

Linking social capital with human capital: A study of oil palm labour in Malaysia

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Abstract

Oil palm labour decline since the COVID-19 pandemic in 2020 demonstrates the urgent need to increase, develop and strengthen local oil palm labour and human capital. However, there are few studies on the development of human capital within the social context, i.e. social capital context, which is the sociological approach to study human capital in relation to social capital. Based on sociologically based social capital theories by Coleman and Granovetter in this article discusses some findings from a recent qualitative study that conducted interviews on some oil palm smallholders involved in oil palm production in Malaysia. The research objectives are 1) to evaluate the link between social capital and human capital in terms of how social capital creates human capital and 2) to identify the kinds of social and human capital. By applying thematic analysis, some key findings are that particular kinds of social capital such as social networks, trust, and shared norms and values develop and sustain particular kinds of human capital such as knowledge, skills and experiences relating to oil palm production. The findings have implication in terms of policy making emphasising on social context to create and sustain oil palm labour and human capital for sustainable oil palm sector growth in Malaysia.

Keywords: Human capital, oil palm labour, oil palm sustainability, social capital, social networks

Introduction

One of the three themes in the 12th Malaysia Plan or 12MP (2021-2025) is to reset the Malaysian economy in order to recover from national economic decline due to the pandemic COVID-19 in 2021. This theme specifically strives to restore the growth of all key economic sectors, namely the oil palm sector under the agriculture sector. One key policy enabler in 12MP is developing future talent that will comprise highly skilled, well educated, efficient and productive labour (Twelfth Malaysia Plan 2021-2029). The National Agriculture Policy 2.0 or the NAP2.0 (2021-2030) fully supports the effort to create and sustain quality local labour that will become local human capital to replace declining foreign labour in the overall agriculture sector and particularly in the oil palm sector since the COVID-19 pandemic (Ministry of Agriculture, 26 February 2023). Thus, the

government shall continue to emphasise human-anchored and people-centric growth to strengthen macroeconomic resilience for a prosperous, inclusive and sustainable future growth as envisioned in the 12MP.

Crude palm oil production is slowly recovering and regaining strength since rapid fall in prices since the pandemic COVID-19 in 2021, Russia-Ukraine conflict in 2022 as well as rising prices of soybean oil and Brent crude oil in the world market (Palm Oil Industry and Technology News, 2023). The Director-General of Malaysian Palm Oil Board (MPOB) Datuk Dr. Ahmad Parveez Hj. Ghulam Kadir reported that exports of palm oil and other palm-based products had increased by 1.3 per cent in January to November 2022 to 22.43 million tonnes from 22.14 million tonnes in the same period of 2021 (Palm Oil Industry and Technology News, 2023). In the first quarter of 2023, the agriculture sector grew to 0.9% contributing 6% share of total overall GDP (Department of Statistic Newsletter, 2023). The oil palm sub-sector is largely responsible for this growth.

Considering palm oil is still regarded as the major source of sustainable and renewable raw material for the world's food, oleo chemical and biofuel industries, quality local labour is still important in driving the growth of the oil palm sector in Malaysia (Ministry of Human Resource, 2008). The past years have seen Malaysia giving serious commitment to ensuring its agriculture sector, including the oil palm sector meet universally accepted standards of sustainability from cultivation to production of downstream activities. The government continues to put effort into developing a workforce well trained in sustainable palm oil production to produce quality human capital and consequently elevate poverty and improve the quality of life of the oil palm community, especially landless farmers or smallholders in the country.

There are some studies on human capital for oil palm productivity and oil palm labour sustainability in Malaysia and oil palm circular mobility and human capital outcomes in Indonesia (Abd Hair & Iskandar, 2019; Faisal et al., 2017; Herdiansyah & Randi Mamola, 2025; Sheilyza & Zulkifli, 2020). As for studies on social capital, few studies have emerged in recent years, especially on the importance of social capital to develop labour for oil palm and crude palm oil production, social capital to improve labour resilience of independent smallholders, role of social capital and local wisdom for palm oil business partnership sustainability and social capital, labour competency and sustainable productivity (Abdul Hafiz Ab Rahman et al., 2024; Ainul Shazwin, 2018; Ainul Shazwin et al., 2019; Herdiansyah & Mamola, 2025; Jajang Supriatna et al., 2025; Jajang Supriatna et al., 2025; Ngan et al., 2022; Shigeki & Abu Kasim, 2009; Wa Kuasa Baka et al., 2024; Hidayat, Nur & Nurdiana, 2024). Hence, studies on oil palm labour that relate human capital with social capital in Malaysia are not new. However, few people study the link between human capital development and social capital, specifically human capital development within the social context, i.e. social capital context. This is actually a specific, sociological approach to study human capital in relation to social capital. To date, known studies on human capital in oil palm industry in Malaysia has ever argue that social capital (i.e. social networks, trusts and norms), that is a kind of non-economic means, can create and develop human capital.

Considering the research gap currently evident, by applying Coleman's and Granovetter's sociologically based social capital theories, this article discusses some findings from a qualitative study conducted by the authors of this article on the link between human capital and social capital in oil palm production in Malaysia. The research problem is on the ability of social capital to contribute to human capital creation for oil palm growth in Malaysia. Hence, the main research question is how can social capital be linked to human capital in terms of creating and sustaining human capital for oil palm growth in the country? In relation to this research question, the main

research objectives are 1) to evaluate the link between social capital and human capital in terms of how social capital creates human capital and 2) to identify the kinds of social and human capital. An implication of the findings is for policy making that emphasises on the importance of social context in oil palm labour development, producing quality and sustainable oil palm labour and human capital for sustainable oil palm sector growth in Malaysia. The rest of this article shall discuss a review of past studies on human capital and social capital oil palm growth in Malaysia, then present and discuss the conceptual and theoretical link and consequently discuss some empirical findings to support the argument.

Literature review

This section reviews several studies on human capital, social networks and social capital for the oil palm industry in Malaysia and elsewhere. Studies on social networks and social capital in the oil palm sector are on the slow rise in recent years; similarly, for studies on oil palm human capital. Nonetheless, all these studies are worth mentioning considering the effort to conduct such studies with minimal or no particular references to oil palm and agricultural contexts in previous years; in Malaysia or elsewhere. There are some common themes that arise from the studies: 1) on nature of social networks and social capital for oil palm production; 2) basis for social networks formation; 3) nature of human capital for oil palm production; 4) individual and social benefits of social networks and social capital; and 5) methods of study the social networks; and social sustainability of palm oil industry.

