malaysian Sustainable Palm Oil (MSPO)

The primary motivation for smallholders to pursue the Malaysian Sustainable Palm Oil (MSPO) standard stemmed from the mandatory certification requirement introduced to the palm oil industry in 2019. Subsequently, the palm oil miller approached the smallholder and offered assistance in applying for the Malaysian Sustainable Palm Oil (MSPO) certificate at no cost to smallholders who sold oil palms to them. Although the Malaysian Sustainable Palm Oil (MSPO) certificate typically incurs a minimum fee, it is not charged to smallholders. The smallholder opted to apply for the certificate after the palm oil miller introduced and elucidated the benefits of the Malaysian Sustainable Palm Oil (MSPO) certificate.

Smallholder 1 from Serom commented *"I just have only a palm oil plantation area of around 1.3 hectares big and a few part-time workers will come to my palm oil field to harvest and sell to palm oil miller. Therefore, I obtained the MSPO certification because the palm oil miller informed me that the government had mandated it in 2019 for the entire industry, including smallholders. He said he could help all smallholders who sell oil palm to him to apply for the MSPO certificate for free and would not cost us money. He explained briefly to me the benefits, and so I decided to apply."*

Echoing smallholders' sentiments, executives at United Malacca Berhad also recognised the importance of MSPO certification. According to the Environment, Health, Safety (EHS) and sustainability executives that the Ministry of Plantation Industries and Commodities announced in 2017 that Malaysian Sustainable Palm Oil (MSPO) would be mandatory from December 2019 for all palm cultivators and palm oil processors. Consequently, the United Malacca Berhad management decided to pursue the adoption of sustainable Malaysian palm oil (MSPO) to ensure compliance with the government's mandate. The informants further stated that United Malacca Berhad had complied with the Code of Good Agricultural Practice for oil palm estates and smallholders prior to the implementation of Malaysian Sustainable Palm Oil (MSPO). However, this code primarily focused on improving agricultural practices with limited emphasis on environmental management. Furthermore, the code does not address the social aspects.

From the viewpoint of researchers, the implementation of the Malaysian Sustainable Palm Oil (MSPO) standard had a significant impact on both smallholders and larger palm oil companies in Malaysia. The government's announcement of mandatory MSPO certification in December 2019 was a key driver of adoption across the industry. For smallholders, support from palm oil millers in obtaining certification at no cost was crucial in their decision to pursue MSPO. This assistance helped overcome potential financial barriers for small-scale farmers. For larger entities, such as United Malacca Berhad, obtaining MSPO certification meant going beyond their existing compliance with the Code of Good Agricultural Practice, especially in terms of addressing environmental and social concerns in palm oil production. The shift towards MSPO underscores Malaysia's

dedication to sustainable palm oil practices and its endeavour to elevate industry standards for all producers, from smallholders to extensive plantations.

Transition from Conventional Business Practices to the Adoption of Malaysian Sustainable Palm Oil

Malaysia's sustainable palm oil (MSPO) certification has brought about significant changes to the palm oil industry, particularly in terms of sustainable supply chain practices. According to an MSPO auditor from Platinum Shauffmantz Veritaz Sdn Bhd, the transition from conventional business practices to MSPO adoption has resulted in numerous improvements. These include better-organised management systems, enhanced training programs, improved facilities, and more efficient operational systems. He emphasised that the MSPO was particularly beneficial for estate players, ensuring smoother operations and management processes.

"MSPO certification addresses a wide range of issues within the industry, not only encompassing estate management but also emphasising worker welfare, particularly for foreign workers. The compulsory nature of MSPO compliance has led to significant changes in the industry's approach to labour practices. Notably, the implementation of the MSPO has effectively addressed and halted the issue of forced labour, as all estates are now required to engage properly with foreign workers. This transformation highlights the positive impact of the MSPO on the palm oil industry's sustainability and ethical practices, demonstrating a shift towards more responsible and transparent operations throughout the supply chain.", as claimed by MSPO auditor from Platinum Shauffmantz Veritaz Sdn Bhd.

