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LABOR INTENSITY AND FARM PERFORMANCE: EVIDENCE FROM THE COFFEE CULTIVATION IN VIETNAM

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Abstract

In developing countries, a large number of labors is considered as one of the factor contributing to economy development. However, there is a question is how these abundant labor resources can be lay on the best productive use, especially in agriculture field which has been seen as a high level of labor intensive industry. Against this background, this paper investigated how labor intensity affects farm performance with a case study of coffee cultivation in Vietnam. By using OLS (ordinary least square) method to estimate parameters in the model, the result revealed that labor intensive has a significant positive impact on farm performance measured by Total Net Income and Net Income per Worker of each household.

Keywords: Labor intensity, labor intensive, labor productivity, Vietnam Coffee cultivation, Farm performance

INTRODUCTION

Labor cost is an important factor contributing to competitive advantage in trading market. Due to a cheap cost of labor, it leads to a low cost of good. The cost is involved in funds which are directed toward base salaries or wages. While costs of labor are known as a variable factor, costs of capital are regarded as a fixed amount. The reason is that it is flexible for labor-intensive industry to control its expenses. For examples, when market faces with a downturn, labor costs can able to be adjusted by layoffs or decrease workers benefits (Gareth Austin, Kaoru Sugihara, 2013, pp. 269-274). With agriculture industry in developing countries, capital is scare, thus famers may lack capital to invest in high-tech machines, but they can gain comparative advantage in labor-intensive products as (Belser, 2000). However, abundant labor in an industry or in a country is not always related with cheap labor, it depends on the food staple cost. Thus, some labor intensive manufacture goods with the purpose of exporting can meet difficulties due to its dependence of labor cost (Grabows, 2015, pp. 43-64).

Labor intensive is described that when an industry or a manufacturing process have need of a huge amount of labor with a purpose of producing its goods or services (David Runsten, Sandra Orr Archibald, 1986, pp. 1-54). The labor intensive levels are generally determined as a proportion of labor cost to the capital amount demanded to create goods or service. In other words, the more required labor costs proportion, the higher degree of labor intensive. To be more details, labor intensive occurs when a huge number of physical efforts are required to bring to an end needed tasks. Low skill levels or education can be witnessed in many labor intensive jobs, but it is not accurate for all fields (Gareth Austin, Kaoru Sugihara, 2013). In simple words, labor intensive refers to an industry or work type relating to the uses of several workers (Deb Kusum Das, Deepika Wadhwa, Gunajit Kalita, 2009). Technology advances as well as productivity of workers have made changes in labor intensive status in some industries. Some well-known labor industries are agriculture, mining or restaurants. In less developed economy nations, they are likely to have more labor intensive industries. Commonly, low incomes cause difficulties for investing for high-modern technology, but they can use a big quantity of workers instead due to paying low wages. Then, they are possible to gain competitive advantages in production. In the past, before the revolution of industry, in agriculture there was majority of workforce employing workers. Especially food production was an extremely labor intensive industry. In this industry, necessary working tasks are involving in foodstuffs like fruit from fruit trees cultivating which must be picked in order to minimize damage. The coffee cultivation is considered as an example of labor intensive because most of necessary tasks are hands-on. Even when employing technology device, workers still have to

be with the most parts of work. Nowadays, thanks to the progress of technology, labor productivity has been improved, it leads to a labor intensity decrease.

Research objectives

(1) To discuss the existing literatures and works involving in labor intensive and its effects on farm performance

(2) To analyze the effects of labor intensive on performance of farms in coffee cultivating in Vietnam