On the benefits of social networks and social capital for oil palm production, Ainul Shazwin (2018) found that social capital contributed to oil palm fresh fruit bunch production among independent smallholders in Johor, Malaysia. The social networks and norms generated shared understanding, trust and reciprocity among the small holders and that contributed immensely to the smallholders' cooperation and collective action between themselves for productive fresh fruit bunch production. The success of oil palm smallholders is dependent on their close relationships or social networks established with other smallholders, extension agents and authorised persons (Ainul, 2019). Network benefits are access to well diffused information and knowledge and reduced uncertainty and transaction costs in production.

Other studies conducted in the early 2000s on social capital and agriculture in Malaysia and Indonesia and social capital and community development in Western Europe argued that enhancing both structural and cognitive social capital could improve farmers' welfare in Malaysia. Kay (2005) argued that social capital contributed to social economy and community development in Western Europe; hence some policy implications on the contribution of social capital for community development are proposed. Hendra et al. (2016) through their study on social capital to welfare of palm farmers in the Siak District in Riau Province, Indonesia discovered that to improve the welfare of smallholders in oil palm sector required a combination of regional characteristics and elements of social capital such as social values inherent in communities, households and individuals. Hence, it seems that government policies are still not sufficient to improve the farmers' welfare in that area in Riau.

Soliki and colleagues (2019) argued social capital benefits in terms of income and development for cattle farmers in Kediri, East Java Province, Indonesia. They revealed that to understand the development of the livestock sector in Kediri, it is imperative to examine the "actual conditions and strategies" relating to social capital. Elements of social capital such as kinship,

behaviours, norms and interactions play a role in enhancing the economic income of beef cattle farmers. The higher the social capital, the higher the income of the farmers (Soliki et al., 2019). Muhammad Bello Ibrahim and colleagues (2017) highlighted the role of social capital as the “motivating and gluing force for communitarian work that benefits agriculture” (Muhammad Bello Ibrahim et al., 2017). Communities that did not subscribe to the working of social capital eventually became excluded from the “beneficial collective actions of the majority” (Ibrahim et al., 2017: 7) people that utilised social capital to their benefit.

Social capital also improved independent oil palm farmers’ resilience in managing oil palm plantations in peat areas in Indonesia (Hidayat, Nur & Nurdiana, 2024). Social networks, a particular form of social capital, are set up between the farmers and middlemen for the purpose of palm oil sales to processing companies (Hidayat, Nur & Nurdiana, 2024). Social networks based on the farmers’ membership in peasant groups and supported by another form of social capital, i.e. work ethics of farmers as transmigrants proved beneficial to the farmers. The networks served to support relationships to ensure favourable prices of palm oil, gain access to financial capital and leverage farmers’ groups to access fertiliser subsidies and protect farm lands from land fires. The networks also enabled social norms to be practiced, i.e. mutual assistance of farmers in preserving road access to oil palm plantations (Hidayat, Nur & Nurdiana, 2024). Social capital worked alongside local wisdom to manage the sustainability of palm oil business partnership for oil palm plantation in North Konawe, Indonesia. Consequently, business partnerships through institutional programmes are strengthened. Specific forms of social capital, i.e. social networks and trust, sustained business partnerships while local wisdom served to influence the partnership.

Social capital is one of several social aspects of social sustainability in the oil palm production (Ngan et al., 2022). In fact, social sustainability figures prominently as one of three standards stated in a set of standards for national oil palm sustainable production certification named as Malaysian Sustainable Palm Oil (MSPO). The other two standards are economic and environmental aspects. MSPO requires independent oil palm smallholders, oil palm plantations and organised smallholders and palm oil mills to ensure there is social sustainability in their oil palm production by making commitment to human and community rights and human development (Ngan et al., 2022). Other benefits of social capital are social capital as influencing oil palm farmers’ labour competency and performance and consequently sustainable oil palm productivity (Jajang Supriatna et al., 2025). This is seen in the case of Indonesia. Social capital in conjunction with institutions and sustainable productivity positively affect farmers’ performance. Institutions are significant for policy focus to enhance the sustainability and performance of oil palm farmers. Shigeki and Abu Kassim (2009) also studied the effects of social capital, but on the welfare of farmers involved in rice production in Malaysia. For Saragih and colleagues (2016), structural social capital (frequency of community activity attendance) contributed to rice yield while cognitive social capital (group norm) strengthened work ethics. Regional characteristics in combination with social capital influenced the factors for the welfare of the farmers such as fixed income, jobs, environmental damage, market access, land possession and number of family members.

As for studies on the nature and benefits of human capital for oil palm growth and agricultural development, there are several studies conducted in Malaysia and other parts of the world. Generally, these studies elaborated on the types of human capital required of the sector as well as benefits of human capital, namely its productive role to oil palm growth and palm oil production. Faisal and colleagues (2017) revealed both human and social capital need to be strengthened in order to bring “social benefits” to the oil palm community either through “policies

or rewarding practice through partnerships with other stakeholders in that landscape” (Faisal et al., 2017). Members of the oil palm community ought to possess types of human capital such as skills to manage resources and commodity production, generate and diversify income, deal with competitors, collaborate with partners and stakeholders, market and promote oil palm products and generally to improve their livelihoods.

Abd Hair and Iskandar Zainuddin (2019) argued that rural communities can empower themselves and enhance their community well-being sustainably through productive human capital assets such as labour, skills and knowledge. These capital assets can be developed through entrepreneurship training programmes, education programmes, agricultural extension programmes and diversification and downstream industry training programmes. Sheilyza and Zulkifli (2020) acknowledged that human capital in terms of knowledge, attitude and skills on farm management, farm operation and oil palm production influenced oil palm seedling assistance scheme participation in Sabah and Sarawak, Malaysia.

Human capital outcomes are positively correlated to oil palm circular mobility and they can strengthen sustainable development goals, as in the cases of North Sumatra, South Sumatra, Central Kalimantan and West Kalimantan. Oil palm circular mobility is defined as the “purposeful step involving practices in the production, consumption and distribution chain towards environmental sustainability and promoting fairness in intragenerational agricultural heritage” (Herdiansyah & Mamola, 2025). Oil palm circular mobility is found to produce human capital outcomes such as farm labour attendance and school participation (Herdiansyah & Mamola, 2025).