Moreover, the adoption of Malaysian Sustainable Palm Oil (MSPO) standards has significantly improved operations and facilities for smallholder palm oil producers. Prior to the MSPO, smallholders often struggled with disorganised practices and inconsistent quality control. However, the introduction of these standards led to a more structured approach to palm oil production, benefiting both smallholders and the entire industry. By enforcing strict quality control and sustainable farming practices, MSPO standards have led to the production of higher-quality palm oil, meeting the stringent requirements of palm oil millers, thereby streamlining the trading process and potentially increasing the value of smallholder production.

To maintain compliance with MSPO standards, smallholders are now required to implement and adhere to more rigorous operational practices. This includes better record-keeping, improved agricultural techniques, and enhanced environmental management. Regular audits by certified auditors ensure that smallholders meet these standards, thus creating a culture of continuous improvement and accountability. Although this may present challenges for some smallholders in terms of adapting to new practices and investing in improvements, the long-term benefits of MSPO certification, such as increased market access and potentially higher prices for their produce, can outweigh the initial hurdles. The overall result is a sustainable and efficient palm oil industry that benefits smallholders, millers, and consumers.

"Before MSPO certification, I must honestly say that our operations were quite messy and unorganised. Thus, after the implementation of the MSPO, it actually improved the operation and facilities. Additionally, the purchasing process has improved, enabling us to meet the standards more consistently. In addition, we always need to maintain the MSPO standard because it is often audited by auditors, as mentioned by Smallholder 2, Api Api Jeram Batu.

Furthermore, the implementation of Malaysian Sustainable Palm Oil (MSPO) standards has significantly transformed United Malacca Berhad's operational practices, particularly in resource management and sustainability efforts. The company has adopted a more comprehensive approach to managing energy, water, and air resources, aligning its operations with MSPO guidelines. This shift demonstrates United Malacca Berhad's commitment to sustainable practices and environmental stewardship within the palm oil industry.

The Manager of Environment, Health, Safety and Sustainability Executive from United Malacca Berhad remarked that *"I think it is the way we do our operations. We must manage our resources well, including energy, water, and air some sort like that. We always take a commitment to sustainability. With the MSPO, our Sales and Purchasing department ensures that the optimum prices for goods and services are obtained in a fair and transparent manner. We have implemented a series of initiatives to maintain the supply chain, such as identifying*

qualified suppliers, conducting background checks, and assessing supplier performance. Therefore, MSPO has significantly improved and transparentized our operations”

In addition, MSPO implementation has led to enhanced transparency and efficiency in the supply chain management of United Malacca Berhad. The Sales and Purchasing department has intensified its efforts to ensure the fair and transparent pricing of goods and services. The company has also implemented rigorous supplier management processes, including identification of qualified suppliers, thorough background checks, and regular performance assessments. These initiatives have not only improved the company's operational efficiency, but have also contributed to a more sustainable and responsible supply chain. As a result of adhering to MSPO standards, United Malacca Berhad has achieved greater transparency in its operations and improved its overall business practices, positioning itself as a more sustainable and responsible player in the palm oil industry.

From the researcher's perspective, the implementation of Malaysian Sustainable Palm Oil (MSPO) certification has brought about significant positive changes across the Malaysian palm oil industry. From large estate to smallholders, the MSPO has driven improvements in management systems, operational efficiency, and sustainability practices. Certification has addressed critical issues such as forced labour, enhanced worker welfare, and improved environmental stewardship. For companies such as the United Malacca Berhad, the MSPO has led to better resource management and increased transparency in supply chain operations. Smallholders have also benefited from more structured approaches to production, resulting in higher-quality output and potentially increased market value. Although challenges remain, particularly for small producers adapting to new standards, the overall impact of MSPO certification appears to be a more sustainable, ethical, and efficient palm oil industry. This transformation not only benefits individual stakeholders but also contributes to the broader goals of environmental conservation and responsible business practices in the global palm oil sector.

