

Social Capital and Sustainability in Oil Palm Sector

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Abstract

The palm oil industry is now under intense criticism for causing deforestation and the destruction of biodiversity. In order to gain the trust of the world community, a form of Malaysian Sustainable Palm Oil (MSPO) certification has been developed. This certification aims to manage palm oil plantations through best agricultural practices and ensure that Malaysian palm oil is the preferred product internationally. However, in order to ensure the successful implementation of this certification, there are several factors that determine its success. Social capital is one of the factors that influence farmers to practice sustainable agriculture. Therefore, this paper discusses some findings based on previous research surveys, namely the relationship between social capital and the sustainability of the palm oil sector. This study was conducted using a systematic literature review or SLR method. As a result of the four phases of article search screening, most of the articles obtained touch on the elements of social capital, such as bonding, bridging, linking, empowerment, cooperatives, and networking. The (social) network is also a type of social capital. In conclusion, this finding highlights the role of social capital in the sustainability of the palm oil sector and sustainable agriculture. The possibility of MSPO as a way to assess and monitor the sustainability of the role of social capital in the palm oil sector.

Keywords: Sustainability, Oil Palm, Agriculture, Social Capital

Introduction

Sustainability practices in the palm oil sector are not something new. The palm oil industry has been linked to deforestation and biodiversity destruction (Parthiban et al., 2021). For the purpose of regaining the world's trust in the Malaysian palm oil industry in particular, the government has developed the Malaysian Sustainable Palm Oil (MSPO) certification. This certification assists in assessing and monitoring the sustainability of oil palm agriculture in Malaysia. It covers the entire palm oil processing chain, and all smallholders are required to obtain this certification. Therefore, it is important to ensure that this certification can be implemented successfully.

More recently, too, the focus of sustainability practices in agriculture has been supported by existing frameworks developed based on social capital. This is also in line with

the study of Economics of Ecosystems and Biodiversity for Agriculture and Food (Sandhu, 2021). Social capital is one of the forms of capital, similar to physical capital, economic production capital, and human capital, and it has its own role in contributing to the growth and well-being of a country's society (Bakar & Ali 2004). According to Bhandari & Yasunobu (2009), social capital also generally refers to the relationships or social networks owned by the community, which include cooperative relations, social norms, reciprocity, and trust. Sandhu (2021) stated that there are three categories of social capital, namely bonding, bridging, and linking, which refer to social networks owned by the community. The presence of this capital in the community can help increase the community's ability to mobilize existing assets in the community as well as increase the community's potential in improving knowledge, technology, and skills.

Social sustainability involves the preservation of certain societal values as well as developing the necessary values. Sustainable development also socially needs to encourage integration and social cooperatives and is an important indicator to measure the success of social cooperatives in a sustainable area. Social capital can also influence behavior and decision-makers by significant reference groups such as friends, neighbors, family, community, children, schoolchildren, and local leaders (Zeweld et al., 2017).

Thus, looking at the direction of the Malaysian palm oil industry, this study will attempt to look at the relationship between social capital and its role in ensuring the sustainability of the palm oil chain in line with the government's aspirations through MSPO certification.

Research Problems

The Brundtland Report, published by the *World Commission on Environment and Development* (WCED) in 1987, introduced the concept of sustainability with the definition of sustainability as development to meet the needs of the present without compromising the ability to meet the needs of future generations. Sustainability encompasses three parts, namely environmental, social, and economic well-being. In addition, sustainable development is development that goes hand in hand with the environmental, social, and economic well-being of society.

Of the 17 Sustainable Development Goals (SDGs) outlined by the United Nations (UN), seven of them form the basis for building a sustainable palm oil industry in Malaysia. The oil palm industry ecosystem covers three sectors, namely upstream, middle and downstream. The upstream sector represents plantation activities, the middle sector involves manufacturing and processing activities, and the downstream sector involves the production of final products and value-added products. According to the Malaysian Palm Oil Board (MPOB) (2019), the palm oil industry contributes 234.48 million metric tons, which is 32% of world vegetable oil production. Globally, Malaysia is also one of the world's largest producers and exporters of palm oil, accounting for 11% of world oil and fat production and 27% of oil and fat export trade (MPOB, 2019). Importing and consumer countries around the world, on the other hand, prioritize agricultural products produced through sustainable production. Some agro-food industries set *Certified Sustainable Palm Oil* (CSPO) standards to meet buyer demand as evidence of sustainability in the palm oil supply chain.

Only large-capacity plantation companies can afford the cost of meeting high sustainability criteria such as Roundtable Sustainable Palm Oil (RSPO) certification. Smallholders may not be able to meet such criteria, but it is important for Malaysia to gain the confidence of international consumers in the production of palm oil from Malaysia. According to Dr. Laziana Ahmad, Science Communication Officer, Corporate Communication

Unit, MPOB, sustainability is a global issue. After over 100 years of the palm oil industry in Malaysia, various challenges have been faced brilliantly. The latest challenge for the Malaysian palm oil industry is to enhance the reputation of the palm oil industry to achieve a world-recognized level of sustainability. To set the sustainability benchmark for Malaysian-produced palm oil, MPOB has developed a sustainable palm oil certification named MSPO. MSPO certification has been made mandatory for all smallholders to ensure that the palm oil produced meets international standards.

In line with the implementation of MSPO, it is necessary to study the factors that can be determinants of success towards sustainability. Social capital is one of the factors that can influence farmers to adopt sustainable practices in agriculture (Zeweld et al., 2019). Social capital is also seen to be able to increase the viability and competitiveness of farmers in an effort to practice sustainable agriculture (Krom, 2017). Therefore, this study will try to look at the relationship between social capital and the sustainability of the palm oil sector in Malaysia. This paper discusses the results of a review of previous research that focuses on the relationship of social capital with the sustainability of the palm oil sector.

Research Question

The research question for this research review is whether elements of social capital are present in the sustainability of the palm oil chain?

Research Objective

The objective of this study is to examine the elements of social capital by identifying the form, type, and role of social capital found in the sustainability of the palm oil chain.

