

# Labour Productivity of Harvesters by Country of Origin: A Case Study in Peninsular Malaysia

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## ABSTRACT

*This study aims at estimating labour productivity in the oil palm harvesting activity in Peninsular Malaysia among workers from different source countries. This study used a case study approach, which involved three estates. This study also utilised a qualitative research approach which is primary exploratory research. The information gathered was used to better understand the underlying reasons, opinions and motivation of the estate management in their decision to employ foreign labour for the harvesting activity sourced from various countries. In Peninsular Malaysia, most of the foreign workers employed for harvesting and fresh fruit bunch (FFB) collection are from Indonesia, Bangladesh and Nepal. Based on the study, there is no significant difference in productivity among workers according to source country.*

**Keywords:** labour productivity, source country, harvesters, foreign labour.

## INTRODUCTION

Labour productivity is one of the productivity types that economists measure to gauge a country's economic growth. It is measured by the amount of goods and services produced by 1 hr of labour (Investopedia, 2015). Productivity is commonly defined as the ratio of a volume measure of output to a measure of input use (OECD, 2002). Among other productivity measures such as multi-factor productivity or capital productivity, labour productivity

is particularly important in the economic and statistical analysis of a country. Labour productivity is also a revealing indicator of several economic indicators as it offers a dynamic measure of economic growth, competitiveness, and living standards within an economy. It is the measure of labour productivity which helps to explain the principal economic foundations that are necessary for both economic growth and social development. The three most commonly used measures of input are hours worked, workforce

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jobs and the number of people employed.

In oil palm plantations, there are five main job categories, namely, general mandore, harvesting mandore, harvester and fresh fruit bunch (FFB) collector, field worker (for fertiliser application, weeding and pruning) and other field worker (as driver, security guard, etc.). Among the five job categories, harvesters and FFB collectors are largest number employed because this activity requires more workers compared with the other activities.

In 2015 (MPOB, 2015), a total of 437 495 workers were employed in oil palm plantations, and out of this total, 38.3% or 167 407 workers were harvesters and FFB collectors (*Table 1*). Field workers comprised 34.8% or 152 117 workers of the total. These two job categories represented about 73.0% of the total workers in oil palm plantations in 2015.

The Malaysian oil palm sector faces a severe labour shortage problem due to the lack of interest among the locals to work in this sector. As an alternative, most estates engage foreign workers, especially for field activities, such as harvesting and FFB collection. These workers come from many countries and work mostly in Peninsular Malaysia as labour laws in the Peninsula are more open than those in Sabah and Sarawak. Out of the total labour employed in oil palm plantations in 2015, 77.8% or 340 283 workers were foreigners and they were mostly employed as harvesters and FFB collectors and as field workers (MPOB, 2015) (*Table 2*). Local workers were mostly employed as administrative staff and executives as well as mandores. In 2015, 9393 locals worked as executives, but now there is even a tendency to replace the locals with foreign labour. Arising from the presence of workers from many

countries of origin in Peninsular Malaysia, a difference in their productivity level probably exists. As productivity is an important element for measuring economic growth of the industry, there was a need to determine if there are differing levels of labour productivity amongst these workers from different source countries, especially for the harvesting activity.

## LITERATURE REVIEW

Increasing labour productivity depends on three main factors: investment and savings in physical capital, new technology and human capital (Investopedia, 2015). Specialisation in a job category is also among the factors that affect labour productivity (Smith, 1776). Plotting productivity trends is a key factor in determining

**TABLE 1. ESTIMATED NUMBER OF WORKERS IN THE OIL PALM PLANTATION SECTOR BY REGION, 2015**

Job category	Peninsula	Sabah	Sarawak	Malaysia
General mandore	4 841	4 262	2 635	11 738
Harvesting mandore	4 718	3 911	2 929	11 558
Harvester and collector	67 990	60 164	39 253	167 407
Field worker	54 240	57 962	39 915	152 117
Other field worker	20 620	24 284	14 620	59 524
<b>Sub-total for Field Workers</b>	<b>152 409</b>	<b>150 583</b>	<b>99 352</b>	<b>402 344</b>
Executive	4 396	2 835	2 319	9 550
Staff	11 084	7 405	7 112	25 601
<b>Sub-total for Office Workers</b>	<b>15 480</b>	<b>10 240</b>	<b>9 431</b>	<b>35 151</b>
<b>Total</b>	<b>167 889</b>	<b>160 823</b>	<b>108 783</b>	<b>437 495</b>

Source: MPOB (2015).