LITERATURE REVIEW

Following (Bigman, 2002, pp. 30-54), Labor intensity is determined by the capital-labor ratio, it occurs when an industry has its production required a large amount of labor. Developing countries usually are labor-abundant countries, thus they possess comparative advantages of labor-intensive goods, such as less cost of machinery, easier to make customized goods and using the own human initiative. However, some main disadvantages are recognized like product quality may be vary because of the worker expertise, differences wages paid for unskilled and skilled workers. As found in (De Nicholas Perdikis, William A. Kerr, William Alexander Kerr, 1998), while a labor – intensive products refer to a production required a larger amount of human labor to bring it off, Capital intensive product involves a greater amount of machinery to produce products. Therefore, capital intensive industry can take big benefits in the aspects of higher production speed as well as uniform effort, then it can reduce average cost. Obviously, capital intensive production has a need of more equipment and machinery to produce goods, so it needs a larger financial investment whereas labor intensive goods necessitates a higher labor input to carry out production activities in comparison to the amount of capital required. Based on (Yotopoulos, Pan A. & Lau, Lawrence J. & Somel, Kutlu, 1970, pp. 1-14), the study investigated that if labor intensity had impacts on agricultural productivity. As the result, the large farms tended to take higher level of intensity in cultivation, and less efficient than smaller farms. The equation was used to present how cost of input per farm (cash outlays, labor cost and seed) affected output per farm: Q/L = a + b Log (C/L), where Q is output per farm (currency); L is size of farm; C is cost of input (labor cost, depreciation of equipment, cash outlay, seed). Similarly, Following (T.R. Jain, 2006), the author provided a measurement of labor intensive $\frac{\mathrm{Kg}}{Lg}$ K: Number of labor; L: Amount of Capital

Following (Stober, 2014) Labor intensity (L/K); Capital Intensity; Income share of labor in Value Added = Real Wages/ Labor Productivity.

Based on (Dogan, 2015), ratio of Relative Labor intensity has been calculated as follow:

$$\frac{Numbers\ of\ workers\ in\ the\ household\ /_{Property,plant\ and\ equipment}}{Total\ Numbers\ of\ workers\ in\ the\ industry\ /_{Total\ capital\ of\ industry}}$$

The ratio explain that whether the level of labor intensity in the household is high-low-medium when it is compared to the industry average.

Following (Dickson M. Nyariki, 2011, pp. 35-52), by using the DEA and Corrected Ordinary Least Square (COLS), the paper revealed that there are a modern technology use brings an improvement for farm performance. The key elements affecting farm performance are education level, gender of household head, market access as well as off-farm capital. In Kenya, the poor agricultural performance illustrates a serious issue in the economy when Agriculture provided around 25% GDP, but it offers jobs for nearly 70% of total population, accounts for approximately 40% of export earnings. In this research, authors defined inputs as land, total labor (household and hired in adult-hours), Cost of seed, manure, fertilizer and pesticide and some other costs. Whereas, outputs are Value of Output per Hectare, Total Cost of Input/ Cost of capital. Similarly, by using the regression model, Lee (2010) proposed a research testing relationship of capital intensity and firm performance. Capital intensity refers to a display of firm's operating leverage while firm performance is defined as Q = Farm's value performance is measured by Tobin's Q (Lee, 2010).

In the research of Dogan (2015), the author showed that labor intensity has a positive relationship with expected firm's returns in a particular industry of manufacturing. The sample is unbalance panel with 1823 firms. The author run Fara-Macbeth panel regression using relative labor intensity ratio to document the relation between labor intensity and expected returns. The research showed that labor intensity has a positive relationship with expected return due to industry adjusting. Labor is considered as one of the most important production's elements. However, high labor intensive firms tends to be more vulnerable with cycle of business than that of less labor intensive labor firms. The authors concluded that if the firms has a higher level of labor intensive, they are likely to have higher sensitivity level of cash flow. The author claimed that in the labor intensive industry which is associated with higher rate of equity return (Dogan, 2015, pp. 1-13). Not only labor has big impacts on firm value, but also it is a factor to form labor market.

As found in (Minge-Kalman, 1977): Correlation between increases in labor intensity per worker and increases in the ratio of consumer/worker. Following **(**Minge-Kalman, 1977, pp. 273-284), the author stated that when a ratio of number of consumer per worker (Q/W) increase, it

leaded to an upward trend of labor intensive per worker (C/W). Q/W = k(C/W). The figure showed k = 144, it meat that in average, when one more consumer added (and all other factors kept remain unchanged), labor intensive would increase 144 hour per worker. The research was studying in 1976 for three production of categories of alpine. Sahlin's method underestimates labor intensity within a given time (or given technology) of "primitive" or peasant domestic production.