Methodology

This study uses the method of Systematic Literature Review (SLR) to obtain relevant articles. SLR aims to comprehensively locate and synthesize specific studies using structured, transparent, and repeatable procedures at each step in the process (Zeweld, 2020). This study has adopted the SLR model from (Yang et al., 2021). There were four phases of article collection and screening used in this study.

1) Phase 1 - Collection of literature

There were five main criteria used in the literature collection.

- i) Database selection. Three databases were used for this study, namely Scopus, Web of Science (WoS), and Science Direct (SD). These three databases are the main databases in academic writing and are used due to having extensive literature coverage. Scopus is among the largest abstract and citation databases with over 22800 journals and 5000 publishers. Areas of study available in Scopus cover various fields, including environmental sciences as well as social sciences and agriculture. WoS, on the other hand, covers more than 33000 journals covering more than 256 fields of study (Basiron, Yusof, 2001). SD includes over 2500 journals and over 11000 books. Major areas of study in SD include health sciences, life sciences, and engineering, in addition to social and business sciences (Harnegie, 2013).
- ii) File type selection. To ensure the reliability of the study results, only writing in the form of articles published in peer-reviewed journals was used. These articles

are of better quality than seminar presentation papers, and thus only those articles are used.

- iii) Keyword selection. Keywords were selected based on the literature highlights and the framework that had been developed, as shown in Figure 3. Keywords used include social capital, bonding, bridging, linking, empowerment, cooperation, and networking. Table 1 shows the search chains used for the three databases.
- iv) Selection of study category. The research categories were set to cover social science and environmental science to ensure that the articles searched were relevant to the research question. Both of these categories correspond to the keywords used for article search purposes.
- v) Selection of the year of publication of the article. Since the initial search results did not find any studies related to social capital and palm sustainability, the search at this time did not place a year limit. This was intended to extend the study period so that more studies could be obtained.

In this first phase, a total of 138 articles were retrieved from the three databases. Of that number, 52 articles were from Scopus, 56 articles from WoS, and 30 articles from SD.

Table 1
Search Chain

Data base	Search Chain
Scopus	TITLE-ABS-KEY ((<i>“social capital”</i> OR <i>bonding</i> OR <i>bridging</i> OR <i>linking</i> OR <i>empowerment</i> OR <i>cooperation*</i> OR <i>network*</i>) AND <i>sustain*</i> AND (<i>“palm oil”</i> OR <i>“palm industry”</i>))
WoS	TS(<i>“socialcapital”</i> OR <i>bonding</i> OR <i>bridging</i> OR <i>linking</i> OR <i>empowerment</i> OR <i>cooperation*</i> OR <i>network*</i>) AND <i>sustain*</i> AND (<i>“palm oil”</i> OR <i>“palm industry”</i>))
Science Direct	TITLE-ABS-KEY((<i>“socialcapital”</i> OR <i>“bonding”</i> OR <i>“bridging”</i> OR <i>“linkin”</i> OR <i>“empowerment”</i> OR <i>“networking”</i>) AND (<i>“sustainable”</i> AND (<i>“palm oil”</i> OR <i>“palm industry”</i>)))

2) Phase 2 – Initial screening

Preliminary filtering was performed to separate identical and overlapping articles to remove duplicate elements. As a result of the study, there were five articles that were identified to have elements of duplication between the above three databases. Therefore, after this phase, there were 133 remaining articles.

3) Phase 3 – Admissions and exceptions

In this phase, the articles were screened based on research on the title, keywords and abstract. Articles needed to meet the characteristics found in the search chain, namely social capital, sustainability and oil palm. Next, filtering was also made on the level of accessibility of an article. As a result of the screening in this phase, a total of 122 articles were excluded bringing the number of articles received to 11.

4) Phase 4 – Additional resources

To add value to this study, the search was also carried out through other databases that have a direct relationship with the title of the study, such as the MPOB and the Universiti Kebangsaan Malaysia (UKM) journal repository. There were three additional articles obtained from these sources. This makes the final number of articles to be examined to be 14. Figure 1 shows the search framework based on the SLR Technique.

