INSANIAH: Online Journal of Language, Communication, and Humanities
Volume 7 (2), October 2024

Enhancing Local Labour Productivity in Oil Palm Agriculture

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ABSTRACT

The palm oil industry in Malaysia, particularly in Sarawak, faces labour shortages due to restrictions imposed by the government. As a result, local workers are required to perform tasks that were previously carried out by foreign labourers. This study aims to identify the productivity of local labour among Smallholders (PKS) in Serian, Sarawak. A total of 56 respondents were selected as samples using purposive sampling methods. The selected respondents are PKS who employ local labour for their plantations. The study found that the local labour used comprises family members, relatives, and villagers. No local labour from outside the area was employed. The types of tasks performed include tapping trees, fertilizing, pruning, harvesting fruit, collecting fruit, loading fruit into trucks, and driving trucks. In terms of Fresh Fruit Bunch (FFB) production, the number of FFB produced per ton per month is mostly between 1 to 2 tons per 1 to 2 acres of oil palm plantation, which equals 12 tons per acre per year. This yield is relatively high compared to the national average for smallholders, which is 8 tons per acre per year. The implication of this study is that effective strategies should be developed involving the MPOB (Malaysian Palm Oil Board) and PKS to encourage more local people to work in the industry, so that the palm oil sector does not continue to rely on foreign labour.

Keywords: Smallholders (PKS); local labour; foreign labour; productivity; fresh fruit bunch (FFB)

INTRODUCTION

The palm oil industry in Malaysia continues to rely heavily on a large labour force for planting, harvesting, processing, milling, and distribution tasks. The industry depends on foreign labour because local workers are generally unwilling to take on "3D" jobs—dirty, dangerous, and difficult. The gap left by locals who prefer higher education and better-paying jobs has increased Malaysia's dependence on foreign workers, with around 505,000 foreign workers involved in the agricultural sector in 2019 (Department of Statistics Malaysia, 2020).

Sarawak, one of the states significantly affected by the reduction in foreign labour, is the largest palm oil-producing state in Malaysia, with 1.555 million hectares of palm oil plantations (Anon, 2018). The stringent border controls imposed by the government have

disrupted the recruitment of foreign labour, whether for new hires or replacing expired workers. This has negatively impacted plantation operations, particularly the productivity of palm oil in terms of fresh fruit bunch (FFB) yields, as well as the overall reduction in the labour force (Sarawak Land Consolidation and Rehabilitation Authority (SALCRA), 2020).

In line with global initiatives like the Sustainable Development Goals 2030, several countries have introduced policies to boost agricultural productivity, especially in countries where agriculture is a primary economic sector and there is a significant productivity gap between primary sectors and other industries and services (Food and Agriculture Organization of the United Nations, 2017). The African Union recognizes the importance of agricultural productivity in the economic and social agendas of developing countries (Food and Agriculture Organization of the United Nations, 2017). The Declaration on Agriculture and Postharvest Losses, launched in 2014, set agricultural productivity growth as a goal for Africa to achieve agriculture-led growth and meet food and nutrition security targets. The Declaration states that to end hunger in Africa by 2025, agricultural productivity needs to at least double from current levels.

Increasing labour productivity allows industries or economies to produce the same or more output with fewer workers (Langemeier, 2018). Since labour productivity is directly related to output, it significantly affects economic growth and the standard of living in a country. Labour productivity has been described as a potential contributor to economic and social well-being, particularly through involvement in agricultural work (World Bank, 2012; Nolte & Ostermeier, 2017).

In Malaysia, the government, through the Malaysian Palm Oil Board (MPOB), has implemented several strategies to address labour shortages by increasing the use of mechanization and equipment to facilitate fieldwork, improve plantation efficiency, and boost labour productivity. Mechanization includes the use of Cantas (motorized cutters for harvesting), grabbers (machines for collecting and transporting palm fruit bunches equipped with hydraulic power and light sensors for control), motorcycle trailers, rhynos (compact multifunctional machinery), and belugas for transporting FFB. These methods are expected to enhance productivity and provide alternatives to address labour shortages. For example, using Cantas for harvesting can increase productivity from 1 ton of FFB per day to 2.2 tons of FFB per day (Azman, Siti & Zuraihan, 2015).