Positive Impact of Malaysian Sustainable Palm Oil (MSPO)

United Malacca Berhad has proactively promoted sustainability and compliance within its palm oil supply chain. Through three meetings with dealers and smallholders who supply fresh fruit bunches to one of their palm oil mills, the company has taken significant steps to engage key stakeholders. The inclusion of the Malaysia Palm Oil Board (MPOB) not only enhances the credibility of these discussions but also sets the stage for the wider adoption of MSPO certification, directly benefiting smallholders through improved practices and support from palm oil millers. During these gatherings, the organisation emphasised the importance of sustainability commitments to its suppliers, effectively utilising this platform to promote Malaysian Sustainable Palm Oil (MSPO) standards. This initiative serves a dual purpose: it raises awareness of sustainable practices among stakeholders and enables United Malacca Berhad to screen and manage its suppliers, including new ones, ensuring alignment with sustainability goals.

Building upon the foundation laid during these stakeholder meetings, United Malacca Berhad further solidified its commitment through the implementation of regular site visits. Senior management and various teams from the company conduct frequent inspections of their estates and mills to ensure that the operations consistently meet the required standards. These visits serve as a crucial mechanism for maintaining control over operations, identifying areas for improvement, and promptly implementing the necessary changes. The company posits that this continuous monitoring and consistent tracking of operations are instrumental in enhancing overall efficiency. By maintaining a constant presence and oversight, United Malacca Berhad can address issues expeditiously, implement best practices, and drive continuous improvement in their palm oil production processes, ultimately contributing to more sustainable and efficient operations.

The Manager of Environment, Health, Safety, and Sustainability at United Malacca Berhad commented that *“In this year, we organised around three meetings with our dealers and smallholders supplying fresh fruit bunches to the Meridian palm oil mill.. The Malaysian Palm Oil Board also attended this meeting. These meetings allow us to directly communicate our commitment to sustainability and the MSPO standards. Thus, I can say that it promoted MSPO certification towards smallholders. In addition, we are better able to screen and manage them, as well as new suppliers. Furthermore, MSPO standards require our top management and various teams to conduct regular visits to our estates and mills to ensure compliance and foster*

continuous improvement. These regular visits helped us maintain control and ensure sustained or improved performance.”

The implementation of Malaysian Sustainable Palm Oil (MSPO) certification has significantly improved the overall operations of smallholder palm oil producers. This positive transformation extends beyond mere compliance as it has fostered a more sustainable and efficient approach to palm oil production. Palm oil millers' proactive assistance in helping smallholders obtain MSPO certification, even without full engagement, demonstrates a commitment to industry-wide improvement and sustainability practices. This collaborative effort has not only enhanced smallholders' operational standards, but also strengthened the relationship between millers and producers in the palm oil supply chain.

As a result of the MSPO certification, smallholders have benefited from improved facilities provided by palm oil millers, which have streamlined and optimised plantation operations. These enhancements may include better harvesting equipment, more efficient transportation systems, or improved storage facilities, all of which contribute to increased productivity and reduced environmental impact. Furthermore, adherence to government-mandated minimum wage standards for foreign workers in plantations ensures fair labour practices and helps maintain a stable workforce. This commitment to ethical employment not only supports the smooth running of operations but also aligns with global sustainability standards, potentially improving the international marketability and reputation of Malaysian palm oil.

Smallholders' Perspective on MSPO Benefits: A testimony from a smallholder in Api Api Jeram Batu underscores the tangible improvements experienced post-MSPO certification, including enhanced operational efficiency and compliance with fair labour standards.

“Everything has become better than it was before the implementation of the MSPO certification. Even though this MSPO certificate also helps us to apply for it, we did not have to pay any money. I can say that after this MSPO, the palm oil miller built up some facilities in my plantation area so that my operation is faster and easier. Although my workers are foreigners and were hired on a part-time basis, now with the MSPO, they must be paid according to the minimum wage standards.”

The implementation of Malaysian Sustainable Palm Oil (MSPO) certification has shown promising results in the palm oil industry, particularly in terms of foreign worker management and overall productivity. Prior to the MSPO, the industry faced challenges related to foreign labour, including high turnover rates and operational disruptions. These issues often lead to inefficiencies and reduced productivity of palm oil production.

