

Impacts of labor migration on structural change of rural labor in Trieu Son district of Thanh Hoa province in Vietnam

Doan Van Truong^{a*}

^aThanh Hoa University of Culture, Sports and Tourism, Vietnam

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ABSTRACT

The study focused on analyzing the impacts of labor migration process on the structural change of the rural labor in Trieu Son District, Thanh Hoa province in Vietnam. With regard to the quantitative and qualitative methods, the study used the survey data from the research “The changes of rural labor composition under the impacts of current labor migration in 2018: A case study in Trieu Son District, Thanh Hoa province in Vietnam”. The results of logit regression analysis showed different factors affecting the structural change of the rural labor including: number of migrant workers, migration time, destination of migrants, occupation, living-condition, number of dependent households in the household.

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1. Introduction

The history of the world and Vietnam saw several large-scale migrations including labor migration (Truong, 2014). The industrialization and modernization process of Vietnam has further promoted the labor migration. Many householders have chosen labor migration as a livelihood strategy to improve income and find job (Truong, 2015). The labor migration is directly related to structural change of labor since some labor workers can move to other industries in the destination such as service industry. As a result, the change of labor force from agricultural occupation to non-agricultural occupation has caused negative and positive consequences (Truong, 2015). In recent years, Vietnam has many different policies to promote rural economic restructuring in general and structural change of the rural labor in particular (Truong, 2016). These policies focus on building rural infrastructure, developing careers, improving the quality of vocational training for rural workers, increasing access to farmers' credit for development objectives of non-agricultural occupations, handicraft villages, small and medium-sized enterprises in rural areas, vocational training, etc. The above-mentioned policy solutions have been considered to have contributed significantly to improve rural economy and structural change of the rural labor. However, in order to go further, it is necessary to have leverage and decisive solutions for rural labor transformation in the past as well as in the coming time (Ba, 2006). Several related studies have been focused on understanding, evaluating and analyzing by scientists and policy makers in different dissertations, theses, books, journals and scientific conferences. Some domestic and foreign scholars mentioned in this field like C Cindy Fan, Colin Green, Bhattacharya, Dang Nguyen Anh, Le Hong Thai, Than Van Lien, Trinh Duy Luan, Le Xuan Ba ... In general, research works on labor composition, structural change of labor published had origins from economic field, economy studies and development

* Corresponding author. Tel.: +84 0979283406

E-mail address: dvtruongxhh@gmail.com (D. Van Truong)

economics, but in the perspective of sociology that has not been interested remarkably. In particular, there haven't been many studies in terms of households economics as well as the impacts of labor migration in both theoretical and practical aspects. Trieu Son district where has had large domestic and foreign flow of labor migration in Thanh Hoa province from 2005 up to now is one of the areas of pure agriculture with the certain difficulties of economic development. To improve living-condition, income and spiritual life, many workers have left their homeland to domestic cities or gone abroad to earn a living. Objectively, this process has had both negative impacts and positive ones on people's life such as changes of human resources, changes of labor composition in agriculture, occupational issues, employment, changes of culture and lifestyles. The positives and limitations of the Labor Migration show that there needs to be an objective and scientific assessment of the impacts of migration.

2. Theoretical basis

2.1. Concepts

Migration is a form of moving in the space of a person from one place to another, or movement with the specified minimum distance. This movement takes place within a defined migration period and is characterized by a change in permanent residence (Lan, 2011). Labor migration is the transformation of labor force to another geographical area (for a period of 6 months or more), with the aim of seeking economic opportunities, employment and income. Labor export is the activity of sending workers to work abroad for a certain period of time under the contract, being managed and supported by the state through licensed enterprises, non-business organizations or enterprises winning bids for overseas projects to create jobs in the country, generate income and improve skills for laborers (Van, 2015). Rural workers are those belonging to the labor force, operating in the economic system in rural areas and operating in the three main fields comprising labor of agriculture, industry, handicraft, construction, service and commerce. Most agricultural workers are universal, less trained. They work based on experience and health, simple labor organization, rudimentary and highly self-made labor tools. Skilled and negligible labor force is unremarkable and uneven among areas. Therefore, labor productivity is low and difficulties in applying modern technology into production are unavoidable (Thanh, 2014). Change of labor composition: is a process to transform structure, relationship and labor according to certain objectives. In fact, it is the process of distributing and allocating labor resources in accordance with progressive regulations and trends in order to make the most complete and effective use of labor resources to promote and grow targets of economic development of the country.