Replacing foreign labour with local workers presents its own challenges, especially in creating a productive environment, as local workers' skills may not match those of foreign workers accustomed to 3D jobs. It is clear that the productivity of foreign workers impacts palm oil industry output, and thus the reduction in foreign labour affects the overall productivity of the palm oil industry. While agricultural labour productivity is the lowest compared to services and manufacturing sectors, the demand for labour in agriculture is the highest (Stephen N. Broadberry & Irwin, 2004). In the palm oil industry, labour productivity is crucial as it greatly influences the industry's overall performance. This drives smallholders to seek alternative solutions to enhance the productivity of existing workers and meet expected production levels. This study aims to identify the productivity of local labour in palm oil farming in Serian, Sarawak.

LITERATURE REVIEW

Labour productivity is a key term that determines the profitability and loss of an organization. It is a subdomain of overall organizational productivity, but organizational productivity heavily depends on labour productivity. According to Ratna et al. (2021), labour productivity is crucial

not only for organizational performance but also for sustainable development. The Organisation for Economic Co-operation and Development (OECD, 2002) defines productivity as the ratio of the volume of output to the measure of input usage. Among other productivity measures such as multifactor productivity or capital productivity, labour productivity is particularly important in economic and statistical analysis. It also serves as an indicator of various economic aspects, providing dynamic measures of economic growth, competitiveness, and living standards. It helps explain the fundamental economic bases necessary for economic growth and social development. According to the National Productivity Corporation (1997), productivity is the ability to produce output from a given amount of input. Productivity improvement occurs when output is achieved more effectively with the same or fewer inputs. An increase in labour productivity contributes to improved living standards, reduced inflation, enhanced competitiveness, better trade balance, and overall improved quality of life.

Labour productivity has become a major concern for economic sectors because it is a key performance indicator closely related to economic competitiveness, growth, and living standards. Generally, labour productivity is defined as the volume of output produced per unit of labour. Previous research has defined labour productivity in various ways. According to Day et al. (2018), labour productivity measures how effectively workers perform during work. He and Ji (2021) measured labour productivity as the total hours worked (i.e., annual working hours and average monthly work) and the wage per unit (i.e., average hourly wage). Some earlier studies have used value-added per worker to measure labour productivity (Lebedinski & Vandenberghe, 2014; Tang, 2014). Other researchers measured labour productivity using the logarithm of actual sales per number of workers (Avarmaa et al., 2013; Dimelis & Louri, 2002), while others used output per working person (Cristea et al., 2020). Improvements in labour productivity can enhance agricultural production efficiency within the agricultural industry (Vorontsov, 1978). Steps to increase labour productivity are crucial for analyzing the performance of any economic sector, but they are especially important in agriculture, where farmers also act as entrepreneurs and suppliers of agro-food products.

Selim (2012) calculated labour productivity using the average wage rate for rice cultivation seasons in Bangladesh, noting that the average wage rate for both men and women was above subsistence levels. Arouna et al. (2021) computed labour productivity as the ratio of cereal yields to the total labour days required per hectare of rice production in Africa. Labour productivity is more than just a broader efficiency measure; it is also directly related to net economic value or return on capital, which is a critical component of firm investment behavior. According to Langemeier (2018), efficiency and labour productivity can be enhanced by examining per-unit costs between inputs and making appropriate adjustments to the farm's input mix (i.e., labour, capital, and purchased input ratios); by increasing the physical capital per worker; by enhancing human capital per worker; and/or by using new technologies. Obike et al. (2016) concluded that education level, experience, and farm size are determinants of labour productivity, while crop materials, fertilizer use, and capital are significant determinants of output among cocoa farmers in Abia, Nigeria. According to Faridi and Basit (2011), in a study conducted in Pakistan, rural agricultural sectors that focus on exploring factors influencing local labour market participation showed that education, Economic Capital Index, and Social Capital Index have significant effects on rural labour supply in agriculture.