With the introduction of MSPO standards, there has been notable improvement in the management of foreign workers within the industry. This enhanced management approach has resulted in fewer problems associated with foreign labour, leading to more stable and effective operations. By addressing issues such as working conditions, fair treatment, and worker welfare, MSPO certification contributes to a more satisfied and productive workforce. Consequently, this has positively impacted the industry's overall productivity, as smoother operations and reduced labor-related disruptions allow for more consistent and efficient palm oil production processes. *“If they manage their foreign workers well, they can increase productivity. Thus, there will be fewer problems with engaging with foreign workers. I can say that the operation was smooth. Before this, maybe hiccups, the turnover of foreign workers may have increased. Now, I believe is already smooth.”*

(Malaysian Sustainable Palm Oil Auditor, Platinum Shauffmantz Sdn Bhd)

In conclusion, the implementation of Malaysian Sustainable Palm Oil (MSPO) certification has demonstrated significant positive impacts on Malaysia's palm oil industry. United Malacca Berhad's proactive approach, including stakeholder engagement and regular site visits, exemplifies the industry's commitment to sustainability and compliance. Certification not only improved operational standards for smallholders, but also strengthened relationships within the supply chain. Enhanced facilities, fair labour practices, and better foreign worker management have led to increased productivity and operational efficiency. These improvements align with the global sustainability standards, potentially boosting the reputation of Malaysian palm oil in international markets. As the industry continues to adapt and refine its practices under MSPO guidelines, it is poised to achieve

greater sustainability, efficiency, and competitiveness in the global palm oil sector.

Negative Impact of Malaysian Sustainable Palm Oil (MSPO)

Malaysian Sustainable Palm Oil (MSPO) certification was established to enhance sustainability in the palm oil industry, mandating compliance with environmental, social, and governance standards. The overarching goal of the MSPO is to balance environmental sustainability with the economic viability of stakeholders, positioning Malaysian palm oil as a credible product in the global market.

To support this transition, the certification scheme employed a tiered-fee structure. Independent smallholders benefit from the full financial support provided by the Malaysian Palm Oil Board (MPOB), which allows them to focus on compliance without financial strain. For estates and organised smallholders, initial government subsidies are offered in the first year, after which they bear the costs of certification themselves. The mechanisms of the scheme are designed to alleviate financial pressures while promoting the widespread adoption of sustainable practices.

Impacts on Smallholders

The MSPO certification scheme has had mixed effects on smallholder farmers. While the scheme promotes sustainable practices and operational improvements, it also results in increased costs, primarily because of the need to adopt environmentally friendly practices, such as the use of organic fertilisers. These transitions initially place a financial burden on smallholders, who must invest in reorganising their operations to meet certification standards.

Despite these challenges, many smallholders acknowledge that the costs are largely one-time investments that lead to long-term benefits. Compliance with MSPO standards enhances operational efficiency, protects the environment, and opens up new market opportunities. Over time, the shift towards sustainability has the potential to boost the reputation of Malaysian palm oil globally, offering significant advantages for smallholders.

“The operation of MSPO certification has indeed increased my operational costs, as compliance with MSPO standards, while making our operations more organised, also leads to higher expenses. For example, we used an organic fertiliser instead of a chemical fertiliser. Certainly, organic fertilisers are priced higher than chemical fertilisers. Therefore, when you want to change your operation, you must also allocate some money to it. But, if I think back, it is actually not a big matter to me, because the cost is only needed to be paid once, and our operation is getting more effective.” as illustrated by Smallholder 1 and Serom, respectively.

Impacts on Estates

For estates, the MSPO certification presents both opportunities and challenges. The fee structure requires estates to bear annual certification costs after the first year, when government subsidies end. While these fees are minimal and manageable, the certification process introduces operational changes that must be navigated.

Estates benefit from improved market access and potentially higher prices of certified sustainable palm oil. However, the financial benefits remain limited by the lack of significant economic incentives, such as premium pricing. This limitation, combined with the need to adapt operational processes, makes it challenging for estates to justify certification costs in the short term. Nevertheless, the long-term gains in sustainability and market reputation may justify these investments.

“Actually, there is a minimum fee. Estates or organised independent smallholders must pay on a yearly basis. However, for independent smallholders, all fees are paid by the MPOB. They are funded by the MPOB. Therefore, they only follow all the requirements stated in the law and MSPO. For estates, fees are payable annually; however, the government covers the first year’s fees as an incentive. However, in the subsequent year, they needed to pay on their own, but still with minimum fees. It is not burden them actually, because profit...I can say is much better after they follow MSPO standard requirement.”, as indicated by Malaysian Sustainable Palm Oil Auditor, Platinum Shauffmantz Sdn Bhd.