Some literature employed qualitative methods as a common way to study social networks and social capital. Ainul for example, employed a qualitative method to obtain social networks data and data on norms of trust and reciprocity among the smallholders. Hidayat and colleagues (2024) and Wa Kuasa Baka and colleagues (2025) also used qualitative methods in their studies on social capital in oil palm development in Indonesia. In comparison, Shigeki and Abu Kassim (2009) studied the effects of social capital on the welfare of farmers involved in rice production in Malaysia through a quantitative study utilising OLS and SLS methods on 59 randomly selected samples of households. Saragih, et al. (2016) employed Structural Equation Models (SEM) as the quantitative method of analysis used to analyse the influence of regional characteristics and social capital on the factors about the welfare of the farmers. The social capital study by Soliki and colleagues (2019) is based on the quantitative method that allowed a survey of 150 farmers and produced descriptive analysis. Another study on human capital and farm management is conducted quantitatively by Sheilyza and Zulkifli (2020) on 180 respondents who are oil palm smallholders in Sabah and Sarawak. Other studies by Herdiansyah and Mamola (2025), Jajang Suprianto and colleagues (2025) Ngan and colleagues (2022) have also employed the quantitative methodology in their studies of social capital and oil palm labour and human capital.

The studies reviewed above have confirmed their research contributions to the study of human capital, and social capital and social networks for oil palm sector specifically and agriculture industry generally in Malaysia and elsewhere in the world. Some research gaps still exist, nonetheless. Although social capital has been and is still being studied, there has yet a study to analyse the nature and role of social capital to oil palm human capital and labour creation and growth, especially in Malaysia. Therefore, the authors of this article argued on the need to examine and analyse the relationship between social capital and human capital by applying a sociological theory that argues the ability of social capital to create human capital. In doing so, policy makers and authorities will be able to see the importance of another factor, a non-economic factor that is social in nature, i.e. social capital, in creating and sustaining oil palm human capital in Malaysia

and elsewhere. Thus, they can concentrate and invest more effort on this social factor in all aspects of their policy making, oil palm human capital training and mentoring initiatives.

Conceptualising and theorising the link between human capital and social capital

This section discusses the conceptualisation and theorising of the link between human capital and social capital for this article. A prominent proponent of the modern human capital concept, Becker (1964) developed the economic approach to human behaviour by theorising on the processes to develop human capital such as education and training that can add value and bring about benefits to human actors. In addition, the human capital can facilitate productive activity and economic action (Teixeria, 2014). Humans, for Becker, possess “individualised choices” that are based on “utility maximisation”, “a forward-looking stance”, “consistent rationality” and “stable and persistent preferences” (Becker in Teixeira, 2014).

Coleman shares an almost similar idea on human capital with Becker whereby for him, human capital created is created through “changes in humans/persons that bring about skills, capabilities” (Coleman, 1988) and knowledge “that can make them act in new ways” (Coleman, 1988; Coleman, 1990). This means the created human capital elements can add value to new action that consequently bring about benefits or profits to the humans concerned and facilitate their productive activity. The types of human capital are educational level, skills, knowledge and experiences and the means to create human capital are education and training.

For Coleman, human capital creation is different from social capital creation. In his view, social capital is created through “changes in the relations among persons that facilitate action” (Coleman, 1988), namely facilitating productive activity. Resources for social capital are social networks, trust and norms (Coleman, 1988; Putnam, 1996; Putnam, 2000). For Putnam (1996, 2000), types of social capital are social networks, trust and norms. These resources are also considered as forms of social capital. Granovetter (1985) theorised on social networks by stressing on the embeddedness of economic action in social relations. Thus, the link between Coleman’s, Putnam’s and Granovetter’s ideas is possible, i.e. social relations are social networks that have added value to become social capital.

Social networks are social relations that are created between at least two persons to facilitate social and individual action (Chan, 2017; Scott, 1991; Taban Khalid et al., 2023; Wasserman & Faust, 1994). The networks that can produce benefits for network actors will become social capital (Borgatti et al., 2018; Chan, 2015; Chan, 2017; Chan et al., 2015; Chan, 2017; Taban Khalid et al., 2023; Coleman, 1988; Coleman, 1990; Field, 2003; Halpern, 2005; Newman, 2018; Scott, 1991; Kilduff & Tsai, 2003; Putnam, 2000; Wasserman & Faust, 1994 on social networks). There are specific kinds of social networks such as family ties, friendship networks, neighbour ties, former and current work ties, old school ties, club or association networks and others.

As for trust, it is defined as the belief that on the reliability of and confidence in someone or something to execute a task or convey messages and information (Cambridge Dictionary, 6 April 2023). For Fulcher and Scott (2011), norms are rules of behaviour that regulate how people behave. Formal norms are often embodied in law and regulations and are established, written and documented. Informal norms, otherwise known as social norms, are about the dos’ and don’ts (i.e. rules) created by social groups such as society and community to inform about how group members should behave for the sake of social order and integration. Taboo is a good example of a social as

well as cultural norm especially as an effort to reduce any misconduct that can affect group behaviour and group outcomes.

Without values, there will be no norms and vice versa. Values are the beliefs or ideas that specify what people should or ought to do and also ought not or should not do in social group living (Fulcher & Scott, 2011). Values determine what sort of norms or rules to exist or be created; in other words, values become the foundation of norms. Values can be communal, societal, cultural or group wise in nature; thus, social or cultural values are socially and deliberately created. Furthermore, they are either modern or traditional, similarly for norms. Modern and traditional values co-exist in most times; so are norms. Examples of modern work and organisational values are rationality, efficiency, professionalism, calculability, objectivity and others. Examples of traditional values are loyalty, filial piety, honour and respect for customs and traditions, tolerance, acceptance, honesty, trust and others. To conceptualise further, forms of social capital are formal and informal while types of social capital are social networks, trust and norms have certain functions to fulfil. One function is to influence through social processes such as social interaction and socialisation. Furthermore, to execute that function, formal and informal means are education and training that are mediated by on-going continuous social interaction and socialisation.

In brief, the conceptual and theoretical explanation for this paper is as follows - creation and sustainability of types of human capital (e.g. skills, knowledge and experiences related to oil palm production) by social capital initially occurs when a particular type of social capital (social networks) functioned to create and sustain social actors, i.e. smallholders, through social interaction and socialisation, to participate as an oil palm smallholder in this specific economic action known as oil palm production. The social capital is also formal and informal in nature. Throughout social interaction and socialisation during informal and formal training and mentoring, the smallholders' social networks together with other types of social capital such as trust, loyalty, family obligations, particular shared norms and values served to influence the smallholders the smallholders to continue to become a smallholder in oil palm production and also to create and sustained their human capital, i.e. new oil palm related knowledge, skills and experiences. Figure 1 portrays the conceptual and theoretical framework. Thereafter, the following sections shall discuss some substantive empirical findings to support this conceptual and theoretical argument.

