

Full Length Research Paper

People's livelihood adaptation in rural resettlement projects in Laos

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This paper clarified the state of livelihood adaptation of resettlers affected by the hydroelectric power development project, from five aspects of rural livelihood: Social, economic, physical, natural, and human aspects, in the central province of Laos. Findings revealed that each ethnic group has significantly different adaptation levels under each aspect of livelihood. Phong ethnic group has the highest level of physical (93.00%) and natural adaptation (78.50%) but has the lowest one in human adaptation (68.75%); Pao ethnic group has the highest level of social (21.86%) and human adaptation (82.07%) but has the lowest rate of physical (84.28%) and natural adaptation (48.59%), and Hmong ethnic group has the lowest one of social adaptation (12.45%) while the physical (85.66%), natural (53.76%) and human adaptation (77.24%) levels are the second highest among the three ethnic groups. Furthermore, among five aspects of livelihood adaptations in each ethnic group; it indicated that social adaptation is the lowest level, but physical adaptation is the highest level. Therefore, it can be concluded that social aspect of livelihood adaptation is the most difficult one for project affected people to adjust themselves to the new livelihood environment at the resettlement sites.

Key words: Livelihood adaptation, project affected people, rural resettlement, Laos.

INTRODUCTION

Laos is a linguistically and ethnically the most diverse country in mainland Southeast Asia with 65.8% (2011) of the whole country's population residing in rural areas (Asian Development Bank, 2012). The latest official classification (2005) has categorized the Lao population, as being comprised of 49 ethnic groups, into four ethno linguistic families: Lao-Tai (eight ethnic groups (Laos, 2005). Mon-Khmer (32 ethnic groups), Sino-Tibetan (seven ethnic groups), and Hmong-Mien (two ethnic groups). In 2005, population of Lao-Tai who arrived before the 13th century covered 65% of the population; Mon-Khmer who arrived at around 15th century covered 23%; Sino-Tibetan who arrived in the late 18th century is 3%, and Hmong-Mien who arrived during the 19th and early 20th centuries covered 8% (Chazee, 1999; Laos, 2005), of the population.

In 1989, the 1st National Conference on Forestry of Laos adopted the government's plan to implement permanent resettlements of a quarter of the country's population by the year 2000 (Evrard and Goudineau, 2004). The initiative of resettlement policy was formed to achieve five objectives: (1) access and service delivery, (2) opium eradication, (3) reduction of security concerns, (4) eradication of swidden farming, (5) and cultural integration and national building, with three resettlement instruments: focal site, village consolidation, and land and forest allocation (Baird and Shoemaker, 2005). Evrard and Goudineau (2004) argued the resettlement is a double process: deterritorialization- leaving territory and changing whole traditional way of life; and reterritorialization- setting in a new environment and accepting and integrating into the cultural preferences.

However, this is difficult in practice due to the diversity of ethnicity with rich cultures and traditions.

Meanwhile, in the 1980s, hydroelectric power development in Laos started when the World Bank (WB), Asian Development Bank (ADB), United Nations Development Program (UNDP), and bilateral westerners advised Laos to develop its hydropower resources and sell the power to Thailand since it is the only option for Laos to fuel its economic development (International River, 1999, 2008). From the late 1980s to the early 1990s, the International Monetary Fund (IMF), WB, ADB, and dam construction consultants flocked to Laos after the Government of Laos (GoL) promulgated her foreign investment code in 1988. According to the Lao PDR Development Report 2010, there were 153 hydropower projects at four stages: operational stage (nine projects), under construction (nine projects), in planning (26 projects), feasibility study (46 projects), and status unclear, of which there is as yet, no Memorandum of Understanding (MoU), (63 projects). World Bank (2010) estimated that around 100,000 to 280,000 people in the country would be resettled as a direct result of hydropower in Laos (WB, 2010).

Scudder (2011, 2012) cited that the years immediately after physical relocation is the special attention required in resettlement areas. During those initial years, resettlers must prepare and plant new farms, find other occupations, adjust to new neighbours, and adjust to an increased presence of government administrators. Therefore, it is important to understand the resettlers' adaptation level in such initial years. This paper is trying to clarify the state of livelihood adaptation of resettles, from five aspects of rural livelihood.