Based on (David Fairris and Lee J. Alston, 1994, pp. 149-160), any upward trend of labor intensity can lead to a compensating payment for a rise of work disutility. There are several factors influencing labor intensity: *Intensity = i(ER, PD, TC, and WP),* where *ER* refers the employment rent, *PD* is production characteristic vector, *TC* is a representative of the technological control. *WP* is a measurement of worker preferences for workplace intensity. Following (Vicente Roca-Puig, Inmaculada Beltrán-Martín, Mercedes Segarra-Ciprés, 2012). Based on (Lin, Justin Y.Sun, Xifang. Wu, Harry X., 2015, pp. 131-143), the authors revealed that labor intensity can be determined by labor-capital ratio. In their study, they used labor-capital ratio of per sector in America as a proxy for ratio of labor-capital of the corresponding sector in China. In other words, the authors stated that at the same industry, Chinese labor-capital ratio should be higher than American labor-capital, because in China, capital is more shortage than that in America. Following (Fouka and Alain Schlaepfer, 2015), the research examined role of labor in agricultural production. Interestingly, the result showed that potential labor intensive in agriculture is related with high returns to labor in European regions. Following (Deb Kusum Das, Gunajit Kalita, 2009), the authors stated that one of the role of labor intensity is it can enhance employment potential. However, there were some reason to inhibit employment generation in labor intensive sectors in India, they are skilled workforce shortage, low levels of technology used due to low investment. Following (Naknoi, 2011, pp. 1-16), the paper had published statistics of labor intensity of some Asian countries, the results showed that both wage inflation and labor intensive have no effects on competitiveness in Asian circumstance of post-crisis.

METHODOLOGY

Research Hypothesis

H1: Labor intensity has a significant effect on farm performance

H0: Labor intensity has an insignificant effect on farm performance

Sampling and data collection

The research collected information from 324 household's z^2

Based on Cochran (1977), n = $Z^2 \times p \times (1-p) / e^2$.

Where; n is the size of sample; z refers to statistical value; p stands for the estimated proportion of a feature that is present in the population.

Model

Equation 1:

$$Netincome_t = \beta_0 + \beta_1 Age_t + \beta_2 Sex_t + \beta_3 Edu_t + \beta_4 Size_t + \beta_5 Distance_t + \beta_6 I\text{-}cost_t + \beta_7 Worker_t + \beta_8 WperM_t + \beta_9 LI_t + \beta_{10} LH_t + \varepsilon_t \quad (1)$$

Equation 2:

$$NIperW_t = \beta_0 + \beta_1 Age_t + \beta_2 Sex_t + \beta_3 Edu_t + \beta_4 Size_t + \beta_5 Distance_t + \beta_6 I\text{-}cost_t + \beta_7 Worker_t + \beta_8 WperM_t + \beta_9 LI_t + \beta_{10} LH_t + \varepsilon_t \quad (2)$$

Dependent variables

- $Netincome_t$ is total Net income of the household t (Million Vietnam Dong)
- $NIperW_t$ is $\frac{total\ net\ income\ household t}{total\ worker\ in\ household t}$ = Net income per worker of the household t (Million Vietnam Dong)

Independent variables

- Age_t: age of the head of household t (year)
- Sex_t : gender of the head of household t (male/female)
- Edu_t: number of years in schooling of the head of household t (year)
- $Size_t$ (Farm size): is defined as Ln(Land), land (hectare) is farm size coffee cultivated (ha) (area of land use for coffee cultivation)
- $Distance_t$: distances from home to the nearest market; ((Kilometers)
- $Icost_t$: costs of input (seed, fertilizer, pesticide, depreciation,…); (Million Vietnam Dong)
- $Worker_t$: total workers of $household_t$ (people)
- $WperM_t$: ratio of number of workers out of number of members of $household_t$
- LI_t : refers to Labor intensive ratio = Labor Capital ratio ($LaborIntensive_t$: ratio of cost of labor out of total capital amount. Based on (Dogan, 2015, pp. 1-13) , capital amount is calculated by investment value for Property, plant and equipment)
- LH_t: total labor hours per hectare per year (both household and hired workers); (hours)