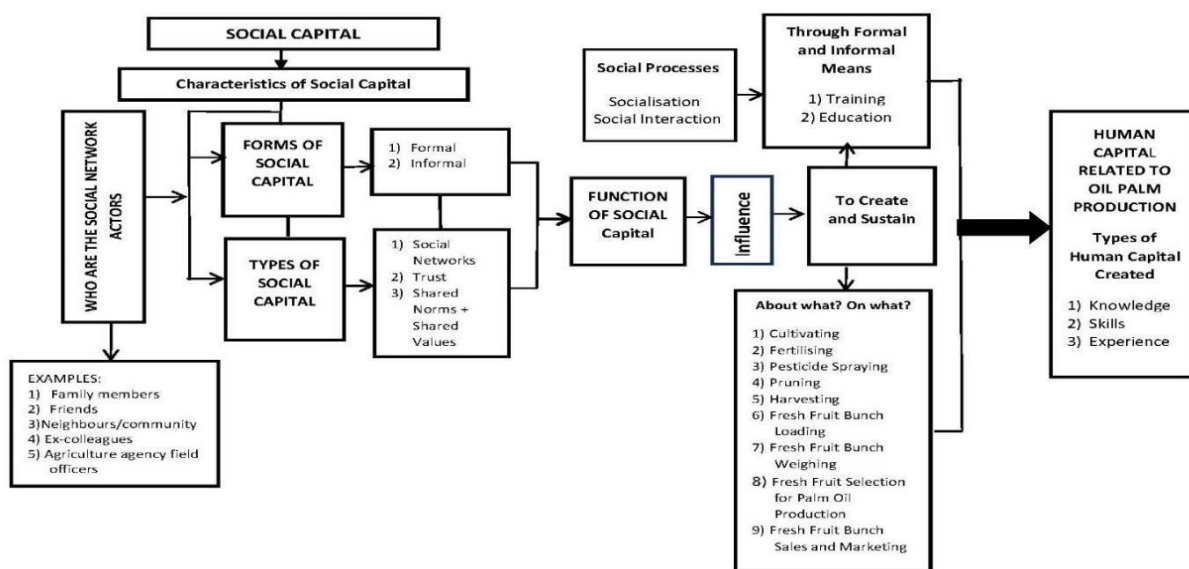


Figure 1. Conceptual and theoretical framework

Method and study area

This section explains the research approach, research strategies, types of research, sampling and sample, method of data collection and method of data analysis. Research ethical considerations are also explained. A summary of particular themes that is derived from deductive and inductive data analysis is provided in Table 1.

a) Research approach, research strategies and type of research

The methodology is primarily based on a qualitative approach that is mainly based on the structuralist paradigm in combination with other research paradigms such as interpretivist, behaviourist and empiricist paradigms. These paradigms allowed a combination of deductive and inductive research strategies. Deductive strategy allowed data collection and analysis of secondary sources from a comprehensive literature review prior to actual research and data from a pilot study. The research turned inductive when the researchers embarked on an empirical study through field work at the research location to collect and analyse qualitative data. Inductive strategy has enabled the researchers to delve into everyday lived experiences of informants e.g. smallholders or farmers, to uncover their own meanings, understanding, views, experiences and practices concerning the creation of social capital of oil palm related human capital.

b) Sampling and sample

The sampling method used is purposive sampling upon a population of all independent oil palm smallholders in all oil palm plantations in Malaysia. The method produced a sample of 15 smallholders who are selected with the assistance from a key government agriculture agency officer who acted as key informant for the study. Besides the 15 smallholders as the main units of

analysis, there are also secondary units of analysis who comprised of several field officers from a key government agriculture agency, an employee and operator of a key government agriculture agency-linked oil palm cooperative and oil palm fresh fruit bunch weighing centre, several private operators of oil palm fresh fruit bunch weighing centres, and one oil palm worker. On the overall, the 15 smallholders as informants are categorised into four categories: 1) owner-operator, 2) lessee-operator, 3) owner-operator-lessee and 4) owner and owner-operator of fresh fruit bunch weighing centres. Research ethical considerations are strictly adhered to in terms of confidentiality of actual names of the key government agriculture agency and the smallholders who are also informants and locations of smallholdings. Pseudonyms are given instead, such as Agency S for the key government agriculture agency and other pseudonyms for all the informants, especially the smallholders. The informants are informed of the research ethics by the researchers prior to the interviews and consented to being interviewed. Hence, trustworthiness of the credibility of the researchers by the informants and vice versa is ensured. Table 1 displays the categories of the 15 smallholders of the study.

Table 1. Categories of smallholders

No.	Informant	Type of research	Category
1.	Informant Z	Pilot Study	owner-operator-lessee
2.	Informant A	Fieldwork	owner-operator
3.	Informant B	Fieldwork	owner-operator
4.	Informant C	Fieldwork	owner-operator
5.	Informant D	Fieldwork	owner-operator
6.	Informant E	Fieldwork	owner-operator
7.	Informant F	Fieldwork	owner-operator
8.	Informant G	Fieldwork	owner-operator
9.	Informant H	Fieldwork	owner-operator
10.	Informant I	Fieldwork	owner-operator
11.	Informant J	Fieldwork	lessee-operator
12.	Informant K	Fieldwork	owner-operator
13.	Informant L	Fieldwork	lessee-operator
14.	Informant M	Fieldwork	owner and owner-operator of fresh fruit bunch weighing centres
15.	Informant N	Fieldwork	owner and owner-operator of fresh fruit bunch weighing centres

The main criterion for purposive sample selection is direct and active involvement as independent smallholders who either own their oil palm smallholdings or rent from oil palm owners. They are actively involved on a daily basis in cultivating, harvesting, pruning, fertilising, spraying pesticides and sending their fresh fruit bunches to fresh fruit bunch weighing centres and/or oil palm factories. Locations of their smallholdings are determined by the researchers with guided information from an officer from the key government agriculture agency Agency S who is also a key informant. The smallholders are also selected based on their availability at the time of the fieldwork. Several field officers from Agency S are also selected purposively based on their

oil palm areas of responsibilities where the selected smallholdings are located. The weighing centre operators and/or owners are also sampled purposively based on their active oil palm business dealings and active interaction with smallholders. The oil palm workers are sampled because of their employment with the smallholders.