MATERIALS AND METHODS

Livelihood adaptation measurement

Livelihood adaptation measurement is widely used in literatures on adapting to climate changes that focused on strategy of people to cope with flood, drought, and dramatic climate changes as well as to adapt/adopt new economic activities (Orinda et al., 2007). However, it is a particular characteristic in the context of rural resettlements that change the livelihood environment is entirely changed to rural people. As an approach to the objectives mentioned above, firstly, the author has based on five main livelihood assets developed by Department for International Development (DFID): social, economic, physical, natural, and human assets (Krantz, 2001); secondly, author reviewed relevant literatures, especially critical papers to find the problems of resettlers during the adaptation; and thirdly, based on the actual situations from direct observation, author developed 24 indicators to measure livelihood adaptation (Table 1). Livelihood adaptation in this study refers to adjustments of oneself to an entirely new livelihood environment.

In this study, social aspect of livelihood adaptation (SALA) refers to interacting with community members within and among ethnicities both host and resettled villagers. Number of new friends within and among ethnic groups (indicator 1 and 4). With collected data, the number of new friends of the respondent is scored based on the interval scale: 0= 0 score; 1-5= 1 Score; 6-10= 2 score, etc.

This implies that respondent who reported she/he has no friend will be given 0; Respondents reported they have 1-5 new friends will be given 1 score, and so on. Based on the data collected, the maximum possible score in this indicator is 18 score; Relationship/communication with new friends within and among ethnic groups (indicator 2 and 5) is measuring the frequency of communicating with others on average in a month through social, cultural, and economic activities including going to friends' house; receiving food from friend; having drinking party together; giving friends some food; going to collect NTFPs together; have dinner together; friends come to one's house; and going to market together. The score is coded as the same as previous indicator (number of new friends); The maximum possible score in this indicator is also 18 score; Feeling of trust in new friends (indicator 3 and 6) is Yes/No question and it is used for asking people whether they trust their new friends in indirect question. (If you want some money, do you think your friends will lend you?). People responded in "Yes", they were given 1 score; and if "No", they will be given no score; Experiences in conflicts with host villagers and with resettled villagers (indicator 7 and 8) is Yes/No question and it is used for asking people whether they have experienced conflicts in direct question. (Since you move here, have you ever had any conflicts with other resettlers?). People responded in "Yes", they were given 0 score; and if "Yes", they will be given no score.

Economic aspect refers the current financial status measuring with three indicators: status of being in debt, having saving, and perception on financial change after relocation; Physical aspect (indicators 12 to 16) refers to feeling of comfortable and familiar living with basic infrastructure environment; and Human aspect (indicators 20 to 24) refers to health; perception in gaining new skills, and knowledge from the livelihood restoration activities.

Natural aspect refers to knowledge about the new forest surrounding (indicator 17); frequency of collecting NTFPs at the new forest (indicator 18); and frequency of going back to the original village for collecting food (indicator 19). For indicator 17, people were tested their general knowledge on the type of available NTFPs and its variability; For indicator 18 and 19, the range of frequency of collecting NTFPs at the new forest and frequency of going back to the original village for collecting food are assigned and given scores oppositely: "Never"; "Few times until now"; "Less than 10 times until now"; "1-2 times/week"; "3-4 times/week"; "5-6 times/week"; and "and every day". For instance, if people reported they never collect NTFPs at new forest (indicator 18), they will be given 1 score because it implies that they are not yet familiar with the new forest; In addition, if they reported they never go back to the original village for collecting food, they will be given 7 score because it implies that they are familiar and adjusted themselves with the new forest where they can find their food. Therefore, it is not necessary for them to go back to their original village for food (Table 1).

Site selections

The case study resettlement

Resettlement under Theun Hinboun expansion project (THXP) was selected as a case study Theun Hinboun Power Company started to improve the seasonal distribution of energy and increase generating capacity in March, 2007 and completed it in 2012. As a result, more than 4,000 people from 12 villages where ethnic groups were mixed. Regarding to relocation from the project areas, Project affected People (PAP) have the two options to decide either to (1) have self-relocation or (2) come with resettlement projects. According to resettlement policy, for households (HHs) preferring a self-relocation, the THXP offered one-time final cash compensation. Self-resettlement proposals and plans by individual HHs were reviewed and approved by the THXP and the district authority. For

Table 1. List of 24 livelihood adaptation indicators.