FINDINGS

Data description

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
AGE	324	24	73	47.44	9.67	.086	.135	-.366	.270
EDU	324	5	12	9.85	2.27	-.805	.135	-.167	.270
SIZE	324	7.4	10.7	9.342	.730	-.431	.135	-.396	.270
DISTANCE	324	.0	13.8	4.108	3.209	.983	.135	.143	.270
I-cost	324	1.09	156.8	57.00	37.0923	.907	.135	.129	.270
Worker	324	1	4	2.47	.84	.819	.135	-.459	.270
WperM	324	10%	100%	.593	.203	.511	.135	-.338	.270
LI	324	.0	4.8	1.373	.829	.585	.135	.673	.270
LH	324	207	7900	2874.2	1861.19	.955	.135	.002	.270
Netincome	324	-78.00	506.0	151.15	107.04	.901	.135	.570	.270
NIperW	324	-39.00	191.2	63.28	44.55	.965	.135	.855	.270

The table 1 displays information about both independent and dependent variables used in this research. Figures of skewness and kurtosis of all variables are below 1 and more than -1, they mean that all variables are normally distributed.

Ages of the head of the household has a big rage from 24 to 73 years old while education level has a moderate gap from 5 year to 12 year schooling. Size of land use for coffee cultivating from 7.4 to 10.7 with size is natural log of land square use for coffee cultivating. Besides, distances from household to the nearest markets are from 0km to 13.4 km. Cost of input from these households have enormous range from 1.09 to 156.8 mill. VND due to their different size of coffee land. Worker refers to total people who can work for the household in coffee cultivating, and the number from 1 to 4 people. WperM is the number of worker per member, it shows that it is around 0.1 to 1.0 worker per member. Regarding labor intensive ratio, it is from 0.0 to 4.8 to show that cost of labor out of total capital amount (capital amount is investment value for Property, plant and equipment). LH_t is from 207 hours to 7900 hours which are total labor hours per hectare per year (both household and hired workers). With value of net income, it is from -78 to 506 mill. VND per household, and NIperW refers to net income per worker is from 39 - 191.2 mill. VND

Correlation test

Table 2: Correlations

		AGE	SEX	EDU	SIZE	Distance	I-cost	Worker	WperM	LI	LH
AGE	Pearson Correlation	1	-.13*	-.15**	-.14**	.084	-.064	.159**	.176**	-.19**	.166**
SEX	Pearson Correlation	-.1*	1	-.005	.143*	-.132*	-.015	.057	.054	.141*	-.134*
EDU	Pearson Correlation	-.1**	-.005	1	.097	.090	.131*	-.40**	-.126*	.107	-.055
SIZE	Pearson Correlation	-.14**	.143*	.097	1	-.200**	.587**	.195**	.021	.148**	-.587**
Distance	Pearson Correlation	.084	-.132*	.090	-.200**	1	-.036	-.113*	.020	-.112*	.225**
I-cost	Pearson Correlation	-.064	-.015	.131*	.587**	-.036	1	-.003	.004	.128*	-.178**
Worker	Pearson Correlation	.159**	.057	-.40**	.195**	-.113*	-.003	1	.502**	.173**	-.121*
WperM	Pearson Correlation	.176**	.054	-.126*	.021	.020	.004	.502**	1	.185**	.008
LI	Pearson Correlation	-.192**	.141*	.107	.148**	-.112*	.128*	.173**	.185**	1	.055
LH	Pearson Correlation	.166**	-.134*	-.055	-.587**	.225**	-.178**	-.121*	.008	.055	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 2 shows description about correlation between variables, as can be seen from the tables, we can state that there are no strong relationship between independent variable.

Regression test

Relationship between labor intensive ratio and net income in household

The model summary display value of durbin-watson is 1.662, it proves that there is no autocorrelations occurs in the model. R square is 0.503, it means that the model can explain 50.3% all the variables of the data.

Table 3: Model Summary[b]

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Durbin-Watson
1	.709[a]	.503	.488	76.6314882	1.662

a. Predictors: (Constant), LH, WperM, EDU, SEX, I-cost, DISTANCE, AGE, LI, Worker, SIZE

b. Dependent Variable: Netincome'

Table 4: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1863000.353	10	186300.035	31.725	.000[b]
	Residual	1838056.500	313	5872.385		
	Total	3701056.853	323			

a. Dependent Variable: Netincome

b. Predictors: (Constant), LH, WperM, EDU, SEX, I-cost, DISTANCE, AGE, LI, Worker, SIZE

Further, Table 5 illustrates result of testing regression between Net income as a dependent variables and its independent variables including AGE; SEX; EDU; SIZE; DISTANCE; I-COST; WORKER; WperM; LI; LH. Following that, AG; SEX and LH do not have significant impacts on NET INCOME. While EDU; SIZE; WORKER; LI have considerable positive effects on NET INCOME. There are strong negative impact of DISTANCE; I-COST; WperM on Netincome.