c) Method of data collection

The main method of data collection is interviews with the purposively selected smallholders located in selected smallholdings in two states in Malaysia. The interviews allowed collection of deep and rich data that captured nuanced and personalised lived everyday experiences of the smallholders of their oil palm ventures. Non-participation observations are conducted in the location of oil palm smallholdings that are owned and operated by some of the smallholders/informants. Non-participation observations are conducted on the kinds of tools used in fresh fruit bunch cutting and pruning as well as on the physical setting and acreage of the smallholdings. Each interview lasted approximately 30 to 75 minutes with semi structured questions and open-ended asked as written below. Some of those questions have been constructed from deductive data analysis from the pilot study data obtained prior to the fieldwork. Other questions are refined or created for the fieldwork interviews. All interviews are audio-recorded and transcribed verbatim. The areas of the interview questions are as follow:

- 1) Period of oil palm smallholdings commencement and operation;
- 2) The ways the smallholdings are acquired;
- 3) The presence and nature of assistance from people for smallholdings operation and oil palm production, especially people who are networked with the smallholders – who is who, who is networked to who, who helped who in what ways;
- 4) Role of a key government agriculture agency and its field officers, other government agencies and private agencies as well as local community organisations;
- 5) Role and contribution of social capital, e.g. social networks/connection with those people and agencies in oil palm related human capital creation – who is networked to who, what kind of networks, who helped who in what ways and who helped who to create and sustain what types of human capital;
- 6) Types of human capital i.e. skills, knowledge and experiences about oil palm production acquired and developed from the social networks;
- 7) Contribution of other forms and types of social capital and their role in oil palm related human capital creation and
- 8) Issues and challenges in oil palm production.

d) Method of data analysis

Qualitative thematic analysis is conducted both deductively and inductively on data collected from the pilot study and fieldwork. The data is coded manually. The analysis discovered several themes that can demonstrate the theoretical and empirical link between human capital and social capital and substantiate the theory.

The themes that have been deduced prior to fieldwork during literature review and pilot study are based on Coleman's social capital theory and supported by Putnam's and Granovetter's ideas and theories. These themes are also induced, discovered and finetuned after the fieldwork.

The themes are as follows: types of human capital, types and forms of social capital, types and nature of social networks, trust, loyalty, shared norms and shared values. Induction of fieldwork data further revealed specific sub-themes such as on particular types of human capital such as knowledge, skills, expertise and experiences relating to oil palm cultivating and planting, ways of harvesting, ways of pruning, fertilising, pesticide spraying, land clearing, fresh fruit bunches loading, weighing and selection for palm oil production and quality of fresh fruit bunches and pricing of the weighted fruits. Other sub-themes discovered are particular types of social capital such as social networks in terms of family ties, friendship ties, neighbour ties, community networks and social networks with former work colleagues. Trust and shared norms and shared values are discovered as well. Social networks established between the smallholders and network actors such as the government agriculture agency field officers, private and government oil palm fresh fruit bunch weighing centre operators, government-linked oil palm cooperative operators, and oil palm worker. Table 2 summarises these themes and their sub-themes. The following steps are taken in the thematic analysis and they are:

- 1) Initial coding – Information and verbatim data obtained from the literature review, pilot study interview and fieldwork interviews and non-participation observation are coded deductively and inductively into broad themes based on the conceptualisation and operationalisation of “human capital”, “social capital”, “social networks”, “trust”, “shared norms” and “shared values” concepts
- 2) Categorisation – Themes are then categorised deductively and inductively into three main categories in alignment with the research questions and research objectives; the categories are – a) nature and characteristics of oil palm production, b) human capital, c) social capital and d) creation of human capital by social capital
- 3) Theme fine tuning – Overlapping similar codes are merged but are distinct ones are retained to demonstrate narrative complexity
- 4) Combination of themes and sub-themes with relevant quotes from verbatim – Relevant quotes that fit with the themes and sub-themes are selected

In short, the thematic analysis found the themes and sub-themes as interlinked with one another thereby further enriching data analysis. The analysis confirmed the ability of Coleman’s human and social capital theory in combination with Putnam’s social capital theory and Granovetter’s social networks and social embeddedness theories to explain the theoretical and empirical link between human capital and social capital and more importantly on how both types of capital can offer a potential solution to human capital and labour issues in the Malaysian oil palm sector in present and the near future.

Table 2. Themes and sub-themes derived deductively and inductively

No.	Themes	Sub-Themes
1.	Types of human capital	Knowledge, skills and experiences on oil palm cultivating and planting, ways of harvesting, ways of pruning, fertilising, pesticide spraying, land clearing, fresh fruit bunches loading, weighing and selection for palm oil production and quality of fresh fruit bunches and pricing of the weighted fruits.

2.	Types and nature of social capital	Social networks, trust, shared values and shared norms
3.	Types and nature of social networks	Informal family ties, friendship ties, neighbourhood networks, social networks with former work colleagues, ties with community members Informal and informal social networks with Agency S' field officers
4.	Shared norms and shared values	Shared modern and traditional values – rationality, calculability, objectivity, self-maximisation, sense of loyalty, filial piety, trust, respect and honour of tradition and customs, honesty Shared norms - familial obligations in giving assistance, communal cooperation and mutual assistance, information sharing

Source: Own research

Ethical Considerations

Ethical considerations are in place throughout the entire research process. The aspects of the considerations are a) Informed consent – all informants are informed of the research's aim, the voluntary nature of their participation and their rights to withdraw, b) Anonymity – Pseudonyms are used in all the verbatim quotes and publications, identifying details (e.g. name of government agencies, private sector organisations, community village names, exact locations of the smallholdings) are omitted or altered and c) Confidentiality – interview recordings and transcripts are stored securely and accessible only to the researchers.

Results and discussion

This section elaborates and discusses key findings that substantiate the conceptual and theoretical link between human capital and social capital theories as explained and summarised in the earlier conceptual and theoretical framework. This section divides discussion of the findings into two large sub-sections; they are 1) Forms and types of social capital that functioned to influence the smallholders through social interaction and socialisation by other social network actors to become oil palm smallholders and 2) Other function of social capital that is to create and sustain types of oil palm related human capital.

Forms and types of social capital and the influence function of social capital through social interaction and socialisation

Social networks of some of the 15 smallholders managed socialise and influence them to become oil palm smallholders. Social networks with some social network actors with whom the smallholders interact with are previous and other current smallholders. The smallholders consequently learned and gained knowledge about oil palm production and acquired and developed human capital, i.e. specific skills on oil palm production and smallholdings operations from those people.

