

Factors affecting the income of migrant households in rural Vietnam: A household level study**Doan Van Truong^{a*}, Le Thi Thuy Ly^b, Nguyen Do Huong Giang^c, Leng Thi Lan^c and Le Thu Hien^d**^a*Thanh Hoa University of Culture, Sports and Tourism, Vietnam*^b*Institute of Cultural Studies, Vietnam Academy of Social Sciences, Vietnam*^c*Thai Nguyen University of Sciences, Vietnam*^d*Vietnam Youth Academy, Vietnam***CHRONICLE***Article history:*

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*Keywords:**Income**Household**Rural**Influence factor**Vietnam***ABSTRACT**

The study identified factors affecting the income of migrant households in Trieu Son district, Thanh Hoa province. To achieve this goal, in this study we surveyed 385 migrant households in the study area. The analysis of the multivariate linear regression model has identified three factors that have significant impacts on household income, including (i) the number of migrants, (ii) Number of activities income generation activities, (iii) Destination of migrants. On this basis, the study offers some meaningful solutions to improve income and ensure the lives of migrant households in Trieu Son district, Thanh Hoa province in the near future.

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1. Introduction

Agriculture is one of the most important sectors in Vietnam's economy today, with 75% of the population being farmers; every year agriculture contributes nearly 20% of GDP to the national economy and above. 25% of export turnover. Agricultural development greatly affects the living standards of people in rural areas. Along with the general socio-economic development, the household economy is also constantly developing both in size and form. Many households have moved out of poverty from their own home countries, using land and migrating to create livelihoods for their families (Khoi, 2015; Hai, 2017). Trieu Son district, Thanh Hoa province is a semi-mountainous region, 30km from the center of Thanh Hoa city, the main occupation is agriculture, production is still low, economic development, exploitation, and utilization of household resources The family is limited. Over the past time, under the impact of urbanization and industrialization, the agricultural land area has been narrowed, the labor surplus has increased, and this has resulted in an increase in the rate of labor migration. launching large cities at home and abroad looking for jobs in large numbers. This directly affects the development orientation and income of rural households. Therefore, it is necessary to research and find out the factors that affect the income of migrant households, providing useful information for the authorities to be able to come up with new policies. and specifically to create sustainable jobs, improve incomes and contribute to the socio-economic development of Thanh Hoa province.

2. Literature Review and hypothesis development

Yadollahi et al. (2011) reported the working-age factor has an impact on household income. On the other hand, educational attainment has also a strong positive impact on household income, and highly educated people can generate more income than people with low income (Nem Nei Lhing, 2013; Abdulai, 2001; Ghirmai Tesfamariam Teame, 2016). Age, gender, marital

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status, occupation, and education are the main determinants of income in Pakistan (Ali, 2013). Estudillo et al. (2018) pointed out that the main motivation for poverty reduction is through local support programs and policies. Research by Lokshin et al. shows that increased labor migration abroad is a leading cause of poverty reduction in Nepal, and internal migration also plays an important role in the economic growth strategy, health and poverty reduction. Therefore, Nepal should consider the aspects of internal and international migration dynamics (Lokshin et al., 2007). Through remittances, the money that migrants remit contributes to improving incomes and consumption, allowing households to overcome poverty and address risks associated with participating in activities and creates higher income. Moreover, migrants who return to their homeland will bring positive new knowledge to apply for local expansion (Murrugarra et al., 2011; IOM, 2015). In Vietnam, many studies have shown that household income is affected by education level, number of people, participation in mass organizations, number of activities that generate income, capital, age of workers and support from the government (Trinh, 2011; Khoi, 2015). Factors such as age, farmland and income-generating industries affect household income (Duy, 2017). The statistical analysis results performed by Tuan (2017) show that income diversification of rural households depends on human capital (including the age of head of household, level of education of the head of household, size households), social capital (participating in political and social organizations), natural capital (productive land), physical capital (residential land, assets). Internal remittances and international remittances have contributed to a significant increase in per capita income, contributed to poverty reduction, and pushed a household beyond the poverty line. Based on the findings, the study shows that it is important to recognize the benefits of labor migration (Le, 2019). Through published researches, we have identified the factors affecting household income in Trieu Son district, Thanh Hoa province, including and propose the following hypotheses:

Hypothesis 1: The income of a migrant household is influenced by the following factors: working-age, education level, number of migrants, time of migration, the destination of migrants, number of people in the household, number of income-generating activities and support from outside.