Social aspect	
1	Number of new friends within the same ethnic
2	Relationship/communication within the same ethnic
3	Feeling of trust in new friends within the same ethnic
4	Number of new friends among different ethnics
5	Relationship/communication among different ethnics
6	Feeling of trust in new friends among different ethnics
7	Experiences in having conflicts with host villagers
8	Experiences in having conflicts with other resettled villagers
Economic aspect	
9	Status of credit/debt
10	Saving
11	Perception on financial changes
Physical aspect	
12	Feeling comfortable in living with a new house
13	Feeling comfortable in living with a new tap water and underground water
14	Feeling comfortable in living with a new lighting system (electricity)
15	Feeling comfortable in living with a new roads
16	Feeling comfortable in living with toilet
Natural aspect	
17	Knowledge in NTFPs in the new forest
18	Frequency in collecting NTFPs in the forest
19	Frequency of going back to mother village to find food
Human aspect	
20	Experiencing in becoming sick with new disease
21	Knowledge gained from vegetable gardening activities
22	Knowledge gained from catfish-raising activities
23	Knowledge gained from Yangbong planting activities
24	Knowledge gained from other activities

HHs that agreed to come into the resettlement project, they were relocated to four host villages where the basic infrastructure such as health centers, roads, clean water, and electricity were prepared for their living as well as their livelihood restoration service including in the compensation package. Every resettled household is compensated with a new house built on a piece of land 1,000 m², 0.5 hectare of farmland for cropping and 1 hectare of farmland for rice cultivation.

Nongxong village (Figure 1) is one of the four resettlement sites and first completed in physical relocation of Somboun and Phabang villages with 109 HHs to resettlement site in 2009. At the Nongxong resettlement site, the population of the host community (60%) and the resettlement community from Somboun (11%) and Phabang (29%) village is now 1,570 people with 246 households. The ethnicity has diversified from 11 ethnics to 18 ethnicities through the

resettlement. Particularly, Pao and Phong were resettled as the new major ethnic group into the existent three ethnic groups while Hmong itself increased in population through the resettlement (Table 2). In this study, Hmong, Pao and Phong ethnic groups were focused as a case study.

Collection and analysis of data

After selecting a case study resettlement village, from 5th to 21st, November, 2011 is the interviewing with eight key persons including village chief and livelihood development extension workers were conducted to catch information of livelihood development extension activities, and the questionnaire survey on socioeconomic information of the resettlers was conducted. Furthermore, from