Impacts on Organizations

MSPO certification has brought both benefits and challenges to organisations, such as the United Malacca Berhad. Although certification costs are considered affordable, there are no premium prices or immediate economic rewards for MSPO-certified products. The absence of direct financial incentives can make it difficult for organisations to justify investments in the certification process.

The primary challenge for organisations is the increased administrative burden associated with the MSPO. Certification requires extensive documentation and compliance efforts, significantly increasing workloads for employees in departments, such as the Environment, Health, Safety, and Sustainability. This shift may divert resources from other areas of operation, thereby posing short-term challenges. Despite these issues, the adoption of sustainable practices aligns with global trends and potentially enhances long-term competitiveness and reputation. The Environment, Health, Safety and Sustainability Executive from United Malacca Berhad responded as follows:

“Although the MSPO scheme is not free, the associated fees for maintaining certification within the organisation are reasonable. But I can say, off record, there is no premium price for MSPO-certified products nor any additional benefits apart from what stated in that document. However, more paperwork needed to be done for this MSPO and it is actually increasing our workload.”

From the point of view of researchers, the implementation of MSPO has had varied impacts on smallholders, estates, and organisations. Smallholders face initial financial burdens but benefit from improved operational efficiency and market opportunities in the long term. Estates encounter manageable certification costs but grapples with the lack of direct economic incentives. Meanwhile, organisations experience increased administrative demands yet align themselves with global sustainability standards that may yield reputational benefits over time.

These outcomes underscore the dual nature of the MSPO's impact: while it introduces short-term challenges, the long-term benefits of sustainability, efficiency, and global market credibility are significant. Continuous evaluation and adaptation of the MSPO framework are essential to ensure that it effectively balances environmental sustainability with the economic viability of all stakeholders in Malaysia's palm oil sector.

The Effectiveness of Malaysian Sustainable Palm Oil (MSPO) on Sustainable Supply Chain Management in Malaysia Palm Oil Industry

This section aims to investigate the effectiveness of Malaysian Sustainable Palm Oil (MSPO) on sustainable supply chain management in the Malaysian Palm Oil Industry.

Comprehensibility of Sustainable Agricultural Practices

The Malaysian Sustainable Palm Oil (MSPO) scheme has significantly improved the Malaysian palm oil industry. According to the MSPO auditor's observations, industry participants are not merely blindly following the guidelines but are actively engaging with and understanding the importance of compliance. The scheme introduced proper standard operating procedures (SOPs) that were previously lacking, particularly for smallholders. These SOPs cover various aspects of palm oil production, including harvesting techniques, which have led to increased yields and improved farm agronomic practices (FAP). The implementation of the MSPO has also resulted in better worker training, enabling the adoption of new technologies in harvesting processes.

The benefits of MSPO compliance extend beyond the operational improvements. The industry's adherence to the scheme's procedures has led to greater stability and smoother operations within organisations. Furthermore, compliance ensures that industry practices align with the relevant laws and legislation. Building on the operational improvements brought about by the MSPO, the Malaysian Palm Oil Certification Council (MPOCC), the scheme's owner, has played a crucial role in its promotion, utilising social media and roadshows effectively. This has fostered a sense of mutual support within the industry, with organisations recognising the market relevance of MSPO and working together to implement sustainability practices in a positive manner. As a result,

the MSPO scheme is not perceived as a mandatory burden but rather as a valuable framework that enhances the industry's overall performance and sustainability.