Hypothesis 2: The living standards of migrant households have been raised through domestic and international labor migration, especially international migration.

3. Research Methods

3.1. Model research

The data were processed and analyzed using SPSS software, averages, percentages, and frequencies used to analyze the factors affecting income of migrant households. The impact factors are determined through the Binary Logistic regression model, Cronbach Mart Alpha to correlate analysis. The regression model is shown as follows:

$$\ln [p(x)/1-p(x)] = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \dots + \beta_nX_n + \varepsilon$$

Inside that:

The dependent variable $p(x)$ is the average household income per year and it is dummy variable receiving values 0 and 1 (0 = household income does not increase and 1 = household income increases),

β_0, \dots, β_n are the regression coefficients to be estimated (β_0 is the intercept),

ε : is the error measuring the impact of variables not included in the model,

X_1, \dots, X_n are the independent variables included in the model, explained in turn:

Table 1

Interpretation of independent variables in a multivariate regression model

X_j	The name of the variable	Interpret	Expected
X_1	Number of people of working age	From 18 to 25 =1, From 26 to 35=2, From 36 to 45=3, Over 45 = 4 (control variable)	(+/-)
X_2	Education level	Primary school = 1 (control variable), Secondary School = 2, High school = 3	(+)
X_3	Number of migrant workers	Many = 1, A few = 2 (control variable)	(+)
X_4	Time of migration	Under 2 years = 1 (control variable), Over 2 years = 2	(+)
X_5	Destination of migration	Overseas = 1, Big cities in the country = 2 (control variable)	(+)
X_6	Number of household members	Over 2 people = 1, Less than 2 people = 2 (control variable)	(+/-)
X_7	Number of activities that generate income	From 1 to 2 = 1 (control variable), From 2 to 3 = 2, Over 3 = 3	(+)
X_8	The support from outside	Yes = 1, No = 2 (control variable)	(+)

(Source: The survey data of the study)

The research model is schematically detailed in Fig. 1. To achieve the study purpose, 385 representative samples, corresponding to 385 migrants and relatives of migrants living in the survey area, were interviewed. When analyzing elements and regression of binary logit, the sample scale must be multiplied at least 5 times the number of questions (Truong, 2020). The study was designed with a total of 45 questions, corresponding to a sample size of at least 225. However, to avoid the case that households could not find or refused to answer, the author took 160 additional samples list. On the other hand, the research content also serves many other research contents, so the authors surveyed all 385 households in the area. The number of the sample selected is intentionally based on the list of households with migrants, the sample structure ensures that all households belong to 3 groups of households: Decent income, Middle income, Poor income.

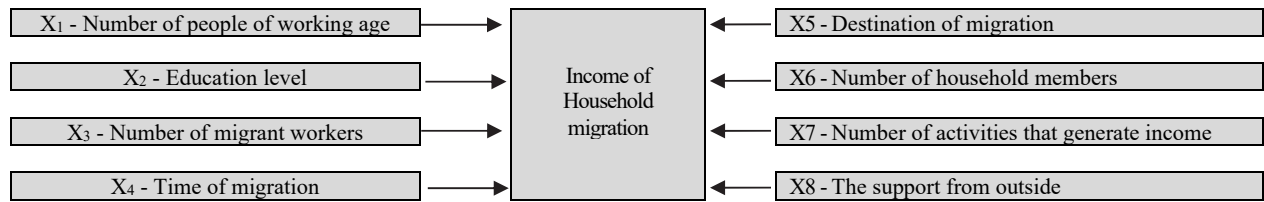


Fig.1. Research model (Source: Synthesis of the author)

3.3. Data collection methods

(i) In-depth interviews, 15 cases including 5 cases for migrants, 5 cases for non-migrants, 5 cases for relatives of migrants to collect their opinions about the decision migration of households.