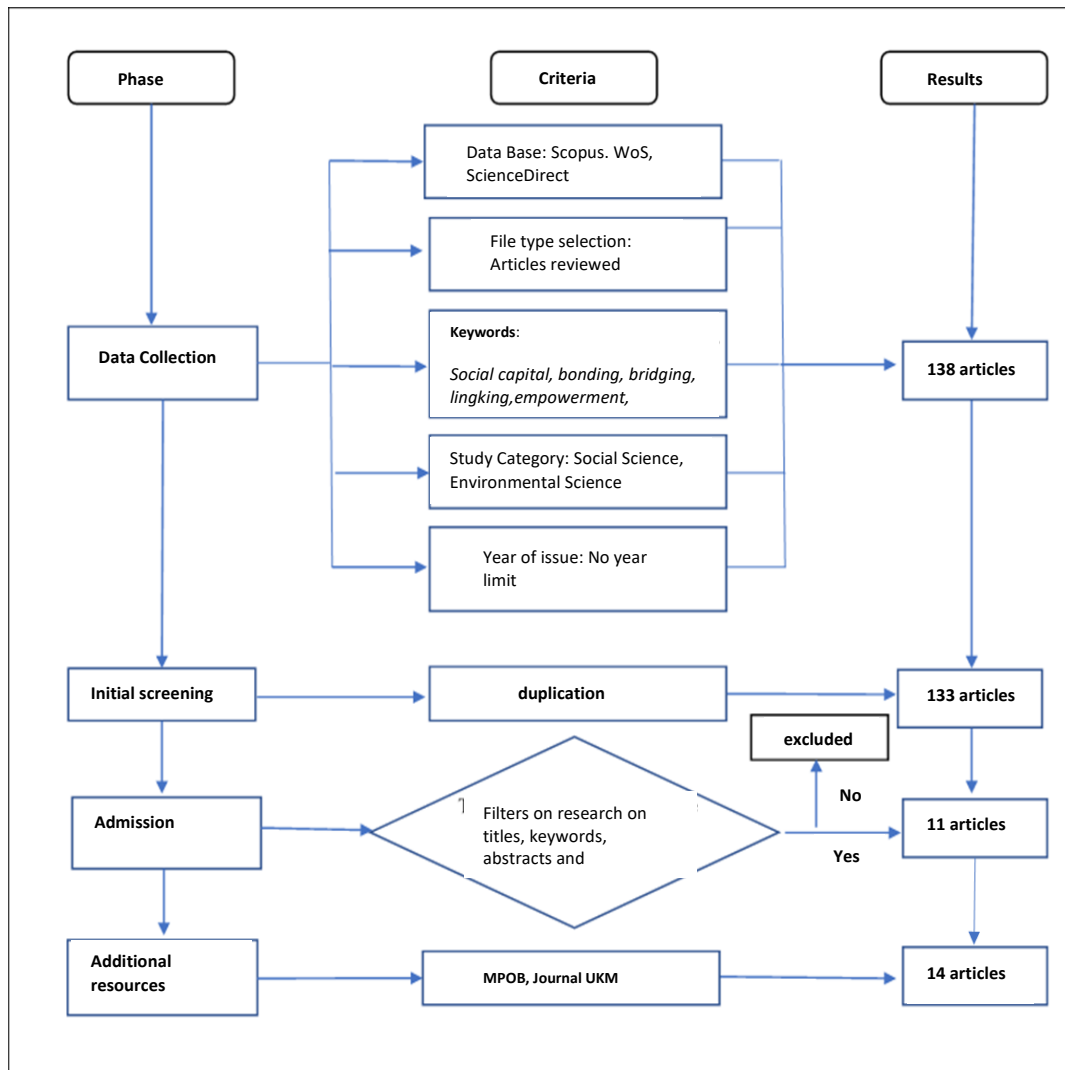


Figure 1: The search flow framework uses methods SLR (Adopted from Ang et al., 2021)

Literature Review

Social Capital

Social capital is defined as a type of non-physical and non-economic capital that can produce positive externalities and improve the competencies of individuals or members of society (Coleman, 1988; Coleman, 1990; Putnam, 1993; Fukuyama, 1999). The characteristics of social capital are areas such as social networks, trust, social norms, forms of social capital, and functions of social capital. Social capital is translated as one of the forms of capital, similar to physical capital, economic production capital, and also human capital, which has its own role in contributing to the growth and well-being of a country's society (Abu Sufian 2004). Social

capital is a component of human capital, but in recent decades social capital has been recognized as a new area of specialization and the fourth source of capital in the machinery of economic growth (Noorasiah, 2007).

This concept of social capital was introduced by Bourdieu and Coleman in the 1980s but became increasingly popular and developed from the 1990s to date, beginning with the Putnam study in 1993 (Coleman, 1988; Bhandari & Yasunobu, 2007; Woolcock & Narayan, 2000; Paxton, 1999; Coleman, 1998; Woolcock, 1998). According to Bakar & Ali (2004), studies in the field of social capital were popularized by (Coleman, 1988; Putman, 1993). Forms of social capital are social networks (examples include friendship networks, family networks, etc.), social norms, values, and reliability that can increase the quantity and quality and cooperatives of a society. Pierre Bourdieu, a French sociologist, in his work "The Forms of Capital" (1986) states that in order to understand the structure and functioning of the social world, it needs to be discussed in all its forms. It not only discusses capital as it is known in economic theory, but Bourdieu also explains the difference between the economic capital, cultural capital, and social capital and describes how the three can be distinguished from each other (Siepmann & Nicholas, 2018)

Meanwhile, Coleman, in a paper entitled "Social Capital in the Creation of Human Capital" (1988), also introduced social capital as a conceptual recommendation to understand theoretical orientation and social action by relating sciences from sociological and economic perspectives. In this way, he uses the principles of economics to analyze social processes. Coleman argues that the notion of social capital is determined by its function. Although there are many social capital functions, he said that they all have two elements in common: social capital covers a number of aspects of social structure, and social capital provides facilities for people to do something within the framework of that social structure. It emphasizes two aspects of social structure that are very important in facilitating the creation and growth of social capital in various forms. First is the aspect of social structure that creates a 'cage' in a social network that keeps everyone connected to each other so that obligations or restrictions can be imposed on everyone who is a member of that network. Second is the existence of social organizations that can be used to achieve goals together.

Social capital has already been extensively discussed in past studies and has had a positive impact on the economy and social development (Begum et al., 2015). In fact, social capital is one of the factors that can explain the differences in the level of development by region and community. Knack (2002) states that social capital is able to influence the ability of individuals to cooperate to achieve a goal. A study conducted by Lam (1996) asserted that close ties between public agencies and local village unions in rural Taiwan create efficient and good irrigation networks. It resulted from collective action between local farmers.

Social capital is a universal field as it can be linked to various aspects such as health, economic growth, regional integration, and globalization. Social capital is an abstract concept and the measurement of social capital can increase the understanding of social functions and how social networks and chains are used. In the context of community development, efforts to improve existing community relationships referred to as social capital, is one of the critical components that help and drive community development (Westwood, 2011; Haines, 2009; Phillips & Pittman, 2009). Thus, in ensuring that community development can be achieved, the development initiatives implemented must be able to develop the social capital of the community involved. The postgraduate study of Zeweld et al., (2019) also studied the extent to which the corporate social responsibility (CSR) initiatives of a multinational corporate company with the joint efforts of development agencies towards the community or the

existence of cooperatives can help develop social capital in the community, especially for oil palm farmers and sustainability in oil palm.

Sustainability of the Palm Oil Sector

The world's agricultural sector is now working towards sustainable use of resources and high productivity. Therefore, seven of the 17 SDGs outlined by the UN form the basis for the construction of a sustainable palm oil industry in Malaysia. The oil palm industry ecosystem covers three sectors, namely upstream, middle and downstream. The upstream sector represents plantation activities, the middle sector involves manufacturing and processing activities, and the downstream sector involves the production of final products and value-added products.

