Study on the Changes of Livelihood Capital of Migrant Farmer's Household before and after the Development of Rural Tourism

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ABSTRACT: The research the changes to livelihood capital of migrant farmer's household before and after the development of rural tourism, The results show: (1) According to the ecological environment, natural resources, cultural practices and customs, it is more suitable to measure the livelihood capital index system of the migrant farmers in the Three Gorges Reservoir area. (2) Integrated point of view, through the rural tourism development, the natural capital has declined; the other four major livelihood capitals have varying degrees of improvement. (3) Specific point of view, the largest increases in social capital, followed by financial capital, the third is the material capital, and human capital is the last. But the overall score is low, Presents migrant farmers living capital of limited in sample area, the overall weak features, the majority of farmers to exploit all kinds of livelihood capital is at a low level.

KEYWORDS: Migrant farmer's household; Livelihood capital; Rural tourism; Three Gorges Reservoir Area.

INTRODUCTION

Livelihood is the way to make a living; it is built on the basis of ability, capital and activity [1]. With in-depth study the livelihood of farmers, as an integrated analytical framework and a constructive tool for sustainable livelihoods, gradually applied in theory and practice [2-3], among them, the most widely used is the UK'S Department for International Development. The framework focuses on five types of capital (human capital, natural capital, physical capital, financial capital and social capital) [4-6].

In our country, based on the framework of sustainable livelihoods, the research on the characteristics of farmers' livelihood and the ways to realize sustainable livelihoods has just started. Mainly focused on the participation power, achieve the background and reconstruction of livelihood capital, etc. [7-11]. These analyses further enrich and develop the domestic research on the sustainable livelihoods of farmers. This study under the background of the development of rural tourism in the Three Gorges Reservoir area, Using the framework of sustainable livelihoods analysis to analyze and quantify the livelihood capital of migrant farmers, in order to better make adjustments to the livelihood capital, realized close combination of livelihood and sustainable development strategy.

MATERIALS AND METHODS

Data Sources

The original data mainly comes from empirical investigation in sample area, respectively select Fuling District, Fengdu District, Yunyang County, Wushan county and Wuxi County as a sample area in the Three Gorges Reservoir area; Then, by random sampling and conditional filter selected 10 administrative villages; Finally, the household survey of 10 administrative villages all migrant farmers. A total of 750 questionnaires were issued, 735 were recovered, 720 valid questionnaires, and the effective questionnaires were 96% (Table 1).

Table 1. The distribution of migrant farmer's household.

District/ County	Village	Immigrant households
Fuling District	Muhe village	81

	Lianfeng village	59
Fengdu District	Fangdoushan village	69
	Wenxi village	99
Yunyang County	Huomai village	56
	Yuantong village	72
Wuxi county	Changsha village	88
	Sanbao village	52
Wushan County	Ninghe village	81
	Yingpan village	63
Total		720

Research Methods

(1) Index and quantification of the livelihood capital of farmers

According to the ecological environment, natural resources, cultural practices and customs, it is more suitable to measure the livelihood capital index system of the migrant farmers in the Three Gorges Reservoir area. In the five livelihood capital, choose several representative indexes respectively assignment, standardization and weight distribution, Build quantitative index system of farmers' livelihood capital, Measure immigrant farmers livelihood capital value can in the Three Gorges Reservoir area, specific as follows (table 2).

Table 2. Index system of immigrant farmer's livelihood capital.

Type	The specific measures	Definitions
human capital	Family labor ability	Sum all family members of the labor ability value. 0 to 6 years old children and lose labor ability members is 0; 7 to 15 years old by children and adolescents is 1; Part of the members of the labor ability is 2; 55 (female) or more than 60 years old (male) members of the health is 3; 16-54 (female) or 16 to 59 years old (male) health member is 5.
	The degree of education	Sum all family members of degree education value. Illiteracy is 0; Primary school is 1; Junior high school for 2; High school or technical secondary school is 3; College for 4. Bachelor degree and above is 5.
	The number of professional skills training	Sum all family members of professional skills training value. Zero time is 0; One time is 1; 2 times is 2; 3 times is 3; 4 times is 4; Five or more times is 5.
natural capital	Per capita arable land area and quality	Areas use the specific value of per capita arable land, Level of quality in accordance with the assignment. Poor is 1; more Poor is 2; General is 3; better is 4; Good is 5.
	Per capita garden land area and quality	Areas use the specific value of per capita garden land, Level of quality in accordance with the assignment. Poor is 1; more Poor is 2; General is 3; better is 4; Good is 5.
	Per capita woodland area and quality	Areas use the specific value of per capita woodland, Level of quality in accordance with the assignment. Poor is 1; more Poor is 2; General is 3; better is 4; Good is 5.
financial	Their cash income	Family annual income

capital		
	Whether can borrowing	If can be through a credit union or bank funds raised, relatives and friends, neighbors, the assignment is 1, can't raise money through these channels, the assignment of 0.
social capital	Whether to participate in the commercial insurance	Yes is 1；no is 0
	Whether a public officer	Yes is 1；no is 0
	Whether to participate in the agricultural cooperatives	Yes is 1；no is 0
	Whether to get help	Yes is 1；no is 0
physical capital	own physical capital	In the questionnaire design of domestic fixed capital options for 14, Family owned property measurement on the number of options for farmers have accounted for the proportion of all the options.
	energy	Crop straw is 1, liquefied petroleum gas/gas is 2, power is 3, biogas is 4, solar is 5.
	Public infrastructure	Poor is 1; more Poor is 2; General is 3; better is 4; Good is 5.