In the case of some of the 14 (excluding the informant from the pilot study) smallholders, those people are late fathers, father-in-law, brothers and late husband. Other network actors who are also able to influence them are family members, neighbours, friends who are also other smallholders, community members and former work colleagues. Hence, family ties, neighbour networks, friendship ties, community networks and former work ties are proven beneficial. As for formal social networks, the smallholders built and sustained formal work ties with the key government agriculture agency field officers, oil palm cooperative members and private operators of fresh fruit bunch weighing centres. The following interview excerpts confirmed this finding.

For Informant Z, besides his former work ties with an agriculture agency, his family ties with his relatives also socialised and influenced him to venture into oil palm production. He and his relatives own the oil palm lands but he worked on the lands on behalf of his family. As he said in the interview,

“...It is my own land and family; my father’s land a bit, sister, mother, relatives, family”

(Field note: 23rd September, 2022)

As for Informant A, her late father who was an oil palm smallholder and owner had socialised, encouraged and influenced her, her brothers and also her late husband who had worked in an palm oil company to venture into oil palm production. She explained in detail,

“My father has experience, from him we know what type of tree for what kind of fertiliser to use after three years. Yes.. we have to learn everything. My husband was once a contractor with so many experiences, My brother...my two brothers and sister own oil palm smallholdings follow father because father owned many smallholding;

(Field note: 20-22th October, 2022)

Furthermore, Informant C’s father who is an oil palm smallholder and owner also influenced him to become a smallholder. He confirmed,

“My experience started from my father and I started quite young. I followed my father when he worked so I also followed him do the work”

(Field note: 20-22th October, 2022)

Informant B also mentioned the influence of her smallholder husband upon her to become a smallholder. She said in the interview;

“I learn to fertilise from my husband. He teaches me a lot?”

(Field note: 20-22th October, 2022)

Informant G also confirmed on the role of his father in encouraging and influencing him to become an oil palm smallholder. He inherited the plantation from his father. He said in the interview,

“It takes me long time ago because from started young so now already 60 years old and now I inherited from my father’s family”.

(Field note: 4-6th January, 2023)

Informant K started doing oil palm production work from young and she and her brother took over her late father's oil palm smallholdings after her father passed away by doing oil palm leasing work. She claimed that;

“I take over from my father, my father passed away 4 years ago and me and my brother continue this job, I do admin”.

(Field note: 15-16th June, 2023)

Finally, Informant L said in the interview his oil palm smallholding work is influenced by his family's smallholding involvement, especially his father. As he said in the interview, oil palm smallholdings are his family business;

“this is actually my family business and it is from my father”.

(Field note: 15-16th June, 2023)

In the case of Informant Z, his former work ties with a government agency motivated him to venture into oil palm production after his retirement.

“when I was working with... I was involved in these places. So, I know many land owners”

(Field note: 23rd September, 2022)

The interview excerpts discussed earlier established that human capital as created by social capital through social interaction and socialisation processes. These processes enabled education and training between the 15 smallholders with previous smallholders, neighbours, community members, other smallholders, former work colleagues, the key government agriculture agency field officers, other government agencies, local agriculture bank, oil palm cooperative operator and private operators of fresh fruit bunch weighing centres. Community members come from the same village as the 15 smallholders. The operator of the government linked oil palm cooperative is also a government employee. Operators of fresh fruit bunches are located in the areas where the 14 smallholders (excluding the informant from the pilot study) operate their oil palm lands.

Formal and informal social networks as a form of social capital are found supported by other types of social capital such as trust, loyalty, shared norms, shared values and obligations. In the case of all the 15 smallholders, particular types of social capital, formal and informal shared values and norms co-exist, and are complementary and mutually supporting. Shared informal values such as on family orientation, loyalty, filial piety, customs and traditions and trust co-exist obviously with basic modern values such as economic rationality, calculability and objectivity and self-maximisation. All of 15 smallholders embarked on oil palm production mainly based on economic rationality, calculability and self-maximisation. This means calculable and objective economic gains and profitability due to relatively high palm oil prices at the inception of oil palm production participation.

In the case of Informant E, trusting his workers is important as he depends on his workers to do all the oil palm harvesting work due to his old age. In the interview, he said,

“So, there is trust with the workers”.

(Field note: 4-6th January, 2023)

The above interview excerpt shows that interrelatedness between some of those types of social capital are at play in reality. For instance, in the case of Informant E, social capital such as trust is linked to some other types of social capital such as formal and informal shared values and norms. Shared norms are about the dos' and don'ts (i.e. rules) of oil palm production, for instance harvesting. For Informant E, trusting his workers means trusting their knowledge and skills on harvesting. Moreover, trust ensures that norms, i.e. rules on behaviour and practices for productive harvesting and pruning are shared and practised based on common understanding and not defied by the workers.

The norms are generally about when and how to seed and plant fresh fruit bunches, when to wait for fresh fruit bunches to ripened, how to cut ripened fresh fruit bunches during harvesting, and when and how to prune, fertilise and spray pesticides. Therefore, these rules or norms are about the behaviour and practices on oil palm production that smallholders and harvesters should display during seedling, cultivating, harvesting, pruning and pesticide spraying that would not incur costs but generate productive and economically viable results from the sales of their oil palm fresh fruit bunches. Some of these norms are formal if they have been taught by the key government agriculture agency field officers to the smallholders during formal training and coaching. Some of the interview excerpts discussed earlier already substantiate these findings. Some other norms are found to be informal if they have been socialised and inherited and taught by elders to the smallholders. Again, some of the interview excerpts discussed earlier have confirmed this point.

As seen in the case of Informant E, a shared value related to the shared norms is about the quality of the fruit. In cases of other informants, other shared values that are discovered are family values, local community (village) values and cultural values. For example, values such as family obligation, filial piety and loyalty become the foundation of trust of the children who assist their smallholder parents, the trust of siblings who assist their smallholder sister in oil palm production and the trust of spouse in oil palm production.

The interview excerpts from the cases of Informant Z (trust of family members), Informant A (mother trusting two sons), Informant B (wife being trusted by husband), Informant C (son being trusted by father), Informant H (son being trusted by father), Informant E (father trusting children), Informant F (father trusting son and daughter), Informant L (son being trusted by father), Informant K (sister-brother mutual trust), Informant M (uncle trusting niece) and Informant N (son being trusted by father) clearly verified the close link between trust and family obligation, filial piety and loyalty. Hence, besides trust of oil palm workers, trust of the children and siblings is clearly evident. In fact, trust exists and is sustained if the social networks, such as family ties, are pre-existing, strong and cohesive. The following section discusses some examples from some interview excerpts with some of these informants.