Oil palm cultivation in Malaysia has been introduced by the government to eradicate poverty among the rural population. Development in the oil palm industry is very encouraging, with emphasis given to research to produce new methods in cultivation technology, production of quality seeds, and the production of new palm-based products (Tabasco, Ruiz, & Pulpón, 2017). Revenue from the palm oil industry can provide a significant contribution to the national economy (Shishkova, 2019). The first commercial cultivation was carried out at Ladang Tennamaran, Klang, Selangor in 1917. Since then, oil palm cultivation has continued to grow and is now one of Malaysia's main commodities. In 1960, Tun Abdul Razak introduced the plantation settler scheme through the establishment of FELDA or the Federal Land Development Authority. FELDA was established to eradicate poverty among farmers and smallholders. Oil palm plantations in Malaysia are mostly based on estate management systems and smallholder schemes.

Since the establishment of FELDA, the number of oil palm plantations has increased dramatically. Based on data from the Department of Statistics, the number of states increased from 3581 in 1975 to 5119 in 2019. The total planted area also increased from 357 thousand hectares to 4.9 million hectares in 2019. Production of fresh fruit bunches increased by 67%, from 4.15 million metric tons to 97 million metric tons (Department of Statistics Malaysia, 2019). Malaysia is also the second-largest producer of palm oil in the world after Indonesia. In 2020, palm oil exports accounted for 4.7% of RM45.66 billion of the total exports of RM980.99 billion. This also makes oil palm Malaysia's main commodity export. Figure 2 shows the breakdown of Malaysia's exports for 2020 (MATRADE, 2020).

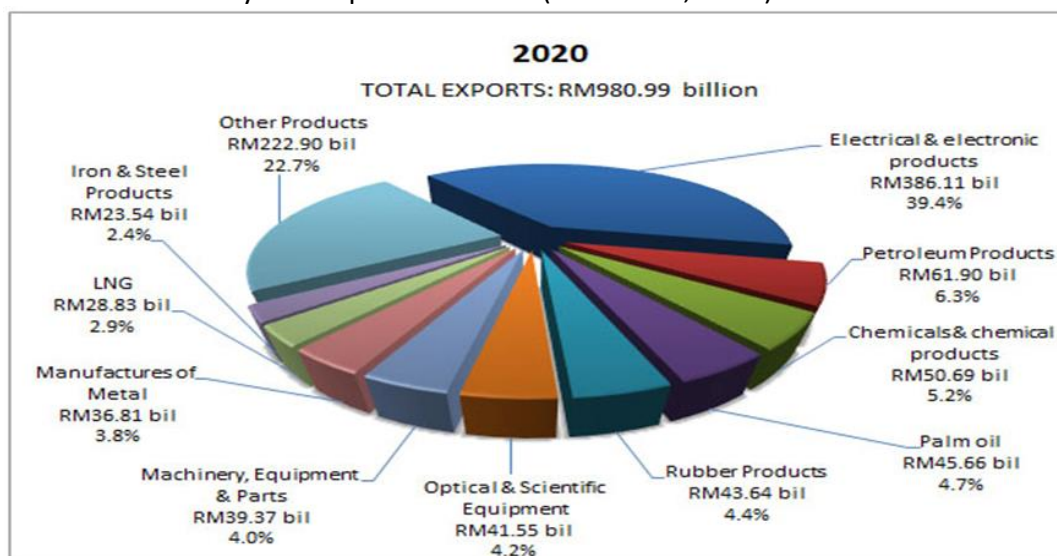


Figure 2: Separate of Malaysia's exports in 2020

In ensuring that the oil palm industry in the country continues to develop, the MPOB has several strategies, which include expanding and increasing the use of oil palm products, finding new uses for these oil palm products, increasing production efficiency and product quality, optimizing land use in oil palm plantation areas and promoting the use, utilization and marketability of oil palm products.

Apart from that, to ensure that the Malaysian palm oil industry develops in a sustainable manner, Malaysia has introduced its own certification to adapt to the situation in the country. The MSPO certificate is a national certification scheme for oil palm plantations, private and structured smallholders, and palm oil processing facilities. The implementation of this MSPO is to facilitate the management of oil palm cultivation through best agricultural practices and thus make Malaysian palm oil a top choice at the international level. The MSPO has outlined seven key principles as a guide to the certification criteria. Figure 3 shows the seven principles. The government also provides incentives for encouraging smallholders to obtain MSPO certification and has made the implementation of the MSPO mandatory starting 31 December 2019 (MPOB, 2019).

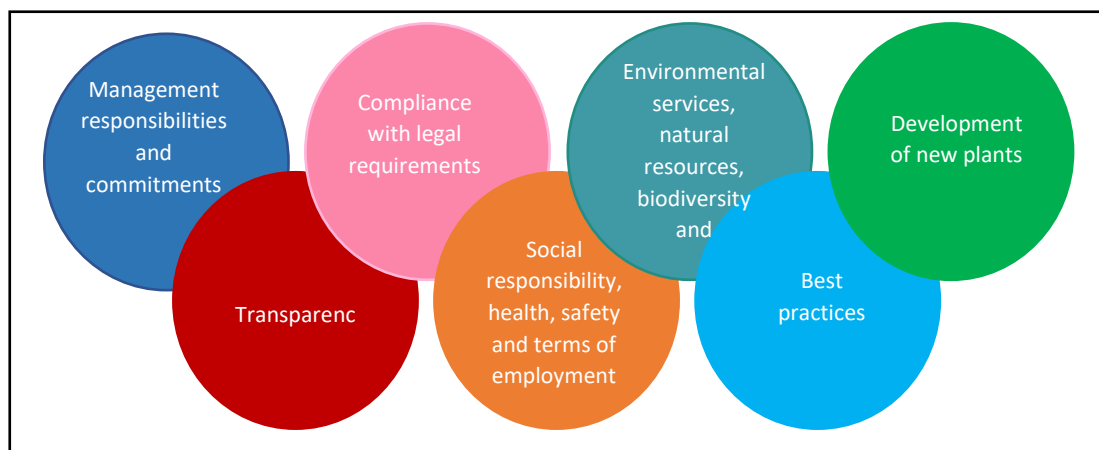


Figure 3: The main principles of MSPO

In line with this MSPO setting, Begum et al (2015) have conducted a study on Sustainability Practices Among Oil Palm Settlers from an environmental, social, and economic perspective. The study was conducted among smallholders organized in Sungai Tekam, Pahang, under the FELDA. The results of the study found that most smallholders have adequate knowledge regarding sustainability, consistent with MSPO and other laws or procedures regarding agricultural best practices. From an environmental point of view, the results of the study found that smallholders have a high awareness to protect the environment.