Inna et al. (2016), in their study on labour factor efficiency in the agricultural industry in Kazakhstan, suggested that growing companies should organize training courses for workers. Continuous education should be a fundamental principle of learning, including learning through labour exchanges. They also proposed establishing inter-republic schools in Kazakhstan for retraining and advanced training of workers and unemployed individuals in

existing educational institutions. According to Siti Mashani et al. (2017), there was no significant difference in productivity among foreign workers on oil palm plantations, and financial incentives could improve plantation labour productivity. To enhance labour productivity on oil palm plantations, Azman, Siti, and Zuraihan (2015) recommended that plantation owners adopt mechanization, especially for harvesting and collecting FFB. They also suggested using mechanized FFB transport systems (MFTS) to reduce the number of workers needed, thereby lowering transportation and production costs. Based on previous studies, local labour productivity is still under-discussed, especially in the agricultural sector in Malaysia. This study aims to examine whether local labour productivity aligns with national productivity levels for palm oil output.

METHODOLOGY

This study was conducted in the Serian district of Sarawak. This district is part of the Serian Division, which was officially gazetted on August 1, 2015, following its separation from the Samarahan Division. The Serian Division comprises three districts: Serian, Tebedu, and is located approximately 62 kilometers south of the state capital Kuching, and 42 kilometers from the Malaysia-Indonesia border at Tebedu. The district encompasses 239 villages with an area of 2,405 square kilometers. Serian is known for its rich agricultural areas, which are a primary source of income for its residents. Agricultural outputs include rice, palm oil, cocoa, black pepper, rubber, fruits, and vegetables, in addition to other economic activities. Palm oil is the main agricultural commodity in Sarawak, and Serian is the district with the highest number of palm oil smallholders in the state (Serian Division Administration, 2016). There are 275 smallholders (PKS) in Serian who employ local labour. The list of respondents was obtained from the Malaysian Palm Oil Board (MPOB), consisting of PKS who employ local workers and have received the Malaysian Sustainable Palm Oil (MSPO) certification from MPOB. However, during the fieldwork, only 56 respondents were able to cooperate, despite the target being 80 respondents. This was due to the implementation of the Enhanced Movement Control Order (EMCO), which restricted the enumerators' movement and hindered their ability to find respondents to meet the set target. Consequently, the sample obtained consisted of only 56 smallholders. Additionally, secondary data was used to allow the researcher to compare results with previous studies and to develop the conceptual framework and related concepts for the study.

FINDING

Background of the Respondents

Table 1 reports the demographic information of the oil palm smallholders, which shows that majority of the oil palm smallholders are between the ages of 46 and 65. About 21.4% of oil palm smallholders are between the ages of 46 and 55, and 35.7% are between the ages of 56 to 65. Furthermore, the findings show that the majority of oil palm smallholders are male (48 people or 85.7%), with only 8 female smallholders (14.3%). Almost half of smallholders (46.4%) have only a primary school education, 25% have a secondary school qualification, 17.9% have no schooling, 7.1% have a bachelor’s degree (7.1%) and the remaining 3.6% have a diploma. The majority of oil palm smallholders (67.9%) budget less than RM5000 per year for the use of machinery or machines. In terms of smallholder experience, 46.4% of

smallholders have 5 to 10 years of experience. While 35.7% and 17.9% of smallholders with less than 5 years and 11 to 15 years of experience, respectively. The majority of the 64.29% of oil palm smallholders have 2 to 4 acres of land available for oil palm cultivation. Moreover, the descriptive analysis revealed that the majority of smallholders (60.98%) were able to obtain 2 to 4 tonnes of fresh fruit bunches within a month. Besides, the findings of this study also show that nearly half (49.02%) of smallholders set aside RM1000 to RM2000 per month to care for their oil palm plantations.