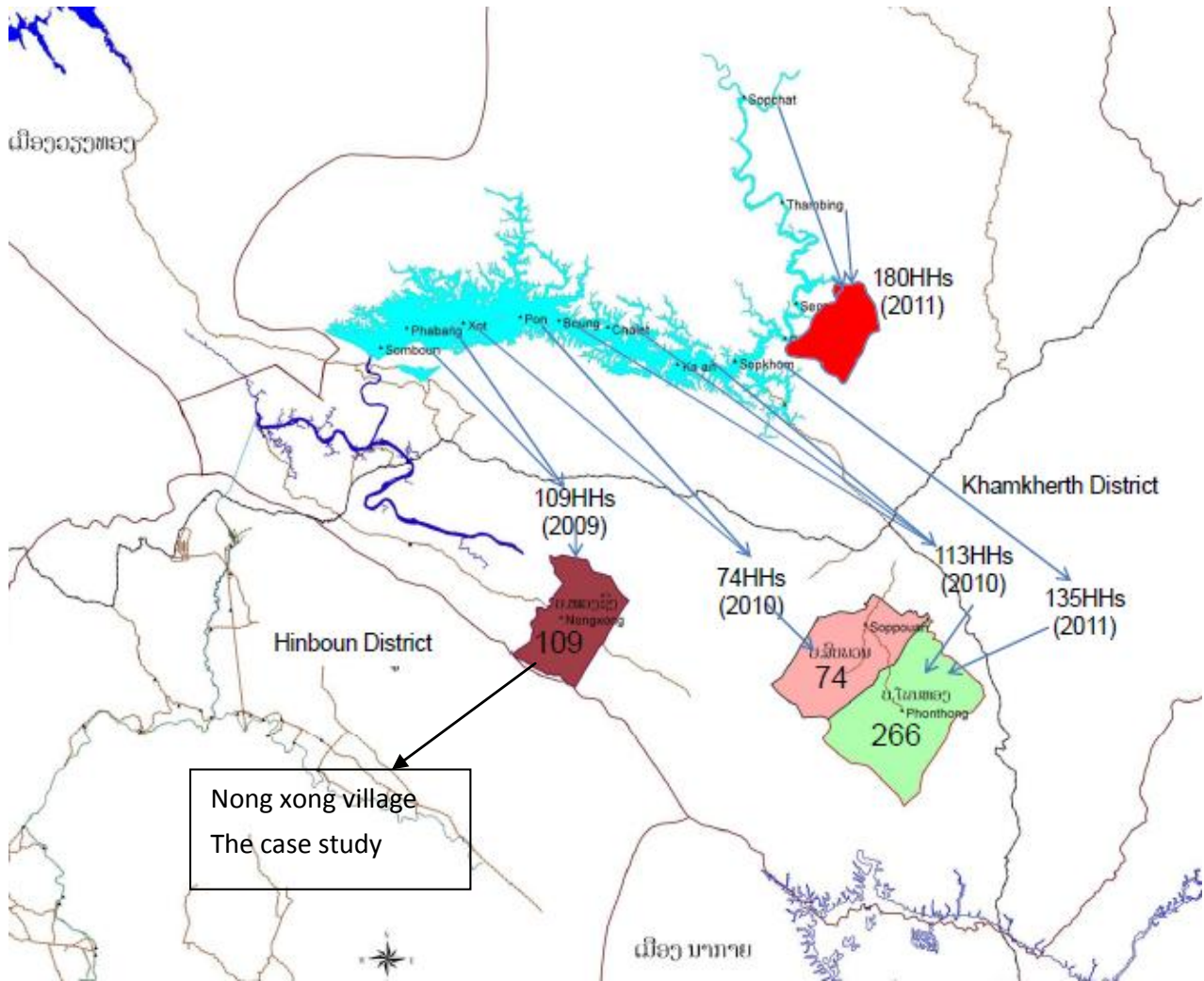


Figure 1. Location of resettlement sites due to THXP. Source: Field survey, March, 2011; Integrated Extension Program, THXP.

13th, March to 6th, April, 2012 data on livelihood adaptation were collected through direct observation and structured interview with 74 households sampled at random (Phong ethnic: 16 HHs; Hmong ethnic: 29 HHs; and Pao ethnic: 29 HHs).

The livelihood adaptation consists of five aspects discussed above: social, economic, physical, natural, and human aspects. The responses of the questionnaires (except the economic aspect) are converted into score and calculated in average with the formula: (for example) social aspect of livelihood adaptation (SALA). The level of SALA is:

$$SALA = \frac{AS}{TMS} \times 100$$

Where: SALA= Social aspect of livelihood adaptation, AS= Actual score; TMS= Maximum score (TMS= 76).

The result is interpreted as the higher the ratio the better the adaptation for people. Then analysis of variance (ANOVA) is applied to examine the statistically significant differences among the three ethnic groups.

RESULTS AND DISCUSSION

Table 3 shows the characteristics of sample HHs by ethnicity. The average age of respondents from Phong ethnic group is 46 years old while from Hmong and Pao ethnic groups are 38 years old. However, average of the number of schooling year, Pao ethnic group has the number of 2.92 years, followed by Phong ethnic group of 1.67 years, and among ethnic group of 1.1 years. The average of HH members of Hmong ethnic group is 7.62 persons, of Pao ethnic group is 5 persons, and of Phong ethnic group is 4.67 persons. The three ethnic groups have different beliefs respectively. All Phong HHs believe in animism while Pao ethnic HHs believe in both animism and Buddhism; and Hmong HHs believe in Animism, Animism and Buddhism, and Christianity. According to the main income source before resettlement, Phong ethnic group's income in 2008 is from labouring related

Table 2. Population and households by ethnicity in Nongxong Village (as of March, 2011).