In addition, to ensure that oil palm production is sustainable and does not damage the environment, there are several other certifications that must be complied with by players in the palm oil industry. Among the main certifications are RSPO, International Sustainability and Carbon Certification (ISCC), ISPO, and MSPO.

Social Capital and Sustainable Agricultural Practices

Preliminary search results found that not many studies have been conducted on social capital and the sustainability of the palm oil chain. Accordingly, the study was conducted through the expansion of the search by looking at the role or impact of social capital in sustainable

agricultural practices. The results of this search expansion will be used to form a new search framework to look at the relationship between social capital and the sustainability of the palm oil chain. Sarmila et al (2015) conducted a study to look at the role of CSR in the development of social capital in contract chili plantations. The results show that there are elements of “Relationships and Cooperatives” that exist in the farming community. This element arises from the basic themes identified through the thematic analysis of the interview narrative, namely 1) frequent discussions and meetings, 2) close relationship between farmers, 3) willingness to guide each other, 4) sharing problems, skills, and information, and 5) group planting efforts. This shows that CSR programs can help develop social capital in a community.

According to Zeweld et al (2019), social capital is one of the factors that significantly influences farmers to adopt sustainable agricultural practices. Social capital has a positive impact on the adoption of many sustainable agricultural practices. Studies on the sustainability of agroecological agriculture and conventional agriculture on a small farm in Brazil (Fernandes & Woodhouse, 2008) also used social capital as an indicator to assess agricultural sustainability. Social capital also plays a role in promoting the continuity of agroecological methods among farmers under the auspices of non-governmental organizations as well as playing a role in the development of wider agroecological applications. Sustainable farming practices, such as conservation agriculture or conservation agriculture (CA), remain an important core in conservation efforts to increase food crop production due to declining productivity (Olawuyi & Hardman, 2019). The results showed that the duration of exposure time, land acquisition, size of CA farms cultivated, number of farms, access to extension services and social capital components were significant predictors of utilization. The reliability of social capital represents a solid foundation on which social networks can be built. With this in mind, a high level of trust between peers, which can be gained through a long process of repeated positive interactions, is considered a safety net for individuals to reduce risk. Therefore, policies to promote formal and informal social networks are very important because information obtained through individual social networks (which are considered strong bonds) is very important in fostering positive behaviors in farmers.

A study by de Krom (2017) on 40 farmers in Flanders, Belgium, showed that farmers in the region increased the long-term viability of their agricultural businesses by building more cooperatives through the application of social capital elements by appreciating as well as forging social ties with other stakeholders. By linking social capital, farmers aimed to avoid and resolve conflicts with non-agricultural stakeholders that threatened the long-term viability of their farms. Studies such as those made by Siebert et al (2006) state the role of social capital in regulating farmers’ readiness to participate in environmental agricultural policies. Social capital encourages farmers’ willingness to adopt agri-environmental schemes because, through social capital, farmers are more aware of the advantages of agri-environmental schemes, which are seen to be able to reduce costs (Mathijs, 2003; Jones et al., 2009; Morrison et al., 2011). Social capital theory by Bourdieu (1986) provides an analytical framework that makes it possible to analyze how farmers’ social capital and participation in agri-environmental schemes are interrelated (Burton et al., 2008; Saunders, 2015). Rural sociologists (Burton et al., 2008; Burton & Paragahawewa, 2011; Sutherland & Burton, 2011) have argued that the nature of cultural capital in agriculture, and its ability to generate social capital for farmers by supporting their social status in farming communities, is key to understanding farmers’ decisions about the environment.

A study by Ruiu et al (2017) in the Arborea district discovered the role played by social capital in terms of social bonding in developing adaptive responses to contextual change

(environmental, social, and economic) at a local scale. In this regard, since the absence of social capital makes collective activity and the creation of resilient systems unlikely, and unable to face contextual change at the community level, a lack of policymaker involvement can lead to long-term failure of strategy adjustment. This study demonstrates theoretically how the concept of social capital can be used to understand the process of collective action development aimed at addressing contextual change at a micro-scale. This study is the first step in analyzing the role of social capital in producing adaptive responses at the community level directly involved in agriculture. A theoretical study by Burton & Paragahewawa (2011) states that in order to apply the values, reliability, and environmental knowledge underlying the scheme, policymakers need to formulate approaches that enable the creation of cultural and social capital in farming communities. The same study states that the better the reputation of a farmer, the more likely he is to be able to access the social capital of others in agriculture. A study by Mills (2012) identified the extent to which agricultural environmental schemes can contribute to sustainable agriculture by positively impacting farm employment and farm income, developing social capital and knowledge and skills networks for farmers.

Rado et al (2021) conducted a study to examine the relationship between social capital and community entrepreneurship and the role of social capital in sustainable community development for small farmers. Their study also looked at the extent to which social capital affects the organizational capacity of gardeners and how that capacity helps create cooperatives with other organizations. The study was conducted through case studies in three countries, Thailand, Taiwan and Japan. The results of the case studies found an element of cross-relationship between sectors and used by groups of farmers for the purpose of resolving specific issues. Good relations between these groups of farmers existed due to their level of trust in each other and this formed a unique culture between the groups. According to Brunie (2009), the formation of this culture can be seen through the concepts of social capital, which are collective social capital, relational social capital, and general social capital. These three types of social capital can also be linked to the three main factors that drive collaboration between organizations, namely solutions, advocacy, and sectoral logic reconciliation. Collective social capital helps a group solve problems collectively. The general social model is also closely related to advocacy strategies. Both types of social capital are seen to be able to help increase the capacity of the group of farmers. The social model of relationship is more of a trust development mechanism. All three social capitals make a significant contribution to the concept of community entrepreneurship which indirectly affects the sustainability of agriculture as a whole.