**TABLE 2. WORKFORCE IN MALAYSIAN OIL PALM PLANTATIONS, 2015**

Job category	Local	%	Foreign	%	Total
General mandore	6 483	55.2	5 255	44.8	11 738
Harvesting mandore	4 567	39.5	6 991	60.5	11 558
Harvester and collector	8 150	4.9	159 257	95.1	167 407
Field worker	24 296	16.0	127 821	84.0	152 117
Other field worker	19 978	33.6	39 546	66.4	59 524
<b>Sub-total for Field Workers</b>	<b>63 474</b>	<b>15.8</b>	<b>338 870</b>	<b>84.2</b>	<b>402 344</b>
Executive	9 393	98.4	157	1.6	9 550
Staff	24 345	95.1	1 256	4.9	25 601
<b>Sub-total for Office Workers</b>	<b>33 738</b>	<b>96.0</b>	<b>1 413</b>	<b>4.0</b>	<b>35 151</b>
<b>Total</b>	<b>97 212</b>	<b>22.2</b>	<b>340 283</b>	<b>77.8</b>	<b>437 495</b>

Source: MPOB (2015).

the sustainability of Malaysia's economic expansion over the long-term.

Labour productivity is modelled as a dependent factor in the degree of foreign presence in an industry, together with other variables, namely, capital intensity, human capital and firm size for scale factors (Xiaming *et al.*, 2001). The econometric results suggest that foreign presence in the industry is associated with higher labour productivity.

Raising labour productivity, therefore, seems to be the only way to solve the problems of a tight labour market, which is normally found in a progressive economy (Abdul *et al.*, 1997). In Malaysia, the problem of labour shortage began in the oil palm and rubber plantation sectors and has spread to other sectors such as construction and manufacturing.

Labour shortage in the oil palm plantations, especially for harvesting and FFB collection, has resulted in economic losses in the plantations as fruit bunches and loose fruit are not collected completely. In addition, a decline in productivity is also due to foreign workers having to leave the country when their work permits expired and consequently taking with them the job training that they received (Mahbob, 2010).

To reduce the labour shortage problem, labour productivity needs to be increased. One of the ways that can be used is through a change in the working system from individuals to working in groups (Azman *et al.*, 2015).

Mamat (2010) was of the opinion that the policy and strategy on foreign workers in the oil palm industry should be reviewed and managed in a more integrated manner between the Ministry of Plantation Industries and Commodities and its agencies. This is because foreign workers

help in improving Malaysia's export earnings. If the number of foreign workers in this country were reduced by 30%, Malaysia's palm oil export revenues may shrink by as much as RM 10 billion a year.

Similarly, Atto (2010) noted that the locals perceive manual work in the oil palm industry as being mainly undesirable because of the location of oil palm plantations is by nature in rural areas nature, and better education has enabled many of them to find other jobs. Thus, the high foreign content in the plantation industry's workforce is a phenomenon that has been around for a long time. This is because the country has failed to attract local job seekers to the workforce despite concerted efforts by both the industry and the government. It is indeed a challenge for both the government and the industry to change the mind set, attitude and perception of Malaysians.

## METHODOLOGY

This study used a case study approach. Three estates located in Selangor and Perak, were visited and discussions with the estate managers were conducted. The three estates were identified as Estates A, B and C. This study also utilised a qualitative research approach, which is primary exploratory research. The information gathered was used to better understand the underlying reasons, opinions and motivation driving the estate management in their decision-making when employing foreign labour for the

harvesting operations. Through the case study, data such as total FFB collected, total number of foreign workers as harvesters, number of working days per month for harvesters and number of working hours per day for harvesters were collected.

SPSS version 20.0 was used for data analysis, and simple descriptive statistics were used to describe the basic features of the data in the study.

