Current Situation of Information Demand of Farmers in Taihang Mountain Area: A Case Study of Pingshan County in Hebei Province

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Abstract Since the reform and opening-up, economy of mountain areas in China has realized considerable development. However, due to such factors as terrain, traffic, and individual differences, compared with plain and coastal areas, mountain areas still lag far behind. In recent years, informationization construction of China develops rapidly, but it nearly stagnates in mountain rural areas. Information has become an essential factor restricting economic development of rural areas. Based on the survey of current information demand of farmers carried out in Pingshan County in Hebei Province in 2010, this study came up with relevant recommendations, in order to speed up development of rural economic in mountain areas, narrow the regional gap, improve living condition of farmers in mountain areas, and increase income level of farmers in mountain areas.

Key words Pingshan County, Taihang Mountain area, Farmers, Information demand, Current situation

1 Introduction

In 2005, No. 1 document of central government firstly mentioned agricultural informationization. In 2010, No. 1 document of central government further proposed "pushing forward rural informationization and actively supporting rural telecommunication and Internet infrastructure construction", which is the most definite statement of rural informationization[1]. With high attention of government, China's rural informationization construction realized rapid development and the "Coverage to Every Village Project" has effectively improved rural informationization. Data indicate that among 43 000 towns and townships, more than 7 000 have established information service organizations, and some towns and townships developed and strengthened information assistant team with resources like broker[2-3].

Mountain area takes up 69% of total national land area, and population of mountain areas accounts for 45% of total population of China, and more than 85% minority people live in mountain areas. Since the reform and opening up, under great support of state policies, economy of mountain areas has realized considerable development. Nevertheless, varied terrain, regional difference, obstacles to development, and slow economic development caused slow construction and development of rural informationization in mountain areas. Most scholars study rural informationization based on plain areas, while few scholars study rural informationization in mountain areas. Long Congxia[4] elaborated rural informationization construction strategy in mountain areas; Li Jianhui[5] stated that application of information technology is great support for mountain areas; Niu Luyan *et al.*[6] came up with ideas and recommendations for rural informationization construction in middle mountain areas. For rural informationization construction in mountain areas, most scholars put forward constructive recommendations from the macroscopic perspective, while there are few studies about current information demand of farmers in mountain areas[7,8]. Based on this, taking Pingshan County in Hebei Province as survey object, through preliminary understanding of economic development and rural informationization level of this area, we analyzed demand and current utilization situation of information of local farmers, and came up with recommendations for development of rural informationization in this area.

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2 Materials and methods

2.1 Materials In 2010, we selected 6 towns, 20 administrative villages, and 320 farmer households in Pingshan County of Hebei Province, distributed 320 copies of questionnaire, and finally received 312 copies (the response rate up to 97.50%). The questionnaire mainly involves basic information of respondents, sales channel of agricultural products, information demand and current utilization situation (information equipment, economic benefits brought by information, purchase information and cost, etc).

2.2 Methods Major methods include documentation integrated method, comparative analysis approach, and graph modeling method.

3 Results and analyses

3.1 Basic information of samples

3.1.1 Gender. Among all samples, 159 are male and 153 are female, accounting for 50.96% and 49.04% respectively.

3.1.2 Age. In the respondents, 93 people are 21 - 40 years

old; 75 are 21 – 30 years old, and 75 are 41 – 50 years old, 45 are 51 – 60 years old, and 24 are elder than 60 years old.

3.1.3 Educational level. 44.23% respondents have junior middle school level, 3.85% have university or above level (their age is mainly 21 – 30 years old and the discipline is mainly agriculture). This indicates that farmers in Pingshan County have realized the importance of knowledge and hope that their children can improve their living conditions through learning knowledge and receiving higher education.

3.1.4 Income level. Our survey indicates that more than 65% of respondents stay at low income level, and only few farmers have reached the relative richness level.

3.1.5 Income structure. Most respondents take planting and breeding as major income source, respectively 102 and 87 farmers (a total of 312 farmers).