Helmi et al (2019) conducted a study on onion entrepreneurs in the Solok District, West Sumatra, Indonesia. The purpose of the study was to identify the main factors that influence farm management and identify elements for the framework to develop small-scale onion plantation areas. Among the key factors identified were the existence and function of farmers' groups or organizations in the context of social capital development. The existence of these groups is important to help farmers manage the farm in a more orderly manner (social capital bond) and also, at the same time, strengthen the capacity of the farmers in managing the farm. Apart from that, the group or organization also helped farmers connect with other local organizations in matters of farm management (social capital bridges the gap) and also to interact with government departments as well as private companies (social capital connects). This element of social capital can also further strengthen the agricultural group or organization.

A study by Pretty et al (2020) points to the emergence of farmer groups that support reforms toward agricultural sustainability. Most groups have between 20 and 25 members. The group size remained the same over a period of time. The small group size leads to effective communication and facilitates agreement and sharing of planning and evaluation. The study divided the existing groups into eight categories covering 1) Integrated Pest Management, 2) Forest Management, 3) Land Management, 4) Water Management, 5) Pasture Management, 6) Support Services, 7) Innovation platforms, and 8) Intensive small-scale system. The existence of groups in each of these categories supports continuous learning through the experience of members or other groups. This directly helps improve knowledge, problem-solving skills, group building, and political strength. A study conducted by Wynne-Jones (2021) assessed the experience of Pontbren farmers' cooperatives in mid-Wales (UK) to explore issues such as yields and diverse cooperatives' unexpected activity. According to Wynne-Jones (2021), limitations in the concept of social capital are addressed to better explore social relationships. She noted that of the diversity of farmer cooperative successes highlighted by previous studies, previous studies have largely emphasized the level and form of social relationships within support groups and networks, which are usually explained in terms of social capital (Svendson & Svendson, 2000; Flanigan & Sutherland, 2016), as well as highlighting various resources, knowledge, and skills brought by individuals into this group.

Dung et al (2018) looked at the relationship between social capital and technology uptake. Social capital and farmer networks can influence the decision of the application of sustainable agriculture technology (SAT) (Isham, 2002; Bandiera & Rasul, 2006; Marennya & Barrett, 2007; Chirwa, 2005; Kassie et al., 2013). This represents a combination of variables, such as membership in a farmer's group or association, the number of relatives inside and outside the village that the household can rely on to obtain critical support, and the number of traders known to farmers inside and outside the village. Social capital uses social networks as tools to access information, obtain employment, obtain credit, protect against unforeseen risks, market information exchange, reduce information asymmetry and enforce contracts. Social networks also reduce transaction costs and increase farmers' bargaining power, helping farmers earn higher returns when marketing their products. Farmers with larger numbers of siblings tend to use SAT because they are able to experiment with technology while spreading the risk over more people and resources. On the other hand, farmers with more relatives may have lower opportunity costs for family employment, so farmers are likely to invest less, including in SAT. Farmer participation in at least one rural institution or group and additional support from skilled civil servants are important in SAT use because of increased opportunities for social interaction and access to knowledge among farmers (Kassie et al., 2009; Garrett, 2017).

Based on the article discussed above, social capital development plays a large and significant role in the sustainability of agriculture in general. Social capital is processed in various forms by researchers. CSR is an example of a social capital-based effort. Assistance received through CSR helps empower a community. Social capital also exists in the form of culture and trustworthiness formed through social interaction sessions and advisory services. In addition, individual character and knowledge are important to the formation of social capital in a community. Through the concept of forms of social capital such as bridging, bonding, and linking, social capital that exists in individuals and communities is able to influence the actions of a group or organization towards agricultural sustainability. Bonding is the level of achievement of sustainability of oil palm plantation management and assesses

the social impact on workers for sustainable development (Arnott et al., 2021). As for bridging, it analyzes organizational and production boundaries as specific forms of sustainability partnerships (Rela et al., 2021). Linking is the decision-making processes required to develop a sustainable oil palm agro-industry, for example, objectives, literature review and development strategies and sustainable oil palm industry (Salikin, 2003).

Cooperatives also play an important role in the development of social capital in the community. The creation of cooperatives allows social interaction to take place between groups of farmers and, indirectly, the exchange of information, sharing of skills and experiences, and social networking. Based on the survey and review of previous studies (literature) that have been done, the elements of social capital in sustainable agriculture have been identified. A framework, as shown in Figure 4, has been developed. The framework will be used as a basis for further research to look at the relationship between social capital and the sustainability of the palm oil sector.

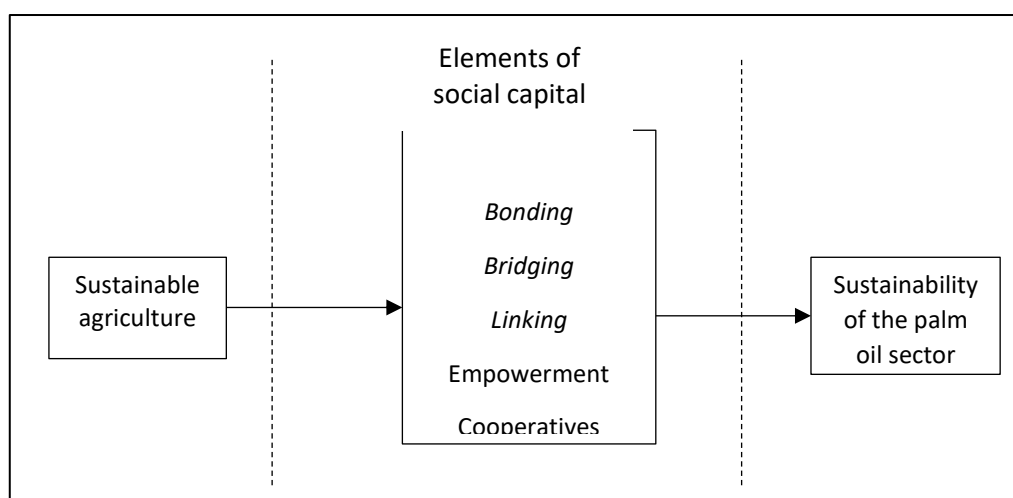


Figure 4: Social capital search framework and palm sustainability

Findings and Discussion

The research was carried out on 14 articles that were selected following screening. Table 2 shows the elements of social capital and related articles. The results of this study involve elements of social capital such as bonding, bridging, linking, empowerment, cooperation, and networking in the sustainable development of the oil palm industry.