TABLE 1. Respondent background

Respondent background	Frequency	Percentage
Age category		
26-35 years old	9	16.1%
36-45 years old	9	16.1%
46-55 years old	12	21.4%
56-65 years old	20	35.7%
66 years old and above	6	10.7%
Gender		
Male	48	85.7%
Female	8	14.3%
Educational level		
No schooling	10	17.9%
Primary school	26	46.4%
Secondary school	14	25.0%
Diploma	2	3.6%
Degree	4	7.1%
Allocation		
Less than RM5000	38	67.9%
RM5001-RM10,000	15	26.8%
RM11,000-RM15,000	3	5.4%
Years of experience		
Less than 5 years	20	35.7%
5-10 years	26	46.4%
11-15 years	10	17.9%
Number of land (acres)		
Less than 2 acres		12.5%
2 - 4 acres		64.29%
> 4 - 6 acres		17.86%
> 6 - 8 acres		3.57%
More than 8 acres		1.79%
Fresh fruit bunches (tonnes)		
Less than 2 tonnes		9.76%
2 - 4 tonnes		60.98%
> 4 - 6 tonnes		19.51%
> 6 - 8 tonnes		4.88%
More than 8 tonnes		4.88%
Cost per month		
Less than RM1000		25.49%
RM1000 - RM2000		49.02%
>RM2000 - RM3000		15.69%
>RM3000 - RM4000		7.84%
More than RM4000		1.96%

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Involvement of Local Labour in Palm Oil Agriculture

Table 2 depicts the participation of local labour in the oil palm industry, with approximately 42.9% of smallholders employing 4 to 6 local labour, 41.1% employing 1 to 3 local labour, and the remaining smallholders employing more than 6 local labour. Table 2 also shows the hiring labour option, which 91.7% of oil palm smallholders prefer to hire their labour on a contract basis. In contrast to full-time appointments, contract labours are required to come to the oil palm plantation only when needed. According to the findings of the study, the primary reason oil palm smallholders use local labour is to provide employment opportunities for local people (98.21%), followed by the attitude of local workers who are easy to accept instructions (75%) and easy to manage (71.43%), the government stopped importing foreign workers (64.29%), easy to obtain local workers (64.29%) and cheap wages (21.43%) as compared to foreign workers. These findings demonstrate that the government factor that has halted the import of foreign labour is not the primary motivator for smallholders to use local labour. The vast majority of smallholders (92.90%) pay workers based on contact, only 10.70% pay workers based on the number of oil palm trees. While local labour classification is almost evenly distributed across three different groups, 33.90% of local labour is from family members, 32.10% from relatives and the 33.90% are the village workers. Utilizing local labour can contribute to the sustainability of the palm oil industry by reducing dependence on foreign workers. This is crucial for the long-term stability of the sector, especially in areas facing labour shortages. Local employment provides direct economic benefits to communities by creating job opportunities and supporting local businesses. It can also help in poverty alleviation and improving living standards.

TABLE 2. The involvement of local labour in the oil palm industry

Respondent background	Frequency	Percentage
Number of local labour		
1-3 people	23	41.1%
4-6 people	24	42.9%
7-10 people	8	14.3%
11 people and more	1	1.8%
Hiring labour option		
Contract	44	78.60%
Full-time	4	7.10%
Both (contract and full-time)	8	14.3%
Reason		
Cheap wages	12	21.40%
Easy to obtain	36	64.30%
Provide employment	55	98.20%
Easy to manage	40	71.40%
Easy to accept instructions	42	75.00%
Government factor	36	64.30%
Method of paying worker's wages		
Number of trees	6	10.70%
Contract-based	52	92.90%
Local labour classification		
Family	19	33.90%
Relatives	18	32.10%

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Village workers	19	33.9%

Table 3 reports the number of local laborers used for the selected tasks at the plantation. Almost all smallholders needed two to three people to perform tasks including squeezing a tree, fertilising, trimming, prominent fruit, picking fruit, and unloading the fruit into the truck. Smallholders, on the other hand, only required one person to be a lorry driver.