2.2. Application theories

The theory of social change: The first researches on social change of sociologists studied and analyzed from the practical needs of industrialization and the expansion of democracy and Civil rights that were happening strongly after the revolution in France and in the US in the mid-nineteenth century (Long, 2013). Some of the main authors of this theory are such as Auguste Comte (1798 - 1857), Herbert Spencer (1820 - 1883), Emile Durkheim (1858 - 1917), Karl Marx (1818 - 1883), etc. Discussing this terminology, many researchers stated that social change is a process which patterns of behaviors, relationships, social situations have been changed according to the time. Although there are differences, the notions of social change are unified in the main contents: Firstly, social change is inevitably a collective phenomenon including a collective or a given area assessed as a collective. Secondly, social change is a structural change means that one must observe the change in the whole or in some parts of the social organization and can best describe it correctly. Thirdly, social change is the change at the time of transformation or the continuation of those ones among two or more previous periods. In fact, assessing and measuring social change often take place between the present and the past time (Trang, 2013). In Vietnam today, the process of industrialization and modernization, the expansion of industrial parks and export processing zones have promoted the movement of labor migration from rural to urban areas to find jobs and increase incomes. This not only makes people's lives better and better, but it is also an agent of the structural change of rural labor. When applying the theory for research, we can clearly see that through the evaluation and measurement of the current structural change of rural labor in comparison with that in the past in Vietnam. The current migration problem from rural areas has significantly changed in culture, education, lifestyle and rural labor composition in both positive and negative aspects. Therefore, when analyzing the structural change of rural labor, it is necessary to look at both aspects in order to draw the most comprehensive picture of the multidimensional transformation to the households in the current research area. The process of labor migration in rural area has profoundly impacted the social structure via the process of the structural change of labor, shifting jobs, occupation, local production and that has changed it into a new form that has caused the transformation of labor distribution and rural household structure.

Theory of gravitation - push: In 1885, Ernest Ravenstein built a sociological theory of migration on the basis of studying the movement of migration from rural to urban areas in England. From the beginning of 1989, Ravestein made a number of notable comments in the article "Migration rules" published by Journal of Royal Statistical Society. Accordingly, Ravestein affirmed the reason of migration came from the difference of development level, from the process of industrialization and trade development among areas of a country. Moreover, migration is determined by people's wishes for a better life. Everett

Lee is one of many researchers influenced by Ernest Ravenstein's migration theory that mainly focused on migration from rural to urban areas. In particular, Lee discussed the factors that prevented the migration process (Lan, 2011). Based on the achievements of Ravenstein's migration theory published in 1966, Lee reviewed and proposed a new perspective on migration. In his opinion, migration decisions were determined by four factors: factors related to the departure, factors related to the destination, intermediate obstacles and personal factors. The reason of migration was not only from the higher living conditions but also the profits of knowledge received when working and living in a new place. With the theory of gravitation - push, the study had a more multidimensional perspective on the motivation of labor migration in Trieu Son district in all four aspects: departure, destination, personal factors and intermediate barriers. Since then, it helped us better understand about the impacts of the labor migration on the structural change of rural labor in the study area (Truong, 2016).

3. Methodology

The study used methods including document analysis, in-depth interviews, semi-structured interviews, structural interviews, group discussion. In which, the main method is structured interview (survey questionnaire). The study conducted interviews with 385 selected people from different households that belonged to 3 groups of living standard comprising the average and below, the well-of, the rich. At the same time, the chosen households must be representative for households in the area and selected communes.