Bonding

Syakra, (2003) conducted a study to see the level of achievement of sustainability of oil palm plantation management based on the integration of ISPO and RSPO criteria. There are five main dimensions in ISPO that are used as benchmarks. One of them is social responsibility and community empowerment (Maharani et al., 2019). This dimension is essential to identify performance and increase confidence in oil palm products. To increase the level of achievement of this dimension, transparent and open communication methods and consultation with the local community and affected parties need to be implemented to achieve the principle of transparency. This dimension is included as the core of ISPO to encourage the development of a district's attitude based on trust and transparency with the relevant parties to ensure a close and healthy relationship.

Haryati et al (2021) looked at the social impact on workers in the Malaysian oil palm industry using social life cycle assessment (S-LCA) and its relation to SGDs. The S-LCA method has been adapted from sub-category guidelines by the United Nations Environment Program

(UNEP). Based on an assessment of the sub-category of forced labor, the study found that employers no longer hold employees' personal documents such as passports. Each employee is provided with a locker for storage purposes. Employers also do not restrict the movement of workers to neighboring cities. This indicates a level of reliability and transparency exists between employers and employees. Observations made on oil palm growers in Indonesia found that reliability and honesty are key values in social relationships. Anwar et al (2021) also found that social relationships based on trust will lead to higher welfare of individuals or groups. The challenge is how wisdom and social capital can be used as a basis for empowerment, especially for smallholders in the Industrial Revolution 4.0, including the implementation of government programs in the future.

Table 2

Elements of social capital and related studies

Social Capital Element	Bonding	Bridging	Linking	Empowerment	Cooperative	Networking
Safriyana et al (2020)			/			
Hamid, (2018)			/		/	
Titor (2020)					/	
Kasim (2021)			/			
Offermans (2015)		/				
Widiati et al (2020)	/					
Haryati et al (2021)	/					
Begum et al (2018)			/			
Npueng (2018)		/			/	
Khairul (2021)	/					
Cheyns (2014)			/	/		
Lyndon & Nurmahfuzah (2015)				/		
Sarmilla et al (2017)					/	
Nurul Fatihah et al (2020)			/			

The results of the study also found that economic factors are not the only factors that influence the attitude of farmers in decision-making. The value of local wisdom that has long been in the community's social system can be decisive to the future welfare of gardeners. Pancasila values and local wisdom are the future of gardeners.

Bridging

Offermasn and Glasbergen (2015) used analytical and visualization frameworks in spider diagrams to analyze organizational and production boundaries as a particular form of sustainability partnership. Conceptualizing partnership as a knowledge-producing entity, they offer a new perspective on this arrangement. The application of this framework reveals several boundary features for the RSPO (JKP). The adoption of the RSPO framework suggests that science and scientific knowledge do not necessarily play a dominant role within

organizational boundaries. This analysis also shows that abstract concepts such as JKP can be manipulated and used to assess the characteristics of knowledge sharing in production. This situation provides benefits for the parties involved to improve their working boundaries. The framework can also be used as an instrumental dialogue to open discussions about and reflect on JKP within organizational boundaries.

The role of key players in the sustainability of the palm oil industry also needs to be looked at more closely. Vista et al (2012) conducted a study to look at the role of private and public players in implementing biodiesel policies and at, the same time, strengthening sustainability through the reduction of greenhouse gas emissions. The results of the study found that the role of civil society in improving the sustainability of the palm oil industry is very limited. Palm oil organizations and cooperatives are more focused on seeking support for their businesses through activities such as promoting collaboration between palm oil processing plants to promote sustainable palm oil production, stock management and promoting CSR projects such as community electricity supply projects, using biomass, and raising education funds for the area around the plant.

Linking

A study by Safriyana et al (2020) investigated the the decision-making process required to develop a sustainable oil palm agro-industry. This study aimed to provide a comprehensive literature review for a decision support system (DSS-Decision Support System) for sustainable agro-industry. A study based on this literature review has also found that collaboration between oil palm industry cooperatives and all stakeholders in the chain builds key strategies to drive the oil palm industry towards sustainable production needs. The progressive sustainability initiative of palm oil downstream products will provide opportunities to increase productivity and market access significantly. Moreover, the involvement of smallholders in palm oil downstream policies requires government intervention through the implementation and compliance of relevant policies. The link between the palm oil downstream industry and the government is a catalyst for the development of the palm oil downstream industry. The study conducted by Hamid et al (2018) aimed to observe and evaluate the implementation of agro-partnerships in the oil palm business and analyze the income level of farmers. This study states that the non-cooperative cooperation of companies and the oil palm industry in Jambi Province was started with PIR-like design and creditors and is now known for forming partnerships that have grown between companies (core) and farmers through plasma cooperative cooperation. When cooperatives or farmers have stronger ties, corporate exploitation of farmers does not occur as much. The results of the study found that the success of the business strategy in the form of partnership covering the implementation of this concept in the oil palm industry is also largely determined by compliance between partners between companies and farmers in the form of cooperative cooperation in conducting business ethics.

Rahman et al (2017) tried to understand how to formulate a palm oil sustainability strategy from the company level and bridge the gap between the strategy and the means of its implementation. External pressures are one of the most important motivating factors for taking action related to environmental and social sustainability issues. In fact, cooperation between various departments as well as effective communication within the organization is essential in implementing supply chain strategies for palm oil sustainability. Through this study, a better understanding of the challenges faced from a downstream perspective in maintaining the food supply chain can be gained. The results also show the important role of

effective communication and cooperation between various departments in the organization. The role of the company is crucial in helping to achieve sustainability in the face of internal and external pressures of social and environmental responsibility. External pressures from NGOs, consumers, customers, governments, and other stakeholders are the most important drivers for taking action on environmental and social sustainability issues. Nurul Fatihah et al (2020) conducted a study to see to what extent the practice of the Code of Good Milling can improve the level of sustainability of the palm oil milling chain. Sustainability in this context is divided into three concepts, namely environmental protection, social responsibility, and economic practices. Social responsibility or sustainability referred to here includes human and labor rights and corporate governance. The results also showed that CSR is one of the important sustainability principles in this industry to ensure social sustainability.