TABLE 3. Number of Local Labour Used for Specific Tasks

Tasks	Number of local labour used				
	1	2	3	4	5
Squeezing a tree	16.10%	46.40%	30.40%	7.10%	
Fertilize	16.10%	50.00%	23.20%	10.70%	
Trim	12.50%	41.10%	37.50%	8.90%	
Prominent fruit	7.10%	35.70%	21.40%	8.90%	3.60%
Picking fruit	3.60%	37.50%	19.60%	10.70%	3.60%
Unload the fruit into the truck	5.40%	39.30%	25.00%	3.60%	1.80%
Lorry driver	33.90%	8.90%			

According to the Department of Statistics Malaysia (DOSM), productivity is defined as the ability to produce output from a given set of inputs, which measures the efficiency and effectiveness in using resources optimally and converting these inputs into useful output. Productivity measures the amount of output that can be generated with a given input over a specific period or technology, representing the ratio of output produced to input used. The formula for calculating productivity is;

$$\text{Productivity} = \frac{\text{Output}}{\text{Input}}$$

Productivity is often measured by the quantity of FFB harvested per acre of land and per month. It reflects the efficiency of labour and land use in palm oil plantations.

TABLE 4. Cross-tabulation of Fresh Fruit Bunches (FFB) Production Based on Land Area

Land Area (acres)	FFB/Month					Total
	< 2 tons	2 - 4 tons	4 - 6 tons	6 - 8 tons	> 8 tons	
< 2 acres	5	2	-	-	-	7
2 - 4 acres	-	32	3	1	-	36
4 - 6 acres	-	-	8	2	-	10
6 - 8 acres	-	-	-	-	2	2
> 8 acres	-	-	-	-	1	1
Jumlah	5	34	11	3	3	56

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Based on the provided cross-tabulation data, the productivity of Fresh Fruit Bunches (FFB) among smallholders in Serian, Sarawak can be analyzed to understand the relationship between land area and FFB production. For smallholders with less than 2 acres of land, the production ranges from 1 to 2 tons of FFB per month. This translates to an annual yield of approximately 12 tons per acre. Despite the small land area, these smallholders manage to produce a reasonable amount of FFB, suggesting efficient use of their limited land resources. For land area between 2 and 4 Acres; smallholders within this land range typically produce 2 to 4 tons of FFB per month. This corresponds to an annual yield ranging from 24 to 48 tons per acre. The higher land area allows for increased production, and the productivity in this range indicates that these smallholders are effectively managing their larger plots of land. Land area between 4 and 6 acres, smallholders produce between 4 and 6 tons of FFB per month. Annually, this amounts to approximately 48 to 72 tons per acre. The productivity for these smallholders is even higher, reflecting the benefits of having a larger land area which may facilitate better cultivation practices and economies of scale. Smallholders with land between 6 and 8 acres show the highest productivity, with monthly FFB production exceeding 8 tons. This translates to a significantly higher annual yield, which indicates that these larger plots are highly productive, possibly due to optimized land management and advanced agricultural practices. For land area greater than 8 acres, this category includes the few respondents who have more than 8 acres of land. These smallholders produce more than 8 tons of FFB per month. Given their extensive land area, they achieve very high levels of productivity, showcasing the potential for large-scale operations to be highly efficient.

The average productivity among smallholders in Serian, Sarawak is reported as 12 tons per acre per year. This figure is notably higher than the national average for smallholders, which is 8 tons per acre per year (Tan, Novel & Khairuman, 2020). The higher productivity in Serian suggests that local practices, environmental conditions, or other factors may contribute to more effective cultivation compared to other regions. The data indicates that smallholders in Serian achieve above-average productivity compared to the national average. This higher productivity could be due to a variety of factors including better management practices, superior land conditions, or the adoption of advanced agricultural techniques. The significant difference in productivity levels between Serian and the national average highlights the opportunity for knowledge sharing. Other regions could benefit from understanding and adopting the best practices that contribute to the high productivity observed in Serian. The high productivity levels among smallholders in Serian suggest that with continued support and investment in best practices and technology, there is potential for sustainable growth in palm oil production. This could lead to increased economic benefits for the region and contribute to the overall success of the palm oil industry.