To illustrate the practical impact of the MSPO, Malaysian Sustainable Palm Oil Auditor, from Platinum Shauffmantz Sdn Bhd shared his experiences:

“During my observations as an auditor at a client's premises, I believe that they follow the MSPO guidelines conscientiously, not blindly. When they comply, they stabilise their organisation and operate smoothly. During the implementation of the MSPO scheme, we obtained appropriate SOPs. Therefore, when they have proper SOPs for harvesting, they can increase their yield, and they can tackle their downtime for workers to cut off the FAP and increase their yield after the implementation of MSPO. All of their activities need to adhere to established procedures, as well as relevant laws and legislation. Therefore, all MSPO schemes are beneficial. Therefore, I believe that it is very good for them to apply MSPO to their daily operations. MPOCC is a scheme owner. MPOCC, together with other government agencies, promotes MSPO very well on social media, as well as their roadshow. I believe everybody know that MSPO is relevant in the market and then everybody is support each other and then they make sure all the organization related to the sustainable implement MSPO in very positive way”,

Additionally, the implementation of the Malaysian Sustainable Palm Oil (MSPO) certification scheme has had a significant impact on the Malaysian palm oil industry, particularly on smallholders. Since becoming mandatory for the entire industry from 2019 to 2022, MSPO has been in place for three years, allowing stakeholders to develop a comprehensive understanding of its requirements and the importance of sustainable agricultural practices. This widespread awareness is attributed to the continuous efforts of relevant government agencies and MSPO representatives who regularly approach and update industry participants regarding the latest trends and developments.

The smallholder perspective highlights the ongoing nature of the MSPO scheme, emphasising that it is not a one-time certification but a continuous process of improvement and compliance. The relevant agencies consistently tracked and updated the scheme, ensuring that all stakeholders remained informed and aligned with current sustainability standards. Furthermore, the MSPO provides technical training to smallholders by focusing on enhancing production methods and improving operational management. This support extends beyond mere compliance, encompassing broader aspects of sustainability such as worker welfare and environmental stewardship. The role of MSPO auditors is particularly noteworthy, as they not only assess compliance, but also offer valuable suggestions for improving various aspects of operations, contributing to the overall advancement of sustainable practices within the Malaysian palm oil industry.

“As you can see the MSPO has been compulsory to be implemented by the whole industry since I think 2019. Until now, it has been three years already, and I believe most or all the people in this industry have already applied this MSPO. Additionally, the MSPO, including palm oil millers and relevant government agencies, will continue to approach and update us. Then, the MSPO people will come, follow up, and update us on the MSPO. They also provided us with the training. It is also important to improve awareness in taking care of workers' welfare and the environment. Then, sometimes the auditor came they will evaluate and give us advice on which part of the operation still need to be further improve.” as highlighted by Smallholder 2, Api Api Jeram Batu.

In conclusion, the Malaysian Sustainable Palm Oil (MSPO) certification scheme has demonstrated significant effectiveness in promoting sustainable supply chain management within the Malaysian palm oil industry. The scheme successfully introduced comprehensive standard operating procedures, particularly for those benefiting smallholders who previously lacked such guidelines. This has led to improved harvesting techniques, increased yields, and enhanced agronomic farming practices. The MSPO has fostered a culture of continuous improvement and compliance, with industry participants actively engaging in and understanding the importance of sustainability.

The implementation of the MSPO has resulted in more stable and efficient operations across organisations, aligning industry practices with relevant laws and legislation. The proactive promotion of the scheme by the Malaysian Palm Oil Certification Council (MPOCC) and other government agencies has created a supportive

industrial environment in which the MSPO is viewed as a valuable framework rather than a mandatory burden.

Furthermore, the impact of the MSPO extends beyond mere compliance, encompassing broader aspects of sustainability such as worker welfare and environmental stewardship. The ongoing nature of the certification process, coupled with regular updates and technical training provided to stakeholders, ensures that the industry remains aligned with the current sustainability standards. The role of MSPO auditors in offering valuable suggestions for operational improvements contributes to the advancement of sustainability.

As the MSPO scheme continues to evolve and mature, it is poised to play an increasingly crucial role in enhancing global sustainability and competitiveness of the Malaysian palm oil industry. The comprehensive approach of MSPO, which addresses the environmental, social, and economic aspects of sustainability, positions it as an effective tool for driving long-term sustainable development in the palm oil supply chain.