Table 5: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	-904.1	93.186		-9.7	.00	-1087	-720.					
AGE	.492	.477	.044	1.03	.303	-.446	1.430	-.084	.058	.041	.855	1.16
SEX	10.57	14.041	.031	.75	.452	-17.050	38.204	.151	.043	.030	.931	1.07
EDU	12.52	2.146	.266	5.83	.000	8.307	16.751	.212	.313	.233	.763	1.31
SIZE	92.44	9.555	.631	9.67	.000	73.639	111.24	.603	.480	.385	.373	2.681
DISTANCE	-3.05	1.399	-.092	-2.8	.030	-5.811	-.305	-.244	-.12	-.08	.902	1.10
I-cost	-.546	.149	-.189	-3.6	.000	-.839	-.254	.208	-.20	-.14	.597	1.67
Worker	32.79	6.866	.258	4.77	.000	19.285	46.303	.262	.261	.190	.545	1.83
WperM	-0.53	24.98	-.102	-2.1	.032	-103.1	-4.805	.044	-.12	-.08	.705	1.41
LI	16.71	5.754	.130	2.90	.004	5.395	28.036	.269	.162	.116	.798	1.25
LH	.003	.003	.044	.834	.405	-.003	.009	-.348	.047	.033	.560	1.78

a. Dependent Variable: Netincome

With education, when head of household increase 1 year of schooling, the net income of the household can enhance 12.52 mill. VND per year, Sig. = 0.00 <0.01, confident level at 99%. Regarding the size of household, when the Ln (land) increase 1, the income of the household grows 92.44 mill. VND, Sig. = 0.00 <0.01, confident level at 99%. Turing to distance from the household to the nearest market, if the distance reduces 1 km, the net income decrease 3.05 mill. VND Sig. = 0.03 <0.05, confident level at 95%. With the variable of input cost which refers to total costs of input (seed, fertilizer, pesticide, depreciation,…); when the input cost rise 1 mill. VND, the net income witness an downturn of 0.546 mill. VND; Sig. = 0.00 <0.01, confident level at 99%. The number of worker in the household increase 1 person, the net income is possible to expand 32.79 mill. VND yearly; Sig. = 0.00 <0.01, confident level at 99%. Whereas, when the ratio of worker per member get an upward turn of 1%, the net income of the household decrease 0.53 mill. VND; Sig. = 0.03 <0.05, confident level at 95%. Turning to ratio of labor intensity, when labor intensive ratio increase 100%, the net income rise 16.71 mill. VND; Sig. = 0.00 <0.01, confident level at 99%. Labor intensive ratio shows that cost of labor out of total capital amount (capital amount is investment value for Property, plant and equipment).