Table 1
Characteristics of households and informants in the surveyed sample

Characteristics	Number of respondents (N)	Percentage (%)
1. Gender		
Male	168	43,6
Female	217	56,4
Total	385	100,0
2. Age		
18 - 25	115	29,9
26 - 35	147	38,2
36 - 45	109	28,3
46 - 60	14	3,6
Total	385	100,0
3. Educational level		
Grade 9 (9/12)	80	20,8
Senior high school (12/12)	305	79,2
Total	385	100,0
4. Qualification		
No qualification	278	72,2
Intermediate or higher level	107	27,8
Total	385	100,0
5. Household living standards		
Average or lower	108	28,1
Well-off	248	64,4
Rich	29	7,5
Total	385	100,0
6. Household income		
From 1 to under 3 million VND	83	21,6
From 3 to under 5 million VND	193	50,1
From 5 to under 10 million VND	81	21,0
Over 10 million VND	28	7,3
Total	385	100,0
7. Household occupational composition		
Agriculture	262	68,1
Different occupations	59	15,3
Non-agriculture	64	16,6
Total	385	100,0

Source: The survey data of the study

The researcher studied in-depth interviews in 15 cases including labor migrants and non-labor migrants, migrants' kinship who provided valuable information at the migration time of their relatives as well as the opinions of local authorities where workers migrated. Specifically, 5 cases for migrants, 5 cases for non-migrants, 5 cases for migrants' relatives were chosen to collect their comments on the impacts of labor migration on the structural change of recent rural labor in Trieu Son District (Truong, 2016). In order to collect the useful data about the impacts of labor migration on the recent changes of rural labor composition of the locality, the study focused on analyzing the factors that influenced this situation. Pearson correlation coefficient, binary logit recurrent model, was applied to analyze the correlation among factors, data on SPSS 17.0 software.

4. Research results and discussion

4.1. Impacts on labor composition and the role of household members

The results from the analysis of survey data showed that labor migration affected labor composition and changes the role of family members. The data from Table 2 inferred people's perception of the level of impacts of labor migration on labor composition and the changes in the roles of household members.

Table 2

The impacts of labor migration on labor structure and the role of household members (Unit: %)

	Impacts of labor migration		Number of migrants		Total
			Many	Few	
The changes of the family labor composition **	Agree	N	301	53	354
		%	93,8%	82,8%	91,9%
	Disagree	N	20	11	31
		%	6,2%	17,2%	8,1%
	Total	N	321	64	385
		%	100,0%	100,0%	100,0%
The changes of members' roles in households **	Agree	N	289	49	338
		%	90,0%	76,6%	87,8%
	Disagree	N	32	15	47
		%	10,0%	23,4%	12,2%
	Total	N	321	64	385
		%	100,0%	100,0%	100,0%
Lack of people to shoulder responsibilities in the family **	Agree	N	282	50	332
		%	87,9%	78,1%	86,2%
	Disagree	N	39	14	53
		%	12,1%	21,9%	13,8%
	Total	N	321	64	385
		%	100,0%	100,0%	100,0%
The changes of family assignment **	Agree	N	282	49	331
		%	87,9%	76,6%	86,0%
	Disagree	N	39	15	54
		%	12,1%	23,4%	14,0%
	Total	N	321	64	385
		%	100,0%	100,0%	100,0%
Lack of main labor force in the harvest **	Agree	N	276	47	323
		%	86,0%	73,4%	83,9%
	Disagree	N	45	17	62
		%	14,0%	26,6%	16,1%
	Total	N	321	64	385
		%	100,0%	100,0%	100,0%

(Statistical significance level: * $p < 0,1$ ** $p < 0,05$ *** $p < 0,01$)

Source: The survey data of the study

The correlation analysis between the independent and dependent variables revealed that the Pearson correlation coefficient is $r = 0.270$; $t = 2,967$; $p < 0.05$ means a positive relationship, whereby the more migrant workers were, the stronger impacts on the change of labor composition in households were. For the impacts on household members' role, the Pearson correlation coefficient with $r = 0.344$; $t = 2,068$; $p < 0.05$ reflected the positive relationship between the number of migrant workers and the changes of members' roles in households. Similarly, labor migration also reduced the number of people who took on family responsibilities. The Pearson correlation coefficient in the sample with $r = 0.344$; $t = 1,143$; $p < 0.05$ indicated that the more the number of migrant workers in the household were, the greater its impacts on the changes of family responsibility were.