Cost Effectiveness

Smallholders' experiences with Malaysian Sustainable Palm Oil (MSPO) certification and organic fertiliser usage reveal a nuanced perspective on the challenges and benefits faced by small farmers in the palm oil industry. While the MSPO certification itself is provided free of charge to smallholders, alleviating potential financial burdens, the transition to organic fertilisers has introduced economic pressure. The significant price difference between chemical and organic fertilisers, ranging from RM80 to RM100, initially presents a challenge of increasing operating costs. However, this apparent setback was offset by positive outcomes observed in the plantation.

The smallholder account suggests that the adoption of organic fertilisers, despite the higher upfront costs, has led to improvements in both palm oil yields and quality. This unexpected benefit effectively transformed what was initially perceived as a challenge. The increased productivity and enhanced quality of palm oil produced using organic methods outweigh the additional expenses incurred. Consequently, smallholders' overall assessment indicates that the transition to more sustainable practices has had a net positive impact on their operations, with the benefits outweighing the initial challenges. This experience highlights the potential for sustainable agricultural practices to not only meet environmental goals, but also contribute to the economic viability of smallholder farms in the long term.

"I think yes there is. However, I do not think that this actually affects me. Because the MSPO is free for all smallholders, it does not cause an issue. However, the shift to organic fertiliser has slightly burdened me financially, as chemical fertilisers are notably cheaper. Similarly, the cost of chemical fertiliser was approximately RM160–RM170, whereas that of organic fertiliser ranged from RM240 to RM270. However, the use of this organic fertiliser also improves palm oil production and quality. So, I think in certain view, it actually bring benefits than challenges."

(Smallholder 1, Serom)

Transitioning to a broader corporate perspective, we examine United Malacca Berhad's MSPO certification to illustrate the scalability of sustainable practices in palm oil production. The implementation of Malaysian Sustainable Palm Oil (MSPO) certification in the United Malacca Berhad appears to have been relatively smooth, with only minor challenges reported. According to the manager of the Environment, Health, Safety, and Sustainability Executive, the primary concerns are the additional costs associated with certification and increased documentation requirements. However, these issues are not perceived as significant obstacles to a company's operations or its overall performance. The organisation's ability to adapt to these changes without major disruptions suggests a well-prepared and efficient management system.

United Malacca Berhad's commitment to maintaining MSPO standards extends beyond their own operations to include their supply chain partners. The company ensures that its suppliers, major distributors, and smallholders comply with MSPO requirements. This comprehensive approach to sustainability demonstrates a holistic view of responsible palm oil production. Regular annual surveillance audits conducted as part of the MSPO certification process likely contribute to a company's ability to consistently meet the required standards without

encountering significant challenges. This suggests that United Malacca Berhad successfully integrated sustainable practices into its core operations, making compliance with the MSPO a natural extension of its existing processes rather than a burdensome addition. *"Apart from the cost, I don't think there will be any challenges. In addition, as annual surveillance audits of the MSPO are conducted in the UMB, we ensure that our operations meet the standard. We also make sure that our suppliers, the key dealers as well as the smallholders are committed to MSPO."* Highlighted by the Environment, Health, Safety and Sustainability Executive from United Malacca Berhad.

Long-term Sustainability

The effectiveness of promoting Malaysian Sustainable Palm Oil (MSPO) in terms of long-term sustainability can be observed from the perspective of Malaysian Sustainable Palm Oil Auditor from Platinum Shauffmantz Sdn Bhd. He revealed that all relevant agencies, including government and non-government organisations, have done a very good job in implementing and promoting the sustainability of Malaysian Sustainable Palm Oil (MSPO) in Malaysia and beyond. He further claimed that the scheme was promoted in Japan, China, and the world. Therefore, it is concluded that Malaysian Sustainable Palm Oil (MSPO) can be sustained in the long term, not only in Malaysia but also worldwide.

"From my perspective, I currently observe that government agencies and NGOs alike are effectively enforcing and promoting MSPO's sustainability initiatives, both domestically and internationally. Perhaps you are already aware of our products in Japan, China, and around the world. Thus, our product can be sustained longer in and outside of our country in other regions."