The Kruskal Wallis test is the nonparametric equivalent of a one-way ANOVA and the appropriate statistical test use to compare more than two groups. This test used when normality assumption is violated or data based on ordinal scale such as Likert-scale (Awang et al., 2016). The Kruskal Wallis was used to compare local labour productivity among three different types of local labour, and the results were statistically insignificant with a *p*-value of 0.086, as reported in Table 5. The local labour from family members, relatives and village workers had a mean rank of 33.03, 29.28 and 23.24%, respectively (Table 5). Our findings revealed no statistically significant differences in terms of local labour productivity among three groups of local labourers; family members, relatives and village workers.

TABLE 5. Comparing the local labour productivity of family members, relatives and village workers.

Types of local labour	No. of subjects	Mean Rank	Test used & Test Statistics	*p*-value
Family members	19	33.03	Kruskal Wallis Test	0.086
Relatives	18	29.28	Chi-Square Test = 4.898	
Village workers	19	23.24		

CONCLUSION

An effective strategy for addressing the labour shortage in the palm oil sector is to boost the involvement of local workers. The government's previous attempts to resolve this issue through the importation of foreign labour have led to negative outcomes, particularly exacerbated by the COVID-19 pandemic. A more thorough approach is needed, focusing on enhancing the participation of local labour to provide a sustainable solution for the labour needs in profitable industries like palm oil. This initiative should be a joint effort involving both the government and small and medium-sized enterprises (SMEs) within the sector, which must seek creative solutions to the labour shortfall. Additionally, the productivity and quality of local produce should meet the standards set by foreign labour. Immediate implementation of strategies to improve local labour productivity and transition plans is crucial to ensure that the industry continues to make a positive contribution to both small palm oil farmers and the national economy.

FUNDING

This research was funded by the MPOB-UKM Endowment Grant EP2020-036. We extend our gratitude to the financial supporters who made this research possible.

REFERENCES

Abdullah, N., Ahmad, S. A., & Ayob, M. A. (2016). Labour force participation of rural youth in plantation sector of North Peninsular Malaysia. *Journal Ekonomi Malaysia*, *50*(2): 83-92.

Arouna, A., Devkota, K. P., Yergo, W. G., Saito, K., Frimpong, B. N., Adegbola, P. Y., Depieu, M. E., Kenyi, D. M., Ibro, G., Fall, A. A., & Usman, S. (2021). Assessing rice production sustainability performance indicators and their gaps in twelve sub-Saharan African countries. *Field Crops Research*, 271.

Arshad, M. N. M., & Malik, Z. A. (2015). Quality of human capital and labour productivity: A case of Malaysia. *International Journal of Economics, Management and Accounting*, *23*(1). https://doi.org/10.31436/ijema.v23i1.289

Avarmaa, M., Hazak, A., & Männasoo, K. (2013). Does leverage affect labour productivity? A comparative study of local and multinational companies of the Baltic countries. *Journal of Business Economics and Management*, *14*(2), 252–275.

Ayob, M. A., Abdullah, N., Ali, J., & Kamaruddin, R. (2015). Perception of local youth in Sabah towards career in oil palm plantation. *Asia Pacific Journal of Advanced Business and Social Studies, 1*(1), 239-246.

Azman Ismail, Siti Mashani Ahmad & Zuraihan Sharudin. (2015). Labour productivity in the Malaysian oil palm plantation sector. *Journal Oil Palm Industry Economic, 15*(2),1-10.

Crowley, M.Z. (2020). Kekurangan buruh asing dalam industri minyak sawit Malaysia: Kesan dan syor. *Jurnal Pertanian dan Pembangunan Asia, 17*(2), 1–18.