(2) Indicators standardization and weights determined

This research selected indicators are positive indicators, namely the raw data value is higher, the higher the index score, such as (Formula 1).

$$Y_{ij} = \frac{X_{ij} - X_{i,\min}}{X_{i,\max} - X_{i,\min}} \qquad (1)$$

In the formula: Y_{ij} is a standardized index value; X_{ij} is index value before processing; $X_{i,\max}$ is the maximum series of indicators before processing; $X_{i.\min}$ is the minimum series of indicators before processing.

Study used the method of maximizing deviations (Formula 2), the specific assignment of weight of the results are shown in（table 3）. Finally, combined with the standardization of index value and the corresponding weights, measure immigrant farmer collective livelihood capital value, such as (Formula 3).

$$Z_j = \frac{\sum_{i=1}^{n} \sum_{k=1}^{n} |Y_{ij} - Y_{kj}|}{\sum_{j=1}^{m} \sum_{i=1}^{n} \sum_{k=1}^{n} |Y_{ij} - Y_{kj}|} \qquad (2)$$

Among them, Z_j is the weight of each specific indicators, i is farmers for an investigation, n is total number of investigate farmers, j is some specific indicators of the sectional capital items, m is a component specific indicators of the total number of capital, k is one partial of capital value in i.

$$H_i = \sum_{j=1}^{m} Y_{ij} Z_j \qquad (3)$$

Among them, H_i is one partial of capital value.

Table 3. Indicators weights of immigrant farmer's livelihood capital.

Type	The specific measures	weights
human capital H	Family labor ability H_1	0.472
	The degree of education H_2	0.256
	The number of professional skills training H_3	0.272
natural capital N	Per capita arable land area and quality N_1	0.564
	Per capita garden land area and quality N_2	0.221
	Per capita woodland area and quality N_3	0.215
financial capital F	Their cash income F_1	0.733
	Whether can borrowing F_2	0.267
social capital S	Whether to participate in the commercial insurance S_1	0.198
	Whether a public officer S_2	0.375
	Whether to participate in the agricultural cooperatives S_3	0.233
	Whether to get help S_4	0.194
physical capital P	own physical capital P_1	0.466
	Energy P_2	0.205
	Public infrastructure P_3	0.329

STUDY RESULTS

By measuring, the large changes to livelihood capital of migrant farmer's household before and after the development of rural tourism in sample area. Integrated point of view, through the rural tourism development, five livelihood capitals of migrant farmers in Three Gorges Reservoir area, in addition, the natural capital has declined, the other four major livelihood capitals have varying degrees of improvement. Among them, the largest increases in social capital, followed by financial capital, the third is the material capital, human capital is the last. Therefore, the development of rural tourism has changed the living environment of farmers' resettlement and the original conditions of their own capital in Three Gorges Reservoir area make the livelihood capital that it can use to accumulate and increase. And the combinations of capital, mobility, exchange, transformation has become more flexible, to some extent, increase farmers' risk elasticity and resist risks ability, reduce the vulnerability of farmers' livelihood. But the overall score is low, Presents migrant farmers living capital of limited in sample area, the overall weak features, the majority of farmers to exploit all kinds of livelihood capital is at a low level (table 4).

Table 4. Livelihood capital value of migrant farmer's household.

Sample area	number	human capital		Physical capital		human capital		financial capital		social capital	
		before	after	before	after	before	after	before	after	before	after

Fuling District	140	0.59	0.39	0.35	0.62	0.23	0.37	0.36	0.55	0.22	0.55
Fengdou District	168	0.41	0.19	0.21	0.55	0.27	0.45	0.47	0.78	0.38	0.61
Yunyang County	128	0.45	0.31	0.29	0.41	0.31	0.48	0.35	0.64	0.21	0.66
Wuxi County	140	0.53	0.22	0.23	0.68	0.28	0.39	0.39	0.76	0.19	0.59
Wushan County	144	0.57	0.27	0.38	0.78	0.19	0.35	0.34	0.81	0.15	0.68
average value	720	0.51	0.28	0.29	0.61	0.26	0.41	0.38	0.71	0.23	0.62

CONCLUSIONS

By measuring, the large changes to livelihood capital of migrant farmer's household before and after the development of rural tourism, conclusions are as follows:

(1) According to the ecological environment, natural resources, cultural practices and customs, it is more suitable to measure the livelihood capital index system of the migrant farmers in the Three Gorges Reservoir area.

(2) Integrated point of view, through the rural tourism development, the natural capital has declined; the other four major livelihood capitals have varying degrees of improvement.

(3) Specific point of view, the largest increases in social capital, followed by financial capital, the third is the material capital, and human capital is the last. But the overall score is low, Presents migrant farmers living capital of limited in sample area, the overall weak features, the majority of farmers to exploit all kinds of livelihood capital is at a low level.

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