Ethnicity	Households (246)			Population (1,570)		
	Host village	Resettlers		Host village	Resettlers	
		Somboun	Phabang		Somboun	Phabang
Air	-	1	-	-	3	-
Bo	-	1	-	-	7	-
Hmong	79	1	30	580	12	239
Kaleng	4	-	-	17	-	-
Khah	4	-	-	20	-	-
Khmu	13	-	-	82	-	-
Khouan	-	-	1	-	-	7
Lao Loum	1	-	-	8	-	-
Man	-	1	7	-	5	39
Mearn	2	3	-	14	15	-
Mon	-	-	1	-	-	2
Pao	-	16	26	-	81	128
Phong	-	12	6	-	53	34
Phou Thay	2	-	-	17	-	-
Phouan	2	-	-	10	-	-
Tai Toum	1	-	-	5	-	-
Yeng	7	-	-	46	-	-
Yor	22	-	-	135	-	-
Others	-	1	2	-	-	11
Total (%)	137	36	73	934 (60)	176 (11)	460 (29)

Table 3. Characteristics of sample households by ethnicity.

Households characteristics		Ethnicity		
		Phong	Hmong	Pao
Gender (household)	Male	9	14	16
	Female	7	15	13
Age (years old)	Average	46	38	38
	Standard deviation	16.85	14.88	12.54
Schooling (years)	Average	1.6	1.1	2.9
	Standard deviation	1.83	2.82	3.17
Household size (person)	Average	4.6	7.6	5
	Standard deviation	1.633	2.718	1.439
Beliefs (household)	Animism	16	16	13
	Animism and Buddhism	0	3	16
	Christianity	0	10	0
Main spoken language		Phong	Hmong	Lao
Main sources of income before resettlement		Laboring and NTFPs collecting	Animal raising and cropping	Animal raising and cropping

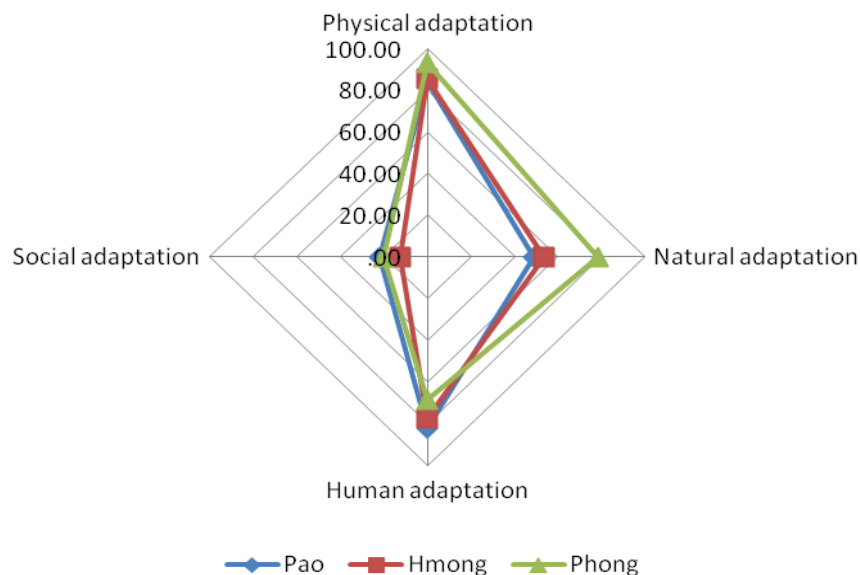


Figure 2. Four aspects of livelihood adaptation level by ethnicity.

Table 4. Result of state of livelihood adaptation of three ethnicities.

Comparison of livelihood adaptation score (%) by ethnicity							
Aspects	Phong (n=16)		Hmong(n=29)		Pao(n=29)		P-Value
	Mean	SD	Mean	SD	Mean	SD	
Social	20.25 ^a	10.542	12.45 ^b	4.725	21.86 ^a	9.859	0.000***
Physical	93.00 ^a	5.562	85.66 ^b	8.037	84.28 ^b	9.558	0.003***
Natural	78.50 ^a	12.997	53.76 ^b	12.365	48.59 ^b	16.293	0.000***
Human	68.75	31.807	77.24	11.618	82.07	23.51	0.159

Means indicate average of one adaptation, *** Mean differences are statistically significant different at $\alpha=0.01$, ^a and ^b: the different letters in the same row are statistically different at $\alpha=0.05$.

activities covering 58% and collecting non-timber forest products (NTFPs) 36%; Hmong ethnic group's income is from animal raising 39% and cropping 25%, and the Pao ethnic group is mainly from animal raising 62% and cropping 17% (Field survey, 2011).