"Since our son and daughter-in law worked far away, we have had much more rice fields to do. Moreover, we have had to take our granddaughters and grandsons to their schools and see them to return home. Furthermore, we have had to cook, wash their clothes. Therefore, we don't have time to relax even to cook and enjoy meals" (in-depth interview, female, 54 years old, relative of a labor migrant)".

As for the impacts on the changes of the responsibilities of family members, the Pearson correlation coefficient with $r = 0.861$; $t = 1,956$; $p < 0.05$ also expressed the positive relationship between the number of labor migrants and the changes of responsibilities of family members. This correlation is statistically significant. The impacts of migrant labor on the lack of the main labor force in the harvest time (Pearson $r = 0.137$; $t = 2.507$; $p < 0.05$). The households with more migrant workers met many difficulties in the division of labor in the family.

"Since my sister-in-law's husband worked far away some years ago, she has done the whole family work related to rice fields, taking care of their children, caring for her parents-in-law. However, every choice has two sides in both good and bad one. Although her husband is far away, he can earn much more money to send it to his family (In-depth interview, female, 36 years old, non-labor

migrant) ”.

Most of the communes surveyed in Son District were purely agricultural and the forces involved in agricultural production were mostly women, but there were many female workers in the area who migrated to other places to find jobs to get more income for their family. Especially in recent years, the domestic and international labor markets have had a higher demand for female workers in light industries (textiles, shoes, ...) than that for men workers. This was also considered to be one of the main reasons that caused the increase of the percentage of women migration workers in Trieu Son District, affecting agricultural production in the harvest time.

“Nowadays there are many women who work away from home because the labor market is now expanding, the chances of finding a job outside their hometown are inviting. Women today aren't the same as them in the past. They don't like staying at home, but they do business more and more (In-depth interview, male, 42 years old, Labor migration worker) ”.

This situation was reflected in the survey data presented in Table 3 below, considering the percentage of households that hired workers.

Table 3

Percentage of households hiring workers by gender of migrant workers in 2 surveyed communes (Unit: %)

Gender of migrants in 2015**		Hiring situation		Total
		% Hire	% Non-hire	
Male	N	146	28	174
	%	42,6%	66,7%	45,2%
Female	N	197	14	211
	%	57,4%	33,3%	54,8%
Total	N	343	42	385
	%	100,0%	100,0%	100,0%

(Statistical significance level *p<0,1 **p<0,05 ***p<0,01)

Source: The survey data of the study

The results confirmed that there was a gender difference of migrants in hiring labor, 57.4% of households with women migrants compared to 42.6% of households with men working away from home, related to statistical significance $p < 0.05$. When women left the family to participate in the labor market, the jobs in the household were previously done by them such as: harvesting, fertilizing, weeding, breeding, ... were replaced by other family members or forced to hire local workers. While the percentage of households with female migrants was quite high, the percentage of households with men staying home remained the same but the percentage of hiring workers was still high.

4.2. Labor migration contributes to transforming the labor structure

Based on the survey data, the author estimated the binary logit recurrent model (Binary Logistic) to predict the probability of the households having to hire labor when the members migrate.