Empowerment

A study by Lyndon and Nurmahfuzah (2015) focused on the role of MPOB in the empowerment of Bidayuh smallholders. Empowerment will increase competitiveness and reduce the dependence of communities and individuals on the government. Empowerment is a form of social action that encourages the participation of communities, organizations, and communities to achieve certain goals such as improving living standards and social justice. Studies show that with the help of MPPOB through information sharing, technical assistance, and advisory services, two types of strength are built, namely internal and external. Internal strength consists of emotional, physical, and intellectual strength, while external strengths are technical, communication and marketing. Through this power, Bidayuh smallholders are able to provide better palm oil yields and contribute to the sustainability of palm oil.

Rodríguez-Entrena & Arriaza (2013) looked at the role of non-governmental organizations (NGOs) in helping smallholders voice their opinions in meetings with companies and government bodies. Take the example of Sawit Watch (SW), which has helped represent local gardeners and communities. SW's close relationship with the community and, at the same time, his position as a member of the RSPO Executive Board allows him to understand the needs of both parties. As such, SW empowers local entities by developing negotiation capacity. With support from international NGOs, SW encourages inter-group negotiations and links NGO agendas on land conflict resolution to the concerns of local entities.

Cooperative Cooperation

A study by Oniki et al (2020) explored the history of oil palm development in Nicaragua in the 20th century during highly challenging political and economic change. In the 1980s, due to the reform of the agrarian revolution of the Sandinistas, the political situation and economic strategy changed completely. In this era, the socialist government began to create agricultural cooperatives for oil palm. Eight cooperatives for oil palm enterprises were organized and about 1200 hectares of land were planted with oil palm (Deming, 2020). At that time, farmers felt that the cultivation of oil palm was their income and the cultivation of those 1200 hectares was their main income. However, oil palms only bear fruit after 5 years and, in 1988, the farmers were unable to generate income because, at that time, there was no way to sell and produce oil. At the same time, the cooperatives and farmers had to incur debt because they had received credit from the central bank, which was used to pay salaries to cooperative members (De los Ríos et al., 2016). Meanwhile, the cooperative received good credit from the central bank and used it to pay. As a result, due to the failure of the oil palm industry through

this cooperative method, most members lost interest in oil palm and the cooperative system, and eventually, the Sandinistas lost the election and most of the cooperatives were dissolved.

Sarmila et al (2017) looked at the contribution of cooperatives to the social development of oil palm smallholder communities through the Sustainable Oil Palm Cultivation Cooperative (KPSM) Saratok, Sarawak. The study was conducted to assess the social contribution of cooperatives to the community of oil palm smallholders in Saratok. The results showed that the social contribution was given by KPSM to smallholders in terms of improving relationships between smallholders, increasing community involvement in oil palm activities, monitoring community agricultural activities, providing employment opportunities, and improving skills and facilities in activity management. These contributions indirectly empower smallholders to practice sustainable agriculture.

All five elements of social capital play an important role in determining the sustainability of the palm oil chain. Bonding, social responsibility, community empowerment through local wisdom, and reliability are values that need to be highlighted. Bridging, on the other hand, leads to knowledge sharing between farmers, which can further increase understanding and expertise in the sustainability of the oil palm chain. In addition, the role of public and private organizations needs to be enhanced to encourage and improve sustainability activities in the palm oil chain. The linking element sees the relationship between palm oil industry players and government agencies as a catalyst for the development of the palm oil downstream industry. At the same time, cooperative alliances in the form of partnerships that place compliance between farmers and companies as a key aspect have brought success to the business. External pressure is also one of the aspects of the concept of linking that is the driver of the sustainability of the palm oil industry. Competition between companies has a positive impact on the sustainability of the palm oil industry as a whole. Empowerment can increase competitiveness and reduce the dependence of a community on the government. This helps to improve the standard of life of the community through emotional, physical and intellectual strength. In addition, the role of NGOs in community empowerment is no less important. The efforts and support of NGOs in helping communities carry out consultations have given them the confidence to be self-sufficient. The role of cooperatives has its pros and cons. Among the benefits are increased communication between smallholders, increased community involvement in oil palm activities, monitoring of community agricultural activities, provision of employment opportunities, and increased skills and facilities in activity management. Yet, cooperatives have also affected farmers' credibility. This is because the establishment of cooperatives provided an opportunity for farmers to expand their cultivation through loans, but due to crops not succeeding, farmers have to bear a heavy debt burden. However, the cooperative receives good credit from the bank and uses it to repay the loan.

Conclusion and Suggestions

In conclusion, the results of previous research based on the SLR method confirm that there are still few studies on social capital and sustainability of the palm oil sector. Using specific keywords derived from the framework developed through a literature review, a total of 138 research articles were obtained. However, after the screening was done, only 14 articles were directly related to the title of the study. However, with limited research, it can be seen that social capital plays an important role in the sustainability of the palm oil industry, either in individual or group form. The conclusion of the study is that the elements of social capital are found to play an important role, such as the form, type, and role of social capital. Forms of social capital, namely bonding, bridging, and linking, are recognized as important in the

sustainability of the palm oil industry by researchers, as well as the types of social capital such as social networks (social relations) and the role of social capital in empowerment, creating cooperatives, establishing relationships, and forming social networks (networking and social networks). In particular, the role of the individual can be seen through the bonding element where values, levels of trust, and transparency in the community can help palm sustainability. The elements of bridging and linking that lead to organizations and cooperatives also play an important role in applying the element of sustainability to smallholders through the sharing of knowledge and skills. For further study, more studies on social capital can be done to look in more depth at its impact on the sustainability of the palm oil sector. Researchers can also use more databases to multiply the findings.

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