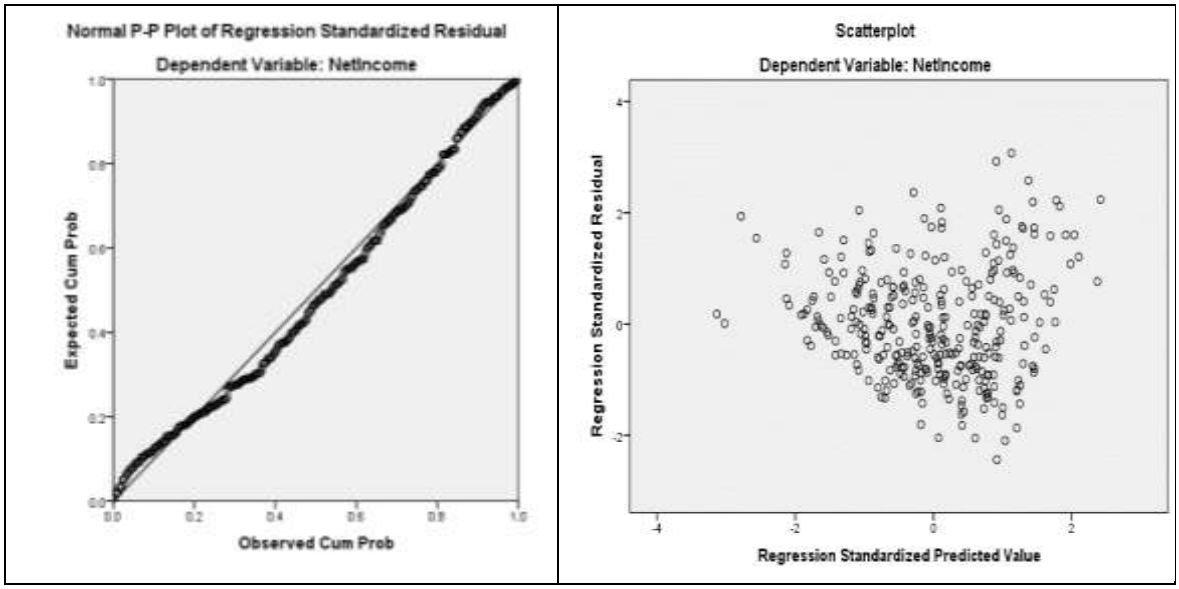

Figure 1: Relationship between labor intensive ratio and net income in household

Relationship between labor intensive ratio and net income per worker in household

The model summary display value of durbin-watson is 1.635, it proves that there is no autocorrelations occurs in the model. R square is 0.473, it means that the model can explain 47.3% all the variables of the data.

Table 6: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.687[a]	.473	.456	32.8691122	1.635

a. Predictors: (Constant), LH, WperM, EDU, SEX, I-cost, DISTANCE, AGE, LI, Worker, SIZE

b. Dependent Variable: NIperW

Table 7: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	303064.428	10	30306.443	28.052	.000[b]
	Residual	338158.482	313	1080.379		
	Total	641222.910	323			

a. Dependent Variable: NIperW

b. Predictors: (Constant), LH, WperM, EDU, SEX, I-cost, DISTANCE, AGE, LI, Worker, SIZE

Table 8: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolera-nce	VIF
(Constant)	-283.0	39.97		-7.0	.000	-361.7	-204.4					
AGE	.190	.204	.041	.931	.353	-.212	.593	-.171	.053	.038	.855	1.16
SEX	12.62	6.023	.089	2.09	.037	.772	24.471	.177	.118	.086	.931	1.07
EDU	4.945	.920	.253	5.37	.000	3.134	6.756	.382	.291	.221	.763	1.31
SIZE	35.33	4.098	.579	8.62	.000	27.270	43.398	.508	.438	.354	.373	2.68
DISTANCE	-.898	.600	-.065	-1.4	.135	-2.079	.282	-.147	-.08	-.06	.90	1.10
I-cost	-.220	.064	-.183	-3.4	.001	-.346	-.094	.189	-.19	-.14	.597	1.67
Worker	-9.30	2.945	-.176	-3.16	.002	-15.10	-3.513	-.201	-.176	-.130	.545	1.836
WperM	-0.35	10.71	-.160	-3.2	.001	-56.11	-13.93	-.233	-.18	-.13	.705	1.41
LI	6.271	2.468	.117	2.54	.012	1.416	11.127	.161	.142	.104	.798	1.25
LH	.000	.001	-.020	-.35	.721	-.003	.002	-.336	-.02	-.01	.560	1.78