Equations of binary Logistic model:

$$\text{Prob}(Y = 1 / X) = ez / (1 + ez)$$

The dependent variables in the model are the probability of hiring of a household, the dependent variables receive 2 values 1 and 0 (binary) in which:

Y = 1 when the household hires labor in the harvest season

Y = 0 when the household doesn't hire labor in the harvest season

$$\ln [p(x) / 1-p(x)] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n + \varepsilon$$

In which:

p(x) is the probability of the dependent variables receiving values from 0 to 1

X₁, X₂, X₃, ..., X_n are independent variables included in the model

β₀, β₁, β₂, β₃ β_n is recurrent coefficient to be estimated (β₀ is a constant)

ε is the measures error probability of the impact of the variables not included in the model

The independent variables were considered comprising migration characteristics of the households including the number of migrant workers, the time of migration, the destination of migrant workers as well as the characteristics of the households in the samples, etc. Specifically:

Variables of the DESTINATION OF MIGRANT WORKERS are dummy variables that receive the value of 1 if the destination of migrants is overseas and 2 if the destination of migrants is a big city in the country. These variables in the model are to determine whether there is actually a difference of the destination of the migrant in employment. Variables of the MIGRATION TIME OF MIGRANT WORKERS are dummy variables that receive the value of 1 if the migration time is less than 2 years and 2 if the migration time is over 2 years. These variables in the model are to determine whether there is a difference of the migration in employment when the harvest time comes. People who work far away, their family is more likely to hire labor. Variables of the NUMBER OF MIGRANT WORKERS are dummy variables that receive the value of 1 if there are a large number of migrant workers and 2 if the number of migrant workers is not remarkable. These variables in the model

are to determine whether there is a difference of the number of migrant workers in employment. Household characteristics include household variables by occupation, household living standards, and number of dependent people in households. FAMILY OCCUPATION is a dummy variable that receives the value of 1 if the household occupation is purely agricultural and 2 if the household occupation is non-agricultural. VARIABLE OF FAMILY OCCUPATION is included in the model to determine whether there is an effect of this variable on employment. VARIABLES OF FAMILY'S LIVING STANDARD are dummy variables that receive value 1 if the household living standard is poor, 2 if the household living standard is average and 3 if the household living standard is well-off. These variables are included in the model to determine if the difference in living standards between household groups affects the probability of employment. VARIABLES OF DEPENDENT PEOPLE in the household are included in the model to determine whether in fact the burden of dependence (dependence) of the household has an effect on employment.

Table 4
Description of independent variables in the analysis

Independent variables	Definitions
Destination of migration	Overseas = 1, Domestic = 2 (control variable)
Number of migrant workers	Many = 1, A few = 2 (control variable)
Time of migration	Under 2 years = 1 (control variable); Over 2 years = 2
Household occupation	Agriculture = 1, Non-agriculture = 2 (control variable)
Household living standards	Poor = 1 (control variable), average = 2, well-off = 3
Number of dependents in the household	Over 2 people = 1, less than 2 people = 2 (control variable)

Table 5
Migration characteristics and household hiring (Unit:%)

Variables	Households must hire labor				
	Hire	Non-hire	Total		
Destination of migration ***	Overseas	N	186	15	201
		%	54,2%	35,7%	52,2%
	Big cities in the country	N	157	27	184
		%	45,8%	64,3%	47,8%
Total	N	343	42	385	
		%	100,0%	100,0%	100,0%
Number of migrant workers ***	Many	N	301	20	321
		%	87,8%	47,6%	83,4%
	A few	N	42	22	64
		%	12,2%	52,4%	16,6%
	Total	N	343	42	385
		%	100,0%	100,0%	100,0%
Time of migration ***	Under 2 years	N	45	26	71
		%	13,1%	61,9%	18,4%
	Over 2 years	N	298	16	314
		%	86,9%	38,1%	81,6%
	Total	N	343	42	385
		%	100,0%	100,0%	100,0%
Household occupation**	Agriculture	N	247	19	266
		%	72,0%	45,2%	69,1%
	Non-agriculture	N	96	23	119
		%	28,0%	54,8%	30,9%
	Total	N	343	42	385
		%	100,0%	100,0%	100,0%
Household living standards **	Poor	N	5	8	13
		%	1,5%	19,0%	3,4%
	Average	N	108	20	128
		%	31,5%	47,6%	33,2%
	Well-off	N	230	14	244
		%	67,1%	33,3%	63,4%
	Total	N	343	42	385
		%	100,0%	100,0%	100,0%
Number of dependents in the household **	Over 2 people	N	228	11	239
		%	66,5%	26,2%	62,1%
	Less than 2 people	N	115	31	146
		%	33,5%	73,8%	37,9%
	Total	N	343	42	385
		%	100,0%	100,0%	100,0%