(ii) The semi-structured interview was conducted with local government officials at 20 samples.

(iii) Group discussions were conducted in 2 sessions with 2 different subjects, one is the manager of the local government level, the other is the migrant and relatives of the migrants.

(iv) After data collection, SPSS 22.0 is used to analyze the factors affecting the income of migrant households. In particular, Cronbach Mart Alpha is used to evaluate the reliability of variables; Explore factor analysis (EFA) to find the factors that strongly affect the model, variance inflation factor and Tolerance are used to check the validity of the research model.

4. Results and Discussion

4.1. Sample description statistics

In the study, we have used identifier scales to evaluate the dependent variables explained in the multivariate regression model. The scales are calculated as the average between levels. The analysis results show that the dependent variables meet the standards when included in the model, with the average value greater than $\frac{1}{2}$ of the original coefficient.

Table 2

Statistics describe independent variables in the regression model

The name of the variable	Describe	Mean	Min	Max	Std. Deviation	Conclude
X1	Number of people of working age	2.57	1	4	.851	accept
X2	Education level	2.76	1	3	.674	accept
X3	Number of migrants	1.57	1	2	.872	accept
X4	Migration time	1.81	1	2	.588	accept
X5	Destination of migrants	1.68	1	2	.810	accept
X6	Number of household members	1.58	1	2	.685	accept
X7	Number of activities that generate income	2.41	1	3	.838	accept
X8	The support from outside	1.59	1	2	.655	accept

(Source: The survey data of the study)

4.2. Testing Cronbach's Alpha

The factors affecting the income of migrant households are measured by Cronbach's Alpha with a coefficient of 0.814.

Table 3

Results of Cronbach's Alpha Testing of Attributes

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
X1	12.31	1.887	.336	.782
X2	11.60	2.324	.314	.735
X3	13.20	2.480	.382	.765
X4	12.55	2.253	.452	.739
X5	12.89	2.431	.371	.797
X6	12.98	2.422	.331	.786
X7	11.95	1.858	.355	.748
X8	13.07	2.382	.334	.754

(Source: The survey data of the study)

On the other hand, the test results in Table 3 show that the attributes of the dependent variables have an Alpha coefficient of Cronbach's greater than 0.6 and smaller than the general Alpha coefficient of Cronbach; the correlation coefficient of all attributes is greater than 0.3, so all properties of the dependent variables are statistically significant (Truong, 2020).

4.3. Exploratory Factor Analysis (EFA)

The author conducted exploratory factor analysis (EFA), Varimax analysis of 8 observed independent variables. As can be seen in Table 4, the EFA result is $0.5 < \text{KMO} = 0.511 < 1$. $\text{Sig.} = 0.000 < 0.05$, which means that all variables are related to each other.

Table 4
KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.511
Bartlett's Test of Sphericity	Approx. Chi-Square	91.925
	Df	28
	Sig.	0.000

(Source: The survey data of the study)

Results of the KMO and Bartlett's Test tables show that the variables all reach values greater than 0.5, proving that the factor analysis of the research data is appropriate. Through the EFA model, some factors that have a significant impact on the income of migrant households have been identified, namely: number of migrants, number of activities generating income, and destination of migrants.

4.4. Analysis of factors affecting the income of Household migration in rural Vietnam

With the collected data, the author used the Binary Logistic regression model to analyze the correlation between the independent and dependent variables. One of the necessary conditions for the analysis of the next steps of multivariate regression is that the independent variable must be correlated with the dependent variable, if not correlated, this type of independent variable is out of the regression analysis. Therefore, before performing the regression analysis, the author checked Pearson's correlation coefficient to check the linear relationship between the independent and dependent variables.