Day, E., Fankhauser, S., Kingsmill, N., Costa, H., & Mavrogianni, A. (2018). Upholding labour productivity under climate change: An assessment of adaptation options. *Climate Policy,19*(3).

Dimelis, S. S., & Louri, E. H. (2002). Foreign direct investment and efficiency benefits: A conditional quantile analysis. *Oxford Economic Papers, 54*(3), 449–469.

Faridi, M. Z., & Basit, A. B. (2011). Factors determining rural labour supply: A micro analysis. *Pakistan Economic and Social Review*, *49*(1), 91-108.

Hapriza Ashari. (2004). *Undang-undang pekerjaan: Huraian dan panduan terhadap akta kerja 1955*. Penerbit Universiti Teknologi Malaysia.

He, Q., & Ji, X. James. (2021). The labour productivity consequences of exposure to particulate matters: Evidence from a Chinese national panel survey. *International Journal of Environmental Research and Public Health,18*(23), 12859.

Inna U. Reya, Gulzada T. Shakulikovab, Gulnar A. Kozhakhmetovac, Olga V. Lashkarevac & Elena G. Bondarenko. (2016). Labour factor efficiency in the agricultural industry. *International Journal of Environmental & Science Education*, *11*(17), 9679-9691.

Ismail, A., Ahmad, S. M., & Sharudin, Z. (2015). Labour productivity in the Malaysian oil palm plantation sector. *Oil Palm Industry Economic Journal, 15*(2), 1-10.

Jabatan Perangkaan Malaysia. (2019a). Akaun negara, keluaran dalam negeri kasar 2015-2018.https://www.dosm.gov.my/v1/uploads/files/3_Time%20Series/Malaysia_Time_Series_2016/01_Akaun_Negara.pdf

Jabatan Perangkaan Malaysia. (2019b). Perangkaan perdagangan luar negeri bulanan. https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=139&bul_id=ZTZmdmpWakMrVHJZdVJsbmZZRU1BQT09&menu_id=azJjRWpYL0VBYU90TVhpclByWjdMQT09

Jabatan Perangkaan Malaysia. (2019c). Indikator pertanian terpilih Malaysia 2019. https://www.dosm.gov.my/v1/index.php?r=column/pdfPrev&id=dmV5aXJUU3dJMUdZWFpYTmkyZElOUT09

Jabatan Perangkaan Malaysia. (2021a). Statistik poket S3 2021. https://cloud.stats.gov.my/index.php/s/x4xSjTYRTuPCo8e#pdfviewer

Jabatan Perangkaan Malaysia. (2021b). Penunjuk pertanian terpilih, Malaysia, 2021. Portal Rasmi Jabatan Perangkaan Malaysia. https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=72&bul_id=TDV1YU4yc1Z0dUVyZ0xPV0ptRlhWQT09&menu_id=Z0VTZGU1UHBUT1VJMFlpaXRRR0xp

Jabatan Perangkaan Malaysia. (2022). Statistik tenaga buruh Malaysia 2021. Portal Rasmi Jabatan Perangkaan Malaysia. https://www.dosm.gov.my/v1/uploads/files/5_Gallery/2_Media/4_Stats%40media/4-Press_Statement/2022/05.%20MEI/STATISTIK%20TENAGA%20BURUH%2C%20MALAYSIA%2C%20MAC%20%26%20ST1%202022.pdf

Langemeier, M. (2018). Labour efficiency and productivity benchmarks. *Journal of the American Society of Farm, 76*(2013), 222-235.

Lebedinski, L., & Vandenberghe, V. (2014). Assessing education's contribution to productivity using firm-level evidence. *International Journal of Manpower, 35*(8), 1116–1139.

MPOC. (2021a). *Malaysian Palm Oil Industry*. Malaysian Palm Oil Council. https://mpoc.org.my/malaysian-palm-oil-industry/[4 April 2022].