To quote an example, for Informant Z, his trust for his son and daughter and their familial piety and loyalty leads to secured financial management of oil palm earnings. In the interview, he said,

“Two of my children helped. My son and my daughter in terms of finance”.

(Field note: 23rd September 2022)

As for Informant A, her trust in her two sons to help her full time in oil palm fresh fruit bunch transportation sustained her oil palm labour productivity. As she said in the interview,

“two sons helped and now full time because not enough worker. I do not drive the lorry, the two of them drive”.

(Field note: 20-22nd October, 2022)

As for Informant F, his family ties with his son and daughter provided family labour for his oil palm production activity. He said in the interview,

“my children if not working I will ask for their help. All four sons but now three and two daughters are helping. My daughters are ver helpful, if we call they will come”.

(Field note: 4-6th January, 2023)

In the case of Informant M, his niece has been helping for the last 15 years. He confirmed this in the interview, as stated that;

“Ha...this is my assistant, I am already old unfit already. I have been helping my uncle for 15 years. What is here she knows everything, she is quite knowledgeable now”.

(Field note: 4-6th January, 2023)

In the case of Informant Z, his social networks with his oil palm workers based on trust indeed become social capital for him; in other words, trust and loyalty is the beneficial outcome of social networks between this oil palm owner-boss and his oil palm workers. In the interview, he quips,

“..trust.... loyalty”

(Field note: 23rd September 2022)

Functions of social capital to create and sustain human capital and types of human capital created and sustained

Further findings are discovered. Social capital, namely social networks in the form of family ties, formal social networks with the key government agriculture agency field officers and other government agency as well as informal social networks with community members and former work colleagues, are discovered playing another function that is to create and sustain most of the 15 smallholders' human capital on specific knowledge, skills, expertise and experiences related to oil palm production.

The kinds of human capital created and sustained are about specific periods and ways of oil palm cultivating and planting; specified periods and ways of harvesting; specific periods and ways of pruning; specific periods and ways of fertilising; specific periods and ways of pesticide spraying; specific types of fertiliser; specific types of pesticides; land clearing; specific ways on fresh fruit bunches loading, weighing and selection of quality and ripened fresh fruit bunches for palm oil production; identification of specific quality of fresh fruit bunches; securing potential smallholders as customers of private fresh fruit bunch weighing centres and selling of fresh fruit bunches to government and private fresh fruit bunch weighing centres and pricing of the fresh fruit bunches. The smallholders' social networks indeed have been transformed into social capital that

subsequently developed their human capital. Some interview excerpts displayed below confirmed these findings.

For example, in the case of Informant Z, his informal social networks with his former work colleagues and also his former work experiences provided him with knowledge of rubber planting and operation of oil palm plantation. For Informant Z, he learned about available lands owned by many landowners and how to build those lands for oil palm plantation through his former work with government agency.

As for Informant A, her late husband who taught her how to fertilise oil palm lands gained his knowledge from his former company, as mentioned in the interview.

“I learned agriculture from my husband. And my husband learned from attending course organised by his company. So skills and training from the course plus working experiences from that company...”

(Field note: 20-22nd October, 2022)

According to Informant D, his oil palm production knowledge came from his friends and the key government agriculture agency named Agency S. In fact, he also established informal social networks with local community people in local eateries in the community – for example, social networks with ‘kopitiam’ (local coffee shop) local community members who are regular patrons of the coffee shops. Through those people, Informant D is able to get new information on types of oil palm trees and periods and ways of oil palm trees cultivation, planting, harvesting, pruning, types of fertilisers to use and fertilising and types of pesticides to use and pesticide spraying. According to Informant D;

“Knowledge I got from friends, how to manage, measure the land, plant. Relations with Agency S also because of license. Agency S and MSPO help a lot. License to sell fruit, to spray pesticides. Agency S helps fertiliser and pesticides”. Many friends, effort is worthwhile. We have googled, you can check, you can go to Agency S. They can teach you too and you can also meet them at Uncle Kedai Kopi”.

(Field note: 20-22nd October, 2022)

Informant B learned to cut the fresh fruit bunches from her husband who learned from formal training courses and advise giving on oil palm production. In the interview, she confirmed that;

“in terms of training, I learned from my husband who went for the training long time ago. I did not go, my husband did”.

(Field note: 20-22nd October, 2022)

In addition, Agency S played a role by helping Informant E in land clearing and cleaning. Informant G shares the same understanding as he mentioned that;

“I am originally from the village so I am from a farming family, smallholding family,

I am a smallholder’s child so I continued my father’s effort, from young, I helped in oil palm planting. So since young, I learn how to prune everything”.

(Field note: 15-16th June, 2022)

In a different situation, Informant H did not get a formal training since his father himself taught him how to cut and harvest fresh fruit bunch. He shared his moment with his Dad regarding the lesson he received from him;

“I called him, he taught me, taught the way, what is the technique, have to put the pole close to the tree. I also learned from him, I started from there...push first, push the fruit I watched him. After a long while he let me try. Said if tired let him do. After a long time, he left me, ha. You can do this yourself, he said to me.

(Field note: 4-6th January, 2022)

Informant M's friendship networks with his friends played an important role in teaching him about planting and selling fresh fruit bunches. He said in the interview;

“So I follow them...when the tree is fruiting, we together find market wherever, sell fruit bunches...haa after long time after collecting a lot, we together bring them to the factory”.

(Field note: 4-6th January, 2022)

Formal networks with a government-linked fresh fruit weighing centre and oil palm cooperative developed Informant M's knowledge on managing fresh fruit bunch weighing centre and the pricing of the weighted fruits. Informant M shares his experience by saying that;

“Knowledge to manage fruit weighing centre from friends and also at the weighing centre from the officers' advise. From there I learn how to estimate the price, they will tell”.

(Field note: 4-6th January, 2022)

In addition, Informant M's friendship networks and networks with community members or villagers provided him some knowledge on fertiliser, type of pesticide to use and when to fertilise. Informant M explained how he expand his knowledge on. Fertiliser and pesticide,

“from my friends we also learn, asked them too, if I see their plantation nice, clean, what fertiliser, pesticide, when to fertilise.. ask them also. And there are my friends from the same village and some are also my relatives”.