In socioeconomic point of views, these three ethnic groups are definitely different because they engage in different livelihood practices for earning a living, especially Phong ethnic. Their livelihood experiences at the original village would influence their strategy to restore/establish livelihood at the resettlement site. Data in Table 3 shows that three ethnic groups have different ways in earning the livings, belief system that would guide them to have different ways in responding to the new livelihood environment.

State of livelihood adaptation (social, physical, natural, and human aspects)

Figure 2 shows the level result of livelihood adaptation by

ethnicity. From the viewpoints of level and differences among ethnicities, at a glance it is seen that the features are (1) comparatively high adaptation with less difference among ethnic groups in physical and human aspects; (2) not low adaptation but remarkable differences among ethnic groups in natural aspect; and (3) absolutely low adaptation with fewer differences among ethnic groups in the social aspect. As a result (Table 4), the Phong ethnic group is likely to be different from the Pao ethnic and the Hmong ethnic, being contributed to the natural aspect of adaptation. However, based on the result of ANOVA-F Test, means of social adaptation ($F(2,71) = 9.949$, $p=0.000$) and natural adaptation ($F(2,71) = 24.300$, $p=0.000$) among three ethnic groups have a very strong statistically significant difference at 0.1% level. In addition, means of physical adaptation ($F(2,71) = 6.152$, $p=0.003$) among three ethnicities have strong statistically significant difference at 1%.

The statistical analysis named post hoc comparison test indicated that there are six pair wise significant mean

Table 5. State of economic adaptation by ethnicity in percentage (%).

Details	Do saving		Being in debt		Perception on financial changes		
	Yes	No	Yes	No	Worse	Same	Better
Phong ethnic	25	75	0	100	6.25	93.5	0
Hmong ethnic	100	0	0	100	0	100	0
Pao ethnic	100	0	0	100	8	92	0

differences at 5% level among ethnic groups in Table 4. In the physical aspect, the Phong and the Hmong ethnic groups and Phong and the Pao ethnic groups pairs have statistically significant mean differences. In natural aspect, the Phong and the Hmong ethnic group and the Phong ethnic and the Pao ethnic groups pairs have statistically significant mean differences. In the social aspect, the Hmong ethnic and the Phong ethnic; and the Hmong ethnic and the Pao ethnic pairs have statistically significant means differences. In the human aspect, there is no pair wise statistically significant difference among the three ethnic groups.

State of livelihood adaptation (economic aspect)

Table 5 shows the current economic status of three ethnic groups. Saving status rate between Phong and Hmong ethnic in Table 5 is remarkably different with 100% of Hmong and Pao ethnic groups engaging in saving while only 25% of Phong reported doing so. From the direct observation and interviews with Phong ethnic group, the majority of them (12 out of 16 HHs) reported that they usually spend all the money they have earned in a day. They reported that whenever they need food or money, they will leave the house to collect NTFPs and work as labourers for other in the early morning and return home when they get some for that day. According to the data on the average household expenditure in 2011 indicates the Phong ethnic spent 56% for food and beverage. They reported, in case of being sick, money is also not necessary to buy modern medicines because they usually use traditional medicines. In addition, they believe that their clan-leader or elders in the village can help in healing. From information mentioned above, it can be concluded that, for Phong ethnic group, saving money is not their custom. From the data in Table 5, there is a remarkable difference in terms of saving of the three ethnicities. This difference is not a different level of economic adaptation; however, rather it is a difference in terms of saving behaviour especially Phong ethnic group compared to other ethnic groups. In contrast, all of them are now having almost alike financial status-no debt. Therefore, it implies that all the three ethnics are able to adjust themselves after moving to the resettlement site.

Conclusion

Results from descriptive statistic (Table 5) enclosed that

the three ethnicities Phong, Hmong, and Pao have similar economic status. It implies that they have similar economic adaptation status. However, they do have statistical significant different adaptation status under three aspects: social, physical, and natural. In addition, among five aspects of livelihood adaptation in each ethnicity's adaptation, physical and human adaptations are not difficult for them to achieve because they have comparative high adaptation with fewer differences among ethnicities. However, for all PAPs, social adaptation aspect is the most difficult one to adjust themselves to the new livelihood environment with the fact that they have absolutely low adaptation with less difference among ethnicities.

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