(Statistical significance level: *p<0,1 **p<0,05 ***p<0,01)

Source: Survey data of the study

The statistical testing results with Pearson correlation coefficient and statistical significance level $p < 0.05$ showed a relationship between labor migration characteristics and the proportion of households with or without hired labors. This is also an important step to estimate the logistic model in the next step of the study. Before estimating regression models, it is necessary to consider the relationship between variables through the correlation analysis between them and dependent variables. The necessary condition in this analysis step is that if the independent variable is not correlated with the dependent variable, we exclude this independent variable from the regression model. The results of our study indicated the correlation among independent variables. However, based on VIF when performing multivariate regression, VIF (variance inflation factor) < 2 does not occur in the collinearity case. On the other hand, when considering the Tolerance value with the formula $Tolerance = 1/VIF$. Tolerance is greater than 0.5, so no multicollinearity takes place. As shown in Tables 6 and 7 below about the results of correlation analysis between independent and dependent variables through the correlation matrix. It can be seen that the household hiring variable was positively correlated with the time of migration and the number of dependents in the household. On the contrary, Among the household living standard variables and the hiring variables were negatively related. The overall assessment of the correlation analysis results reveal the variables were related to one another that being included in the model to explain for the dependent variable.

Table 6
Correlation matrix between factors of migration characteristics and household hiring

		Destination place	Time of migration	Number of migrants	Hiring labor in the harvest
Destination place	Pearson Correlation	1	,240**	-,246*	,116*
	Sig.		,000	,000	,023
	N	385	385	385	385
Time of migration	Pearson Correlation	,240**	1	-,237**	,392**
	Sig.	,000		,000	,000
	N	385	385	385	385
Number of migrants	Pearson Correlation	-,246**	-,237**	1	,336**
	Sig.	,000	,000		,000
	N	385	385	385	385
Hiring labor in the harvest	Pearson Correlation	,116*	,392**	,336**	1
	Sig.	,023	,000	,000	
	N	385	385	385	385

(Statistical significance level: * $p < 0,1$ ** $p < 0,05$ *** $p < 0,01$)

Source: Survey data of the study

Table 7
Correlation matrix between household characteristics and hiring labor

		Households occupation	Living standard of households	Number of dependents in the household	Hiring labor in the harvest
Household occupation	Pearson Correlation	1	-,075	,056	,181**
	Sig.		,142	,269	,000
	N	385	385	385	385
Living standard of household	Pearson Correlation	-,075	1	-,653**	-,288**
	Sig.	,142		,000	,000
	N	385	385	385	385
Number of dependents in the household	Pearson Correlation	,056	-,653**	1	,259**
	Sig.	,269	,000		,000
	N	385	385	385	385
Hiring labor in the harvest	Pearson Correlation	,181**	-,288**	,259**	1
	Sig.	,000	,000	,000	
	N	385	385	385	385

(Statistical significance level: * $p < 0,1$ ** $p < 0,05$ *** $p < 0,01$)

Source: Survey data of the study

As can be seen in Table 8, the results of the logistic regression model with the dependent variable was hiring labor in the harvest. The statistical significance of the model with $p < 0.01$, $R^2 = 23,1\%$ indicated that the independent variables in the model could explain 23.1% of the change of the dependent variables according to the variation of the independent variables in the model. The results implied that overseas destinations had a 3,108 times higher probability of hiring workers in the harvest than destinations in big domestic cities if the influence of other factors in the model is constant. The above difference is statistically significant $p < 0.01$ corresponding to 99% confidence interval (OR = 3,108, 99% CI = 6,35-78,8)¹. Thus, hiring labor in the harvest was influenced by the destination of the migrants, whereby the overseas destination of tended to hire workers higher than the destinations in big domestic cities.