The above data indicated that the gender structure of respondents is 1:1; the age scope is mainly 21 – 50 years old; educational level is relatively low; income level is also very low; labor force in this area takes agricultural production as major income source.

3.2 Analysis on information demand of farmers in mountain area

3.2.1 Current situation of sales channel of agricultural products. Statistical results indicate that in all 312 respondents, 102 respondents take planting as major income source of family income, and 87 respondents take breeding as major income source of family income.

(i) Planting farmers. 44.12% planting farmers sell their agricultural products and their sales channel is mainly peddler; 50.00% planting farmers consume most part of their agricultural products and sell small part, and their sales channel is mainly retailing; 5.88% planting farmers sell all their agricultural products.

(ii) Breeding farmers. 75.86% breeding farmers sell their agricultural products and their sales channel is mainly self retailing, selling to processing enterprises, and peddlers; 6.90% breeding farmers sell all their agricultural products, as listed in Table 1.

About 65.08% respondents with planting and breeding as major income source sell larger part or whole of their agricultural products, and their sales channel is mainly peddler and partially self-retailing, accounting for 66.67% and 17.07% respectively; 20.63% respondents sell small portion of their agricultural products and their sales channel is mainly self-retailer and partially peddler, accounting for 71.79% and 23.08% respectively, so the economic benefit is relatively low. This indicates that planting and breeding in this area are mainly separate operation and fail to form large industrial scale. Also, the sales channel is traditional and single, mainly self-retailing or peddler purchase.

3.2.2 Information demand and current utilization situation.

(i) Current utilization situation of information equipment. In all respondents, 249 people and 228 people have mobile phone and television respectively, as shown in Fig. 1. Mobile phone and television have become necessities of local farmers. In this area, farmers get in touch with relatives and friends mainly through mobile phone. In farm slack season, they often watch entertainment program or television series. They are not aware the importance of obtaining information. Besides, potential function of information equipment is not explored yet.

Table 1 Direction and sales channel of agricultural products of respondents with planting and breeding as major income source

Direction of agricultural products	Sales channels	Number of respondents	
		Planting	Breeding
Self consuming	–	24	5
Selling in small part	Self-retailing	24	4
	Processing enterprises	0	1
	Peddler purchasing	2	7
	Selling as per contract	0	0
	Entrusted selling	0	0
	Wholesale market	1	0
	Others	0	0
	Subtotal of number of respondents	27	12
Selling in large part	Self-retailing	9	12
	Processing enterprises	0	10
	Peddler purchasing	30	40
	Selling as per contract	0	0
	Entrusted selling	0	0
	Wholesale market	6	4
	Others	0	0
	Subtotal of number of respondents	45	66
Wholly selling	Self-retailing	0	0
	Processing enterprises	0	0
	Peddler purchasing	5	5
	Selling as per contract	1	0
	Entrusted selling	0	0
	Wholesale market	0	1
	Others	0	0
	Subtotal of number of respondents	6	6

* The number of planting respondents is 102, and the number of breeding respondents is 87.

(ii) Types of information. Types of information demanded by farmers in this area are various, but mainly information related to agricultural production, including supply and demand of agricultural products, price of agricultural products, employment of labors, and agricultural means of production. Specifically, about 59.29% and 49.04% farmers have demand for information related to supply and demand of agricultural products and price of agricultural products; for information demand of agricultural science and technology, agricultural policies, laws and regulations, and market situation of agricultural products, there are less than 100 farmers; for information demand of education, health and agricultural product processing, there are less than 50 farmers, as shown in Fig. 2.