## RESULTS AND DISCUSSION

### Labour Productivity

Average productivity (tonnes per man-day) for harvesting in Estates A, B and C was calculated by using the formula shown in *Figure 1*. In Estate A, the estate management employed labour from Indonesia and Bangladesh for harvesting activity. Based on the calculated average labour productivity, it was found that harvesters from Indonesia seemed to be more productive than those from Bangladesh. On average, a worker from Indonesia harvested 3.02 t FFB per man-day whereas a Bangladesh worker harvested 2.78 t per man-day given the same number of working days and working hours for both workers (*Tables 3 and 4*).

As in the case of Estate A, the management for Estate B also employed harvesters from Indonesia and Bangladesh. Based on the above formula, the average labour productivity for harvesters from Indonesia was 2.52 t per man-day (*Table 5*), while for Bangladeshi workers, the average was 2.05 t

$$\text{Labour productivity} = \text{units produced} / \text{labour-hours used}$$

$$\begin{aligned} \text{where: Units produced} &= \text{total FFB collected (t)} \\ \text{Labour-hours used} &= \text{total number of working hours per day for} \\ &\quad \text{harvesters and FFB collectors} \\ &\quad \text{(hours per man-day*)} \end{aligned}$$

Note: \*A man-day refers to 8 working hours per worker.

*Figure 1. Formula used to calculate average labour productivity.*

**TABLE 3. LABOUR PRODUCTIVITY OF INDONESIAN HARVESTERS AND FRESH FRUIT BUNCH (FFB) COLLECTORS IN ESTATE A**

Month	No. of harvesters	Working days	Tonnage	Productivity (t/man-day)
January	8	26	665	3.20
February	8	26	510	2.45
March	8	26	530	2.55
April	8	26	650	3.13
May	8	26	700	3.37
June	8	26	475	2.28
July	8	26	900	4.33
August	8	26	592	2.85
September	8	26	560	2.69
October	8	26	517	2.49
November	8	26	587	2.82
December	8	26	850	4.09
Average	-	-	-	3.02

**TABLE 4. LABOUR PRODUCTIVITY OF BANGLADESHI HARVESTERS AND FRESH FRUIT BUNCH (FFB) COLLECTORS IN ESTATE A**

Month	No. of harvesters	Working days	Tonnage	Productivity (t/man-day)
January	6	26	496	3.18
February	6	26	380	2.44
March	6	26	396	2.54
April	6	26	448	2.87
May	6	26	460	2.95
June	6	26	356	2.28
July	6	26	492	3.15
August	6	26	444	2.85
September	6	26	420	2.69
October	6	26	388	2.49
November	6	26	440	2.82
December	6	26	488	3.13
Average	-	-	-	2.78

**TABLE 5. LABOUR PRODUCTIVITY OF INDONESIAN HARVESTERS AND FRESH FRUIT BUNCH (FFB) COLLECTORS IN ESTATE B**

Month	No. of harvesters	Working days	Tonnage	Productivity (t/man-day)
January	18	29	762	1.46
February	21	24	847	1.68
March	21	27	828	1.46
April	20	26	1 061	2.04
May	19	27	1 236	2.41
June	19	29	1 548	2.81
July	18	28	1 552	3.08
August	16	29	1 875	4.04
September	17	30	1 744	3.42
October	18	30	1 436	2.66
November	15	30	1 008	2.24
December	15	29	1 296	2.98
Average	-	-	-	2.52

per man-day (*Table 6*). It appears that harvesters from Indonesia were more productive than the harvesters from Bangladesh.

Unlike Estates A and B, the management of Estate C employed harvesters from Indonesia and Nepal. On average, the labour productivity for harvesters from Indonesia was 1.37 t per man-day, while the average for harvesters from Nepal was 2.34 t per man-day. It would seem that harvesters from Nepal were more productive than the Indonesian workers (*Tables 7 and 8*).

#### Comparison of Productivity by Source Country

To determine whether or not the difference in average labour productivity for harvesters according to source country was statistically significant, a one-way analysis of variance (ANOVA) was conducted (*Table 9*).

The average productivity by source country in Estate A showed a p-value of 0.258, which is greater than for the significance level of  $p=0.05$ . With the p-value greater than the significant value, we cannot reject  $H_0$ . Therefore, we can conclude that there was not sufficient evidence that productivity was influenced by the source country. Thus, labour productivity in Estate A was not significantly different between foreign workers from Indonesia and Bangladesh.