The great number of migrants has a 2,756 times higher probability of hiring workers in the harvest than the low number of migrants if the effects of other factors in the model remain unchanged. The above difference is statistically significant $p < 0.01$ corresponding to 99% of confidence interval (OR = 2,756, 99%, CI = 5.39-45.9). Thus, hiring labor in the harvest is influenced by the number of migrants, whereby the great number of migrants has a higher probability of hiring workers in the harvest than the low number of migrants

Table 8

Estimated logistic model results of migration characteristics impact on hiring labor of households

Independent variables		Odds	Significant level (p)
Destination of migrants	Overseas countries	3,108	0,000
	Big cities in the country (Control group)		
Number of migrants	Many	2,756	0,000
	Few (control group)		
	Under 2 years (control group)		
Time of migration	Over 2 years	0.038	0.000
Observation number N		385	
Prob> Chi2		0,000	
Pseudo R2		23,1%	
Loglikelihood		164,062	

(Statistical significance level: *p<0,1 **p<0,05 ***p<0,01)

Source: Survey data of the study

The migration time of more than 2 years has a probability of hiring workers in the harvest 0.038 times higher than the migration time of less than 2 years if the effects of other factors in the model remain constant. The above difference is statistically significant $p < 0.01$ corresponding to 99% confidence interval (OR = 0.038, 99% CI = 0.01-0.11). Thus, the employment in the harvest is affected by the time of migration, whereby the migration time over 2 years tends to hire workers higher than the time of migration less than 2 years.

Table 9

Forecasting logistic model results for migration characteristics impact on hiring workers in the harvest

Observation		Prediction		True prediction percentage
		Hiring workers in the harvest		
		1.00	0.00	
Hiring workers in the harvest	1.00	332	11	96,8
	0.00	15	27	64,3
True percentage of overall prediction				93,2

Source: Survey data of the study

The table above showed the analysis results of the dependent hiring variables in the harvest. The observed column reflected two values of these variables including 0 and 1. The predictive column gave the predictive values of the model-based hiring variables. This table provided the correct predictive values of the model compared to observed reality. In this case, the model correctly predicted 332 cases related to hire labor in the harvest by 1 and correctly predicted 11 cases. Therefore, the correct predictive result is $332/343 = 96.8\%$. Similarly, the model correctly predicted 27 cases of non-hiring of labor by zero and incorrectly predicted 15 cases. It could be said that the correct prediction was $27/42 = 64.3\%$. With the data obtained, it was concluded the correct prediction rate of the whole model was $(332 + 27) / (332 + 27 + 11 + 15) = 359/385 = 93.2\%$. The overall predicted percentage indicated the model's correct prediction rate with 93.2%. Compared with the results of Block 0, this prediction model is better (from 89.1% to 93.2%).

Table 10

Results of estimating logistic models of household characteristics affecting household hiring

Independent variables		Odds Ratio	Significant level (p)
Households	Agriculture	2,358	0,021
	Non-agriculture (Control group)		
	Poor (control group)		
	Average	1,370	0,524
	Well-off	6,608	
Households living standard			0,010
Number of dependents in the household	Over 2 people	3,699	0,027
	Under 2 people (control group)		
Observation Number N		385	
Prob> Chi2		0,004	
Pseudo R2		10,5%	
Loglikelihood		222,566	

(Statistical significance level: *p<0,1 **p<0,05 ***p<0,01)

Source: Survey data of the study

It can be drawn out from the Table 10 that the results of the logistic regression model with the dependent variables were hiring labor in the harvest. The statistical significant model with $p < 0.05$, $R^2 = 10.5\%$ said the independent variables in the model could explain 10.5% of the change of the dependent variables according to the variation of the independent variables in the model. As for the results, agricultural job has a 2.358 times higher probability of hiring workers than non-agricultural jobs if the effects of other factors in the model remain constantly. The above difference is statistically significant with $p < 0.05$ with 95% confidence interval (OR = 2,358, 95% CI = 1,14-4,89)².