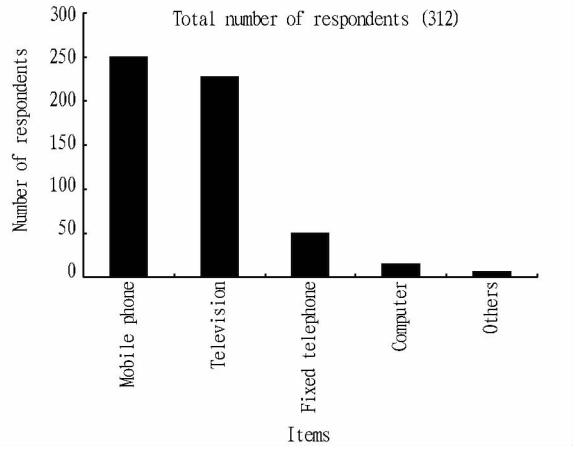

Fig. 1 Information equipment used by respondents

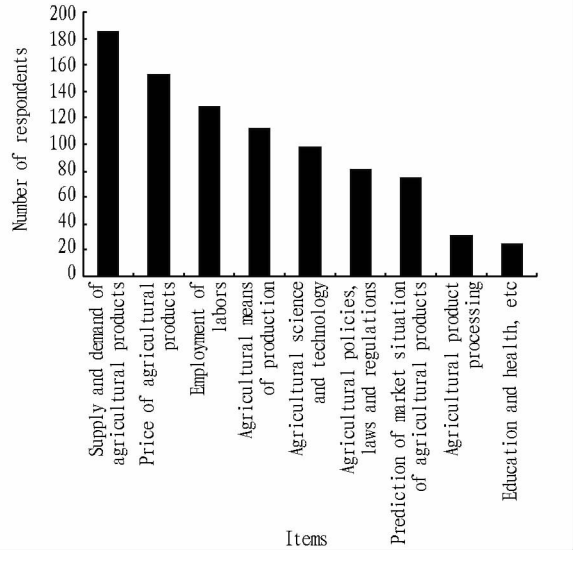

Fig. 2 Types of major market information obtained by respondents

(iii) Economic benefits brought by information. In all 312 respondents, 43.27% think the economic benefit of information is moderate and they do not think the information changes their current production and living situation, and 28.85% respondents even believe that information has not brought economic benefit or brought little economic benefit for them. Data indicate that local farmers have not obtained expected economic benefit through information.

(iv) Information demand and current utilization situation. From Fig. 3, we can know that more than 1/2 farmers believe that major factors influencing them in obtaining information include "not knowing where to obtain information", "limited educational level", "low information accuracy and practibility", "not knowing which information is useful", and "too much false information".

(v) Willingness to purchase information and range of cost. As for the question "whether you are willing to purchase information", 109 respondents said that it depends on function and economic benefit of information; 101 respondents were unwilling to buy information and they did not think information can change their current living situation; 51 respondents were willing to buy information; 46 respondents said that it depends on cost of information; 5 respondents took indifferent attitude, as shown in Fig. 4. As for acceptable cost of information, 162 respondents selected monthly cost less than 5 yuan (accounting for 51.92%); 82 respondents selected monthly cost of 6 – 10 yuan; 64 respondents selected monthly cost of 11 – 15 yuan; 4 respondents selected monthly cost 16 – 20 yuan, as shown in Fig. 5. This indicates that most respondents accept 0 – 15 yuan monthly cost. The lower the cost, the easier it is to be accepted by respondents.

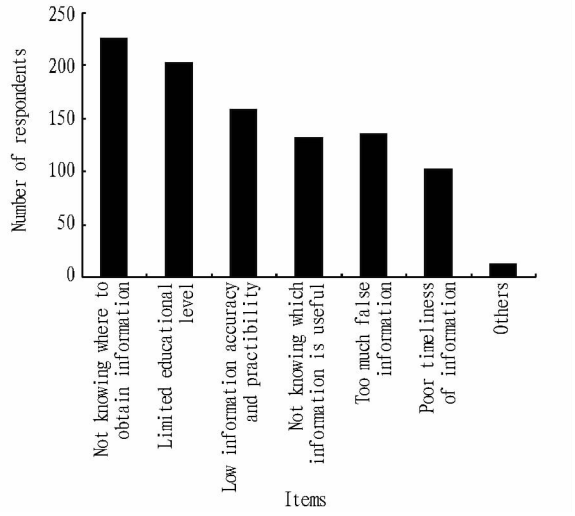

Fig. 3 Major factors influencing respondents obtaining effective and accurate information