In Estate B, average productivity by the source country showed a p-value of 0.106, again higher than  $p=0.05$  for statistical significance. With the p-value being higher than the significant value, we cannot reject  $H_0$ . Therefore, there was no significant evidence that productivity was influenced by the source country. Thus, labour productivity in Estate B was not influenced by whether the foreign workers were from Indonesia or Bangladesh.

**TABLE 6. LABOUR PRODUCTIVITY OF BANGLADESHI HARVESTERS AND FRESH FRUIT BUNCH (FFB) COLLECTORS IN ESTATE B**

Month	No. of harvesters	Working days	Tonnage	Productivity (t/man-day)
January	7	21	265	1.80
February	7	22	237	1.54
March	6	20	209	1.74
April	6	22	230	1.74
May	6	23	210	1.52
June	6	25	357	2.38
July	6	24	402	2.79
August	6	26	443	2.84
September	7	26	510	2.80
October	7	24	386	2.30
November	7	21	182	1.24
December	7	28	374	1.91
Average	-	-	-	2.05

**TABLE 7. LABOUR PRODUCTIVITY OF INDONESIAN HARVESTERS AND FRESH FRUIT BUNCH (FFB) COLLECTORS IN ESTATE C**

Month	No. of harvesters	Working days	Tonnage	Productivity (t/man-day)
August	-	-	-	-
September	12	24	151	0.52
October	12	24	482	1.68
November	12	24	473	1.64
December	12	24	639	2.22
January	12	24	303	1.05
February	13	24	404	1.30
March	13	24	478	1.53
April	13	24	448	1.44
May	13	24	395	1.27
June	17	24	606	1.49
July	17	24	402	0.99
Average	-	-	-	1.37

**TABLE 8. LABOUR PRODUCTIVITY OF NEPALESE HARVESTERS AND FRESH FRUIT BUNCH (FFB) COLLECTORS IN ESTATE C**

Month	No. of harvesters	Working days	Tonnage	Productivity (t/man-day)
August	2	24	182	3.80
September	2	24	166	3.46
October	2	24	137	2.86
November	2	24	121	2.52
December	2	24	149	3.11
January	2	24	82	1.70
February	2	24	105	2.19
March	2	24	83	1.74
April	2	24	96	2.00
May	2	24	86	1.78
June	2	24	79	1.65
July	2	24	60	1.24
Average	-	-	-	2.34

As in the case of Estates A and B, the p-value of 0.092 for average productivity in Estate C was higher than  $p=0.05$  for statistical significance. The  $H_0$  cannot be rejected, therefore, it can be concluded that there was no significant evidence that productivity was influenced by the source country. Thus, labour productivity in Estate C was not influenced by whether the workers were sourced from Indonesia or from Nepal.

## CONCLUSION

The analysis showed that there was no significant difference in labour productivity regardless of whether the workers were from Indonesia, Bangladesh or Nepal. However, the most favoured workers among oil palm estate owners are still those from Indonesia. Workers from Bangladesh and Nepal can be alternatives, especially for harvesting and FFB collection. The productivity of workers from Nepal and Bangladesh are almost approaching that of the Indonesians, which makes them suitable for working as harvesters and FFB collectors to replace Indonesian workers in the future.

In order to reduce the labour shortage problem, estate managements are encouraged to provide incentives to their workers. These can be in the form of monetary or non-monetary incentives, like monthly cash, paying bonuses and giving prepaid telephone cards when the workers achieved certain set targets.

Apart from this, employers are advised to hire workers from source countries with climates similar to that of Malaysia. This is because they will then be working under climate conditions they are familiar with. Thus, this will make it easier for them to adapt to working in the oil palm plantations in Malaysia.



**TABLE 9. PRODUCTIVITY COMPARISON BY SOURCE  
COUNTRY IN ESTATES A, B AND C**

	<b>Estate A</b>	<b>Estate B</b>	<b>Estate C</b>
<b>Hypothesis</b>	$H_0: \mu_{Indonesia} = \mu_{Bangladesh}$ $H_1$ The average productivity was different for different source countries.	$H_0: \mu_{Indonesia} = \mu_{Bangladesh}$ $H_1$ The average productivity was different for different source countries.	$H_0: \mu_{Indonesia} = \mu_{Nepal}$ $H_1$ The average productivity was different for different source countries.
<b>p-value</b>	0.258	0.106	0.092

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