a. Dependent Variable: NIperW

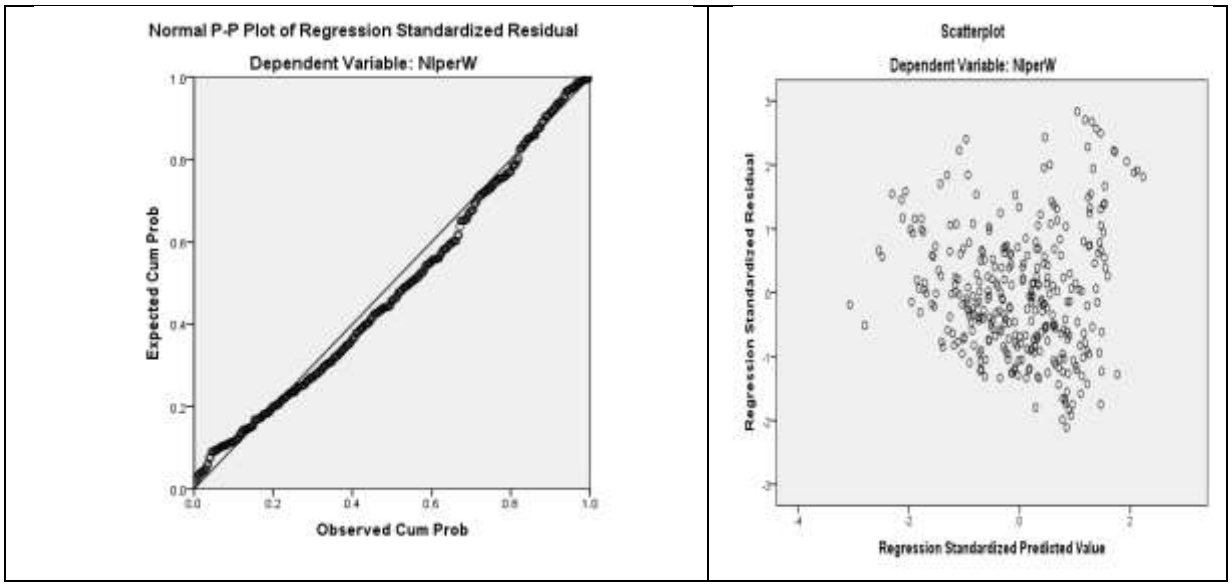

Figure 2: Relationship between labor intensive ratio and net income per worker in household

Table 8 illustrates result of testing regression between NIperW as a dependent variables and its independent variables including AGE; SEX; EDU; SIZE; DISTANCE; I-COST; WORKER; WperM; LI; LH. Following that, AGE; DISTANCE and LH do not have significant impacts on NET INCOME. While EDU; SIZE; LI have considerable positive effects on NET INCOME. There are strong negative impact of I-COST; WORKER; WperM on Netincome.

Regarding education, when head of household increase 1 year of schooling, the net income per worker of the household can enhance 4.945 mill. VND per year, Sig. = 0.00 <0.01, confident level at 99%. Turning to the size of household, when the Ln (land) increase 1, the net income per worker of the household grows 35.33 mill. VND, Sig. = 0.00 <0.01, confident level at 99%. Turing to the variable of input cost which refers to total costs of input (seed, fertilizer, pesticide, depreciation,…); when the input cost rise 1 mill. VND, the net income per worker witness an downturn of 0.22 mill. VND; Sig. = 0.00 <0.01, confident level at 99%. The number of worker in the household increase 1 person, the net income per worker is possible to decrease 9.3 mill. VND yearly; Sig. = 0.00 <0.01, confident level at 99%. Whereas, when the ratio of worker per member get an upward turn of 1%, the net income per worker of the household decrease 0.35 mill. VND; Sig. = 0.00 <0.01, confident level at 99%. Turning to ratio of labor intensity, when labor intensive ratio increase 100%, the net income per worker rise 6.2 mill. VND; Sig. = 0.01 <0.05, confident level at 95%. Labor intensive ratio shows that cost of labor out of total capital amount (capital amount is investment value for Property, plant and equipment).

Conclusion

By using OLS (ordinary least square) method to estimate parameters in the model, the result reveals that labor intensive has a significant positive impact on farm performance measured by Total Net Income and Net Income per Worker of each household. To be more details, when labor intensive increase 100%; Net income per household increase 16.715 million VND while Net income per worker per household increase 6.217 million VND.

The result has an agreement with some previous study. For example, Dogan (2015) revealed that labor intensive has a positive effect on expected firm's return with a case study at manufacturing industry. However, there are some researches show their results to support for technology in the term of leaping the productivity, according to (Dickson M. Nyariki, 2011, pp. 35-52), by using the DEA and Corrected Ordinary Least Square (COLS), the paper revealed that there are a modern technology use brings an improvement for farm perform. Moreover, based on (David Fairris and Lee J. Alston, 1994, pp. 149-160), Any upward trend of labor intensity can lead to a compensating payment for a rise of work disutility.

With this study, the result can support for farmers in Vietnam who are cultivating coffee that; if they can enhance labor cost to their farming; it can help them to improve the net income in certain way. However, they need to take consideration with modern technology; because it can probably bring them some convenient and saving time for their work. The future research, the authors are going to focus on which elements affect labor intensity, with case study of coffee cultivation in Vietnam.

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