Shifting focus to corporate perspectives, Environment, Health, Safety, and Sustainability Executive, from United Malacca Berhad highlights the potential of MSPO 2.0. The launch of Malaysian Sustainable Palm Oil (MSPO) 2.0 is expected to lead to the rapid adoption of certification in the palm oil industry. To sustain longer, he indicated that the new scheme would be easily adopted and meet international buyers' demands without compromising the production costs of local planters. The new version of the scheme is also expected to reduce the complexity of adopting sustainable agricultural practices, while ensuring compliance with all laws and regulations. However, he also believed that the current Malaysian Sustainable Palm Oil (MSPO) scheme could provide long-term sustainability. This is because the scheme actually helped smallholders gain knowledge and assistance in adopting efficient agricultural practices through stakeholder engagement and served as a guide to manage workers effectively.

"With the launch of MSPO 2.0, the adoption of MSPO certification is expected to be rapid across the palm oil industry. It is also hoped that the scheme will be easier to adopt and meet international buyers' demands without compromising the production cost for local planters. The new version of the scheme is also expected to reduce the complexity of adopting sustainable agricultural practices and simultaneously ensure compliance with all laws and regulations. However, I believe that the old-format MSPO scheme has been sustainable for a long time. MSPO has helped smallholders gain knowledge and assistance in adopting efficient agricultural practices through stakeholder engagement. MSPO is the guidance to manage the workers effectively."

In the opinion of smallholders, it was claimed that the current form of Malaysian Sustainable Palm Oil (MSPO), whether in terms of the promotion or implementation of the program, is actually doing well enough to achieve long-term sustainability. This is because smallholders believe that Malaysian Sustainable Palm Oil (MSPO) is making the entire palm oil industry sustain longer and bringing more long-term benefits. This can be seen from many aspects, as

Smallholder 1 from Serom stated that *"I believe that the current format of MSPO is sufficient and will be sustained in the long term. I can say that the MSPO is actually doing well, regardless of whether it is promoting or executing. Therefore, I believe that it can sustain the palm oil industry and bring more long-term benefits. This is because in many aspects, I feel that everything is running smoothly."*

From the researchers' perspective, the Malaysian Sustainable Palm Oil (MSPO) scheme has demonstrated significant effectiveness in promoting sustainable practices in the palm oil supply chain. Industry players have

shown a clear understanding of the scheme's importance and actively comply with its requirements rather than blindly following it. The MSPO has provided comprehensive standard operating procedures that enable smooth operation and promote sustainability throughout the industry. Relevant agencies have undertaken continuous initiatives to promote the scheme and ensure its widespread adoption across the sector.

Although the implementation of an MSPO incurs additional costs, it is generally outweighed by the benefits it brings to the industry. The scheme has proven to be cost-effective, particularly for smallholders who can participate free of charge. Although the shift to organic fertilisers has increased operating costs, it has also led to improved palm oil quality and increased production. The long-term sustainability of the MSPO is further reinforced by ongoing initiatives from both government and non-governmental organisations, as well as its global recognition. The launch of MSPO 2.0 demonstrates a commitment to continuous improvement and enhanced sustainability practices, solidifying the scheme's role in promoting long-term sustainability in the Malaysian palm oil industry.

CONCLUSION

The implementation of the Malaysian Sustainable Palm Oil (MSPO) certification scheme has significant implications for the future sustainability and competitiveness of Malaysia's palm oil industry. The widespread adoption of MSPO standards across large estates and smallholders indicates a sector-wide shift towards more responsible and sustainable practices. This transition is likely to enhance Malaysia's reputation as a producer of sustainable palm oil in global markets, potentially leading to improved market access and premium pricing of certified products. However, the challenges faced by smallholders in meeting certification requirements include the need for government agencies and industry stakeholders to provide continued support and capacity building to ensure that the benefits of MSPO are equally distributed across the industry. As the scheme evolves, with initiatives such as the enhanced MSPO 2.0, there is potential to drive further improvements in environmental stewardship, labour practices, and operational efficiency throughout the palm oil supply chain. The long-term success of the MSPO will depend on ongoing efforts to refine the certification process, support smallholder compliance, and demonstrate tangible sustainability outcomes for international buyers and stakeholders. Overall, the MSPO appears poised to play an increasingly crucial role in shaping the future trajectory of Malaysia's palm oil sector towards greater sustainability and global competitiveness.

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