Thus, hiring labor in the harvest is influenced by household occupation, whereby agricultural jobs tend to hire workers higher than non-farm jobs.

With respect to the estimating results of the logistic model, p of the household living standard is statistically significant with $p < 0.05$ corresponding to 95% of the confidence interval (OR = 6,608, 95% CI = 1.56-27,98). Thus, hiring of labor in the harvest is affected by household living standards, whereby well-off households tend to have higher probability in hiring labor in the harvest than average and poor households.

The number of dependents in a household affects the probability of hiring. Odd ratio is 3,699 times higher than that of households with fewer dependents if the effects of other factors in the model remain constantly. The above difference is statistically significant with $p < 0.05$ with 95% confidence interval (OR = 3,699, 95% CI = 1.37-9.95). It can be believable that the trend of hiring labor is influenced by the number of dependents in the household.

Table 11

Forecasting results of logistic models of household characteristics affecting household hiring in the harvest

	Observation	Prediction		True prediction percentage
		Hiring labor of household 1.00	0.00	
Hiring labor in the harvest	1.00	338	5	98,5
	0.00	36	6	14,3
True percentage of overall prediction				89,4

Source: Survey data of the study

The model correctly predicted 338 cases for hiring workers in the harvest (the dependent variable received a value of 1 and incorrectly predicted 5 cases. Therefore, the correct prediction results with high probability ($338/343 = 98.5\%$). Similarly, the model correctly predicted 6 cases without hiring workers in the harvest with 0 and incorrectly predicted 36 cases. That meant that the correct prediction was $6/42 = 14.3\%$. It can be inferred from the given data that the correct prediction percentage of the whole model is: $(338 + 6) / (338 + 6 + 36 + 5) = 344/385 = 89.4\%$. Compared with the results of Block 0, the results showed that the prediction model was better (from 89.1% to 89.4%).

5. Conclusion

Based on both the theoretical basis of structural change of rural labor under the impacts of labor migration and applying empirical research models, the analysis of data from the survey indicated that the transformation process of rural labor structure in Trieu Son Distret was influenced by the following factors: number of migrant workers, time of migration, destination of migrant workers, occupation of migrants, migrants' living standard, number of dependents in the household. The results of the study were not only consistent with the theory but also consistent with the experimental results in some localities in the country, which proves that under the impacts of labor migration process, occupational transition process of employees has been gradually shifting towards industrialization and modernization in line with the market economy and the current trend of globalization. The process of labor migration helped migrants accumulate knowledge from the reality of the labor market and gain some capital that gave them more conditions to shift jobs from agriculture to non-agriculture. That made the movement of rural labor composition in the studied area. In order to develop a sustainable rural labor structure, it is necessary to be aware and properly assess the situation of labor migration and pay attention to the impact factors to have suitable solutions in managing and developing sustainable human resources in rural areas.

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¹The value of p-value (sig.) = 0.01 means that the probability of false conclusion is 1%, or the probability of true conclusion is 99% (subtract 1 from 0.01). The smaller the p-value is, the more significant the influence level is and the higher the reliability of the conclusion is

² The value of p-value (sig.) = 0.05 means that the probability of false conclusion is 5%, or the probability of true conclusion is 95% (subtract 1 from 0.05). 95% confidence interval (probability $\alpha = 0.05$). The regression calculation of SPSS provides regression coefficients, estimation of regression coefficients and p value. P-value: p Lower 95% value: The lower critical value of the estimation with 95% confidence interval. Upper 95%: Upper critical value of the estimation with 95% confidence interval. Reject H0 when p-value < 0.05 or interval (Lower; Upper) does not contain 0. In this dissertation, p values are less than 0.05 and the interval (Lower; Upper) does not contain 0. Therefore, the handling data ensure statistical reliability.