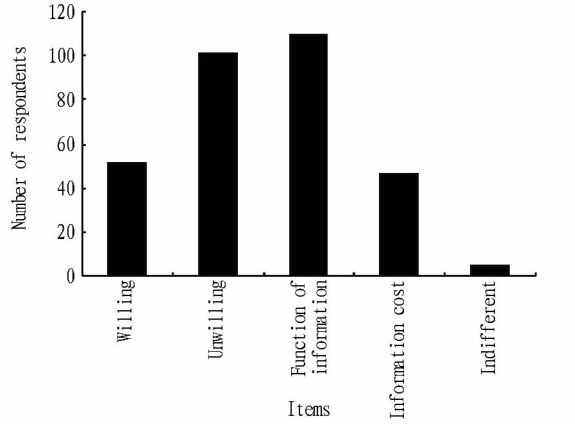

Fig. 4 Willingness of respondents to buy information

4 Conclusions

From the above analysis on current information demand of farmers in Pingshan County, we can arrive at following conclusions.

4.1 Residence of this area is relatively scattered and the economy is still mainly small peasant economy Due to such objective factor as geographic environment, residence of this area is relatively scattered and the economy is still mainly small peasant

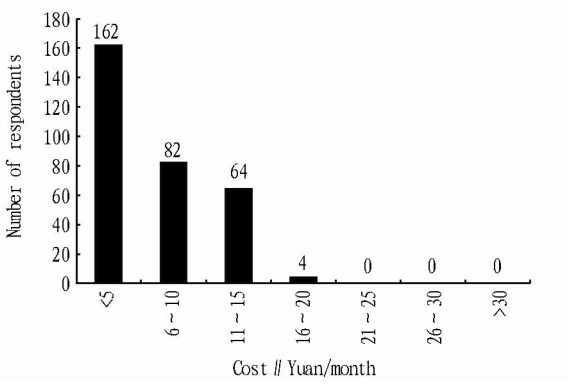

Fig. 5 Information cost acceptable to respondents

economy. Our survey indicates that main economic source of local farmers is agricultural production. In this situation, local government should take pertinent measures in accordance with local situation and seek competitive agricultural product. Besides, it should adjust agricultural industrial structure, increase fund input, develop characteristic planting and breeding, gradually establish and improve farmers' specialized cooperatives, form large-scale effect, and ultimately increase income of farmers.

4.2 Sales channel of agricultural products is single, and agricultural products are mainly purchased by peddlers Neither planting nor breeding industry in Pingshan County has formed industrial scale effect. In addition, they fail to participate in agricultural industrial chain and have little communication with agricultural enterprises. As a result, most agricultural products are still sold in the form of peddler purchasing. Sales channel of agricultural products is excessively traditional and single, not favorable for healthy development of agricultural production.

4.3 Information demand of farmers for information is relatively single, closed related to educational level of local farmers The information demand of local farmers for supply and demand and price of agricultural products is strong, while the information demand for agricultural science and technology and policies is not high. Furthermore, local farmers think that information they obtained does not bring expected economic benefits to them. As a result, farmers lose confidence in effectiveness and accuracy of information, and become unwilling to pay corresponding cost for obtaining information.

5 Policy recommendations

(i) Local government should make every effort to improve living condition of local farmers, further strengthen local agricultural development[9], and provide related policy support and create more commercial opportunities for local farmers in accordance with market demand and local actual situations[10-13].

(ii) It is recommended to attract more funds to capital construction of rural information[14]. Local government should promote, encourage and attract enterprises and various economic entities to participate in capital construction of rural information, explore and realize mutual construction, sharing and win-win system, encourage agricultural scientific research system and communication organizations to assist in construction of rural information service stations, and expand information acquisition channel of farmers in mountain areas[14-17].

(iii) It is recommended to improve farmers' sci-tech information awareness. Local government should focus on strengthening information awareness of farmers and regularly hold training class[18], to improve farmers' attention to information and make farmers actively accept information[19-20].

References

[1] YU J. The No. 1 document from the National Central Government in 2010 has set up the new target of rural informatization[EB/OL]. (2010-02-05)[2011-11-11]. http://www.itxinwen.com/View/new/html/2010-02/2010-02-05-1016061.html. (in Chinese).