(Field note: 4-6th January, 2022)

Informant M's formal networks with Agency S also developed his oil palm production knowledge and skills through training, loans, courses and advise giving. Informant excitedly explained on some knowledge he gained on loans process and procedure.

“Agency S advise giving loans and besides that, once in a while, they come to the village to give advise..how to fertilise, spray pesticide, and firstly give license”.

(Field note: 4-6th January, 2022)

In another situation, Informant N believes that friendship networks with his friends helped to find smallholders as his potential customers for his fresh fruit bunch weighing centre business. Consequently, his human capital on knowledge and skills related to fresh fruit bunch sales and marketing are developed through his social capital based on friendship networks. As he said in the interview;

“...some friends help me to find smallholders, after working for a long time, the smallholders recommend other smallholders”.

(Field note: 4-6th January, 2022)

Informant F who is also a teacher, utilises some of his human capital, for example knowledge on particular types of pesticides and fertiliser is developed from work ties with local school students. According to Informant F,

“my student who first taught me what his father knows, so he went home he gave me basta”.

(Field note: 4-6th January, 2022)

Furthermore, Informant F also said that Agency S helped him in tree replanting and fertiliser and pesticide as he also mentioned that;

“...there is help from Agency S so I got help from Agency S to replant tree fertiliser pesticide for the first two years..seeds and pesticides and aid in planting and clearing the plantation they give”.

(Field note: 4-6th January, 2022)

Another finding is on the role of informal social networks with former work colleagues from government agencies and local agriculture banks in developing the smallholders' oil palm related human capital. In the case of Informant E, his former work ties with a local agriculture bank through his work on the finance sector in the bank developed his oil palm related human capital by providing him with specific knowledge on oil palm production, especially on tree planting. In the interview, he confirmed that;

“Knowledge on planting coincidently I was in the bank there were loans to develop oil palm plantation...I was in the finance section”.

(Field note: 4-6th January, 2022)

Informant E's informal social networks with his friends also developed his human capital on oil palm planting. He said,

“usually in the evenings we sit down with friends to share stories..ehh my tree is dying so there are friends who share experience, usually after Asar prayers, we will sit down drink while sharing anything”.

(Field note: 4-6th January, 2022)

In general, the discussion above shows the smallholders' types of social capital such as formal and informal social networks, trust and shared norms and shared values are significant in advise-giving, licensing (relating to oil palm production and sales), consultation and hands-on training on oil palm production to the smallholders. The social networks, trust, loyalty, shared formal and informal norms and shared values are able to continue to educate, train and coach/mentor the smallholders on oil palm production throughout their social interaction and socialisation processes with other social network actors with whom they networked with such as previous smallholders, other smallholders, Agency S's field officers, operators of fresh fruit bunch weighing centres, operator of oil palm cooperative and workers.

The types of social capital indeed guided the entire human capital creation process. Once human capital such as specific skills, deep knowledge and experiences on oil palm seedling, cultivating, harvesting, pruning, fertilising, pesticide spraying, land clearing, weighing and loading of oil palm fresh fruit bunches and pricing of the fresh fruit bunches have been created, they are sustained. The forms of social capital eventually ensured the sustainability of oil palm labour and human capital, namely in terms of labour reliability, accessibility and availability.

Oil palm related human capital that has been created by the social capital might be further developed and eventually sustained if oil palm work productivity is continuously improved and monetary rewards continued to be obtained. The ability of social capital to create oil palm human capital will continue to be at work as far as that oil palm related human capital development continues. Consequently, the motivation and commitment of the smallholders to continue to engage in oil palm production as a kind of sustainable productive work will continue and be enhanced. If this is the case, then Malaysia may not need to depend too much on foreign labour anymore for oil palm development and growth, especially for harvesting activity.

Conclusion

As a conclusion, this article has substantiated Coleman's, Granovetter's and Putnam's theories on social capital and social network embeddedness in the study of oil palm labour in Malaysia based on empirical evidence. The evidence confirmed that creation of sustainable oil palm related human capital (e.g. skills, knowledge and experiences) by a particular social capital (i.e. social networks) initially occurred when the networks influenced, through social interaction and socialisation, existing smallholders to actively participate in an economic action, i.e. oil palm production as smallholders. The social networks are established with family, friends, neighbours, community members, former work colleagues, oil palm cooperative members, operators of fresh fruit bunch weighing centres as well as field officers of Agency S that is a key government agriculture agency in Malaysia. Once influenced, the social capital (social networks) functioned to create and sustained new knowledge and skills on oil palm production through informal education, training and mentoring that are mediated by long term on-going social processes such as social interaction and socialisation.

The creation and sustainability of oil palm related human capital is further facilitated by other types of social capital such as trust, loyalty, obligations and shared norms concerning rules of oil palm production behaviour, modern and traditional shared norms and shared values of economic rationality, filial piety, importance of filial piety, tolerance, acceptance, honour and respect for family customs and tradition, trust and loyalty. Hence, specific types of human capital that are created and sustained are specific knowledge, skills, expertise and experiences on varying stages of oil palm production from seedling, cultivating, planting, harvesting, pruning, fertilising,

land clearing, pesticide spraying to loading and sending the fresh fruit bunches to the weighing centre for weighing and quality check and pricing of the weighted oil palm fruits. The smallholders also developed specific experiences related to oil palm production. These types of human capital that are now owned by the smallholders continue to generate economic benefits to them. In other words, the link between social capital and human capital indeed exists as social capital is proven to be able to create and sustain human capital that generates economic benefits for the smallholders.

Some limitations to the study are noted but can be addressed for future research purposes, research problem, research questions and research objectives. Firstly, the size of sample is currently limited but can be expanded to include other smallholders in other smallholdings in Malaysia; and secondly, mixed research methodology can be employed. These two limitations can be addressed should future research aims to gain a more comprehensive empirically based understanding of how the theory of social capital for human capital creation by Coleman in relation to social capital and social network ideas by Putnam and Granovetter can be applied and substantiated in the context of oil palm production in Malaysia. Nonetheless despite these limitations, these findings have implication in terms of policy making that should emphasise now more than before on the importance and key role of the social factor, i.e. social capital, in local human capital creation and sustainability for effective oil palm production in the near future in Malaysia. Specific human capital and talent development initiatives can be taken by the government in collaboration with the private sector, non-governmental organisations (NGO) and the community that should mainly emphasised on incorporating the social component in every aspect of human capital training and mentoring programmes, workshops and activities tailored for the youths, the younger generation who will take eventually over oil palm production from the aging independent oil palm smallholders.

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