Table 5
The correlative matrix between variables

Variable	X1	X2	X3	X4	X5	X6	X7	X8	p(x)
X1	1	-.070	-.014	.111*	-.064	.029	-.008	.017	-.071
		.169	.790	.030	.208	.567	.869	.739	.003
X2	-.070	1	-.091	.206**	-.137**	.054	.101*	.062	-.016
	.169		.073	.000	.007	.293	.049	.227	.009
X3	-.014	-.091	1	-.111*	.048	-.033	.045	.049	-.054
	.790	.073		.029	.351	.523	.380	.335	.001
X4	.111*	.206**	-.111*	1	.160**	-.098	.147**	-.105*	.012
	.030	.000	.029		.002	.056	.004	.039	.002
X5	-.064	-.137**	.048	.160**	1	-.073	-.011	-.011	.139**
	.208	.007	.351	.002		.155	.835	.822	.000
X6	.029	.054	-.033	-.098	-.073	1	.008	-.081	-.090
	.567	.293	.523	.056	.155		.878	.115	.009
X7	-.008	.101*	.045	.147**	-.011	.008	1	.036	.038
	.869	.049	.380	.004	.835	.878		.484	.000
X8	.017	.062	.049	-.105*	-.011	-.081	.036	1	-.021
	.739	.227	.335	.039	.822	.115	.484		.002
p(x)	-.071	-.016	-.054	.012	.139**	-.090	.038	-.021	1
	.003	.009	.001	.002	.000	.009	.000	.002	

(Statistical significance level: * $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$)

(Source: The survey data of the study)

Table 6
Multicollinearity test results

Coefficients	t	Collinearity Statistics	
		Tolerance	VIF
(Constant)	6,965	-	-
X ₁	-1,096	,964	1,037
X ₂	,011	,896	1,116
X ₃	-1,329	,972	1,028
X ₄	-,549	,848	1,180
X ₅	2,622	,929	1,076
X ₆	-1,667	,969	1,032
X ₇	,928	,965	1,036
X ₈	-,524	,966	1,035

(Source: The survey data of the study)

The analysis results show that the VIF of 8 independent variables included in the model is much smaller than 10. Therefore, there is no phenomenon of collinearity in the model, so the model has statistical significance. Table 7 presents the results for binary logistic regression as follows:

Table 7
Results for the binary logistic regression model

Variables in the Equation	B	S.E.	Wald	df	Sig.	Exp(B)
X1	0.319	.541	.003	1	.018	.816
X2	0.508	.672	1.765	1	.024	1.010
X3	2.263	.636	.363	1	.005	.540
X4	0.274	.522	7.197	1	.014	.840
X5	1.875	.539	2.872	1	.002	2.277
X6	-0.435	.518	.859	1	.016	.565
X7	2.202	.547	.436	1	.005	1.227
X8	0.525	1.476	1.020	1	.019	.810
Constant	1.491	1.341	.003	1	.001	.300

(Statistical significance level: * $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$)

(Source: The survey data of the study)

Number of observations N=385 Prob> Chi²=0.01 Loglikelihood = 91.532 Pseudo R² = 34.0%

Table 7 presents the results of the logistic regression model with the dependent variable being the average household income in a year. The model has statistical significance with $p < 0.05$, $R^2 = 34.0\%$ indicates the independent variables in the model can explain 34.0% of the change of the dependent variable according to the variation of the independent variable in the model. The variables are explained as follows:

When there is an increase in the number of migrants within a household, the probability of generating income is 2.263 times higher than that of households with few migrant workers if the influence of other factors remains unchanged. The above difference is statistically significant $p < 0.05$ corresponding to 99% of confidence interval (OR = 2.263, 99% CI = 0.21-1.34). Thus, a household's income in a year is influenced by the number of migrants, whereby a large number of migrants tend to increase the household's income more than the number of migrants. Households with migrants abroad are 1.875 times more likely to generate income than households with migrants in the country if the effects of other factors in the model are remained unchanged. The above difference is statistically significant $p < 0.05$ corresponding to 99% of the confidence interval (OR = 1.875, 99% CI = 1.26-4.46). Households with 3 or more income-generating activities are 2.202 times more likely to generate income than households with fewer than 3 activities if the influence of other factors in the model remains constant. The above difference is statistically significant with $p < 0.05$ with 99% confidence interval (OR = 2.202, 99% CI = 0.79-1.87). The number of people with statistical significance $p < 0.05$ corresponds to 95% of the confidence interval (OR = -0.435, 95% CI = 0.29-1.10). This is a variable that has a negative impact on the household's income variable, when the number of dependents is too large in a household, the average income per capita will decrease. In this case, if a family has a follower, it will reduce 0.435 times compared to households without a follower. Similarly, for the other variables, similar results were found: The working age was statistically significant $p < 0.05$ with 95% confidence interval (OR = 0.319, 95% CI = 0.56-1.17). Educational attainment was statistically significant with $p < 0.05$ with 95% confidence interval (OR = 0.50, 95% CI = 0.50-2.02). Migration time was statistically significant with $p < 0.05$ corresponding to 95% of the confidence interval (OR = 0.274, 95% CI = 0.34-2.01). The support from dynamic outside has statistical significance $p < 0.05$ corresponding to 95% of confidence interval (OR = 0.525, 95% CI = 0.40-1.60). Thus, the income of migrant households is influenced by many objective and subjective factors. The significance level is $p < 0.05$ in all independent variables, showing that the model has a high significance for the statistical level. With this result, the logistic regression model is written as:

$$\ln [p(x)/1-p(x)] = 1.491 + 0.319 \times X_1 + 0.508 \times X_2 + 2.263 \times X_3 - 0.274 \times X_4 + 1.875 \times X_5 - 0.435 \times X_6 + 2.202 \times X_7 + 0.526 \times X_8.$$

Table 8
Predict the results of a logistic model of independent factors

Observe	Guess		Proportion of attendance guess right
	Household income 1.00	Household income 0.00	
Household income 1.00	328	5	98.5
Household income 0.00	42	10	19.2
The proportion of attendance guess right			87.8

(Source: The survey data of the study)

Table 8 shows the analysis of the dependent variable which is the income of migrant households in a year. The observed column yields two values for this variable: 0 and 1. The predictive column gives the predictive value of the income variable of the migrant household on the model. This table gives the correct predictive value of the model compared to observed reality. In this case, the model correctly predicted 333 cases for the assumption that income increased and incorrectly predicted 0 cases. Therefore, the correct predictive result is $328/333 \times 100 = 98.5\%$. Similarly, the model correctly predicted 10 cases of unchanged income and incorrectly predicted 42 cases, the correct prediction was $10/52 \times 100 = 19.2\%$. From this we calculate the correct prediction rate of the whole model: $(328 + 10) / (328 + 10 + 5 + 42) = 338/385 \times 100 = 87.8\%$. The overall prediction percentage shows the model's correct prediction rate, in this case 87.8%. Compared with the results of Block 0, the results showed that the model predicted better (from 80.5% to 87.8%).

5. Conclusions and recommendations

Based on the regression results, we have made some conclusions and recommendations to contribute to raising incomes and ensuring the lives of migrant households in Trieu Son district, Thanh Hoa province in the coming time as follows: The estimation results show such factors as working age, education level, number of migrants, time of migration, the destination of migrants, number of people in the household, number of activities that generate income, external support affected household income in Thanh Hoa. Households with migrants have a higher chance of improving their incomes than non-migrant households, especially international migrants. The results also show that the number of people in the household is still dependent, reducing the average income per capita of the household. From the results of the research and practice in Thanh Hoa, we propose some recommendations to improve the income of migrant households as follows: (i) Supporting migrants returning to set up production facilities doing business in the local community, to take advantage of the knowledge and skills they gain at the destination; (ii) It is necessary to have policies to invest in education and training in rural areas to equip young people who have the knowledge and skills to improve their livelihoods and eradicate poverty and reduce the number of dependent labor in households; (iii) Need to be more proactive and active in investing in human capital and social capital of the family: equipping necessary knowledge and professional skills for the labor force, strengthening relationships social relations, finding information on labor recruitment, etc. to participate in the labor market most enthusiastically.

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