[2] YU J. The No. 1 document from the National Central Government in 2010has set up the new target of rural informatization[EB/OL]. http://www.itxinwen.com/View/new/html/2010-02/2010-02-05-1016061.html. 2011-04-20. (in Chinese).

[3] KOU BQ. Analysis on the development status of rural informatization and the countermeasures in China[J]. Legal System and Society, 2010(21):217. (in Chinese).

[4] LONG CX. Information construction strategy in less-developed rural mountain areas[J]. Journal of Intelligence, 2009, 28(2):187-189. (in Chinese).

[5] LI JH. My opinions on how quickening information modernization in the countryside of mountain districts[J]. Value Engineering, 2005(12):74-76. (in Chinese).

[6] NIU LY, ZHANG BK, LI FA, *et al*. Significance and countermeasures of rural informationization construction in the central mountainous area under the new situation[J]. Journal of Anhui Agricultural Sciences, 2011, 39(32):20245-20246, 20269. (in Chinese).

[7] SHI YQ. Reflections and suggestions on rural informatization construction in the mountain areas of Beijing[J]. Agriculture Network Information, 2009(11):41-44. (in Chinese).

[8] LONG CX, ZHANG Y, LIU Y. Investigation and analysis on the current situations of rural informatization in Karst Mountainous Area[J]. Journal of Anhui Agricultural Sciences, 2008, 36(27): 12045-12047, 12068. (in Chinese).

[9] GU SG. Study on the capability of agricultural sustainable development and strategies in Taihang Mountain Areas of Hebei Province[D]. Beijing:China Agricultural University, 2005. (in Chinese).

[10] College of Humanities and Development Studies, China Agricultural University. Research report of rural poverty subject in China in 2002[R]. 2002. (in Chinese).

[11] WANG JP, YING WJ. Agricultural informatization construction status of Hebei Province[J]. Agriculture Network Information, 2006(5):52-54. (in Chinese).

[12] LEI N, ZHAO BH. Empirical study on peasant households' information requirements and agricultural information imbalance between supply and demand——Based on the investigation of Hebei peasant households' information requirements[J]. Agricultural Economy, 2007(3):37-39. (in Chinese).

[13] LI X. Study on the modes for informatization development in rural areas of Heilongjiang Province[D]. Beijing:The Chinese Academy of Agricultural Sciences(CAAS), 2008. (in Chinese).

[14] CAO Y, LU XC. The quickening of rural information construction pace of Huashan District, Maanshan[N]. Maanshan Daily, 2011-01-27. (in Chinese).

[15] YAN QL. The quickening of rural information construction pace of Guizhou mountainous areas[N]. West Times, 2011-08-09. (in Chinese).

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(3) The third stage (2004 – 2007): At the third stage, based on the above model (5), we made quantile regression analysis on convergence of China's economic growth. The results are listed in Table 3.

Table 3 Quantile regression results of conditional convergence for China's economic growth in 2004 – 2007

Variables	Quantile				
	0.1	0.25	0.5	0.75	
$\ln y_{t_0}$	−0.115 4(−7.66)***	−0.054 2(−0.79)	−0.057 1(−0.73)	−0.082 6(−0.65)	−0.137 7(−3.07)***
$\ln(i/GDP)$	0.219 3(4.8)***	0.283 5(1.45)	0.206 7(1.01)	0.395 2(1.3)	0.512 1(8.37)***
$\ln(h)$	0.005 6(0.6)	0.017 1(0.56)	0.033 3(0.78)	0.024 0(0.58)	0.059 9(4.07)***
$\ln(n+g+\partial)$	−0.155 1(−1.89)*	0.049 1(0.23)	−0.010 7(−0.03)	0.088 9(0.16)	0.512 7(2.33)**
Constant	1.177 628(6.27)***	1.238 6(1.48)	1.037 5(1.10)	1.774 6(1.56)	3.526 1(9.67)***