MPOC. (2021b). *Nearly 1m work in Oil Palm Industry*. Malaysian Palm Oil Council. https://mpoc.org.my/nearly-1m-work-in-oil-palm-industry/.

Muruga a/l Krishnan. (2019). Analisis terhadap pengeluaran buah tandan segar, pengeluaran dan kadar perahan minyak sawit di Malaysia. Tesis Dr. Fal, Universiti Sains Malaysia.

Naidu, L., & Moorthy, R. (2021). A review of key sustainability issues in Malaysian palm oil industry. *Sustainability*, *13*, 15-20.

Nolte, K. & Ostermeier, M. (2017). Labour market effects of large-scale agricultural investment: Conceptual considerations and estimated employment effects. *Journal World Development, 98*, 430–446.

Obike, K.C., Idu, M.A. and Aigbokie, S.O. (2016). Labour productivity and resource use efficiency among smallholder cocoa farmers in Anbia State, Nigeria. *Agro-Science Journal of Tropical Agriculture, Food, Environment and Extension Volume*, *15*(3), 7 – 12.

OECD. (2002). Mengukur produktiviti; pengukuran pertumbuhan produktiviti agregat dan peringkat industri. http://www.oecd.org/std/ productivity stats/2352458.pdf.

Perbadanan Produktiviti Negara. (1997). *Produktiviti : Prinsip asas*. Petaling Jaya: Perbadanan Produktiviti Negara.

Pertubuhan Buruh Antarabangsa. (2003). Glosari istilah perangkaan ILO.https://www.ilo.org/ilostat-files/Documents/Statistical%20Glossary.pdf

Ratna, S., Saide, S., Herzavina, H., & Muwardi, D. (2021). Analisis model awal reka bentuk pengurusan pengetahuan: kepimpinan rohani terhadap produktiviti pekerja berpengetahuan. *Analisis Teknologi & Pengurusan Strategik,* 1–16.

Roslina Kamaruddin, Norehan Abdullah, Mohammad Amizi Ayob. (2018). Determinants of job satisfaction among Malaysian youth working in the oil palm plantation sector. *Journal of Agribusiness in Developing and Emerging Economies*, *8*(4), 678-692.

Selim, S. (2012). Labour productivity and rice production in Bangladesh: A stochastic frontier approach. *Applied Economics, 44*(5), 641–652.

Siti Mashani Ahmad, Ali Nordin, Kamalrudin Mohamed Salleh dan Balu, N. (2017). Labour productivity of harvesters by country of origin peninsular Malaysia. *Jurnal Ekonomi Industri Kelapa Sawit*, *15*(2), 20-30.

Stephen N. Broadberry & Douglas A. Irwin. (2004). Labour productivity in Britain and America during nineteenth century. NBER Working Papers 10364, National Bureau of Economic Research, Inc.

Suhana Saad, Zaimah, R. & Novel Lyndon. (2021). Use of local labour in oil palm agriculture. *International Journal of Academic Research in Business and Social Sciences*, *11*(9), 19-25.

Surianshah, W. N. S., Sieng, L. W., Mohd Salleh, N. M., Idris, S. H. M., & Janor, H. (2020). Faktor mempengaruhi penglibatan belia dalam sektor perladangan kelapa sawit. *International Journal of Management Studies, 28*(1), 115-140.

Tang, C. F. (2014). The effect of real wages and inflation on labour productivity in Malaysia. *International Review of Applied Economics, 28*(3), 311–322.

Vorontsov, A. (1978). Labour productivity in agriculture. *Problems in Economics*, *20*(9), 3–24.

World Bank. (2012). *World development report 2013: Jobs*. https://openknowledge.worldbank.org/handle/10986/11843.

Yoon, D. (2018). Peningkatan pengangguran di kalangan orang muda dan dasar pekerjaan yang lebih baik: Kes Korea Selatan. *Ekonomi dan Sosialologi, 11*(4), 246-264.

INSANIAH: Online Journal of Language, Communication, and Humanities
Volume 7 (2), October 2024

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