In models at the third stage, only the decile and ninth decile have higher significance level and have good fitting to models. Therefore, we carried out analysis mainly on high-income areas and low-income areas at this stage. From the coefficient value of per capita GDP, it is known that there is conditional β convergence in both low-income and high-income areas, and the convergence rate of high-income areas is slightly higher than that of low-income areas; the investment rate indicates that the effect of investment on economic growth is positive in areas with different income level, in other words, increasing investment in all areas has positive effect on economy. However, the coefficient value of investment rate in high-income areas is 0.512 1, much higher than that in low-income areas, showing that economic effect brought by investment in high-income areas is much higher than in low-income areas. From coefficient value of human capital, increasing human capital in high-income areas also can promote economy, and the effect is higher than that on low-income areas. From the perspective of technological progress, increasing technological investment in high-income areas can promote economic growth, but increasing technological investment in low-income areas exerts little effect on economic growth.

5 Conclusions and further discussions

This study made analysis on convergence of China's economic growth using quantile regression method. Through analysis on variation coefficient of provinces in China, we divided convergence of China's economic growth into 3 stages. Through study on the first stage (1978 – 1991), it has convergence, absolute β convergence and conditional β convergence, indicating that the gap between rich and poor is firstly narrowed, then widened and finally narrowed, which is basically consistent with conclusions of most domestic scholars. The difference is that we reached richer information and conclusion using quantile regression and comparison with OLS estimation: the control over the gap between rich and poor in low-income areas is excellent; the dispersion speed in middle income areas is gradually quickening, and the gap between rich and poor is gradually widening; in high-income areas, the convergence rate at the first stage is highest; at the second stage, the dispersion speed is the highest, and it exerts greatest influence on the overall gap between rich and poor; at the third stage, this situation is preliminarily controlled and there appears absolute β convergence of economic growth. From the perspective of factors influencing convergence of economic growth, the influence degree of investment rate, human capital, and technological progress on economic growth rate is higher in areas with higher economic growth rate than that with lower economic growth rate at all three stages, so these three factors can bring more economic effect. Although we applied advanced quantile regression method to study convergence of China's economic growth and reached rich information and conclusion, our study is preliminary, and there will be weak points. For example, in data processing, we did not consider extracting more information through analysis of panel data, and making in-depth studies. In conditional convergence, we did not consider increasing more control variables. These questions need further studies in the future.

References

[1] CAI F, DU Y. Convergence and divergence of regional economic growth in China[J]. Economic Research Journal, 2000(10):30 –37. (in Chinese).

[2] CHEN AG, LI GP. Convergence of regional economic growth: An time series analysis of China[J]. The Journal of Quantitative & Technical Economics, 2004, 21(11): 31 –35. (in Chinese).

[3] CHEN J, LIN L, YE AZ. A quantile regression analysis on Chinese resident's consumption[J]. The Journal of Quantitative & Technical Economics, 2008, 25(2):16 –27. (in Chinese).

[4] CHEN JB, DING JJ. A review of technologies on quantile regression[J]. Statistics & Information Tribune, 2008, 23(3):89 –96. (in Chinese).

[5] DENG L, ZHENG Z. A statistical approach of depicting different research objects – quantile regression[J]. Statistics and Decision, 2009(4): 154 – 155. (in Chinese).

[6] JIN XY. Analytical methods on regional economic growth convergence[J]. The Journal of Quantitative & Technical Economics, 2006, 23(3): 102 – 110. (in Chinese).

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[16] WU JP, XIE K, WANG MM. Information economics[M]. Beijing: Higher Education Press, 2002. (in Chinese).

[17] NIU S. Study on the countermeasures of enhancing county rural informatization construction of Harbin City[J]. Economic Research Guide, 2011 (2): 135 –136. (in Chinese).

[18] WANG X, HU XM. A brief analysis on the difficulties and acting point of a new socialist countryside construction – Bijie[EB/OL]. http:// www.stats – bj.gov.cn/tjfx/20061117/110432 shtml. 2012 –02 –27. (in Chinese).

[19] WU JP. Economic information[M]. Dalian:Dongbei University of Finance & Economics Press, 1996. (in Chinese).