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Factors Obstructing Rural Informationization Development of Pingshan County of Hebei Province

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Abstract The purpose of rural informationization is to provide effective information for farmers, increase production efficiency and income level of farmers in agricultural production. In recent years, under the guidance of No. 1 document of central government, China's rural informationization has obtained considerable development. However, due to influence of terrain, mountain areas are still backward in informationization development. Combining actual conditions of Pingshan County of Hebei Province, the authors visited local farmers and made detailed survey on basic conditions of farmers, and analyzed factors obstructing agricultural informationization development in mountain areas, to provide theoretical reference for promoting informationization development in mountain areas and increasing income of local farmers.

Key words Pingshan County, Rural informationization, Obstruction factors

1 Introduction

Pingshan County, as a key poor county supported by the state^[1], has received great support in economy and policy by central government^[2, 3]. Its county-wide economy has been developing rapidly and steadily. However, due to weak economic foundation^[4–6], compared with other counties in Taihang Mountain areas^[7], Pingshan County is still relatively backward in per capita net income, which is 3 312 yuan, much lower than that in other counties in Taihang Mountain areas (4 560 yuan). In addition, Pingshan County is an old revolutionary base area. Studying factors obstructing rural informationization development of Pingshan County is of great significance to find out how to develop rural informationization in old revolutionary base area, speed up developing regional economy, increase agricultural production level of local farmers, and improve living conditions of local farmers^[8–10].

2 Materials and methods

In 2010, we carried out a survey of 320 households of farmers in 20 administrative villages in Pingshan County of Hebei Province. In the total 320 copies of questionnaire handed out, we received 312 valid copies, 97.50% copies were acceptable. The questionnaire contained basic information of farmer households, information infrastructure construction, types and price of informationization products. We made statistics, summarization and analysis of survey results with the aid of Excel software.

3 Results and analyses

3.1 Basic information of respondents

3.1.1 Educational level

Overall educational level of respondents

ents is relatively low; 62 are illiterate, accounting for 19.87%; 207 have primary school or junior middle school education, accounting for 66.35%; 31 have senior middle school or college education, accounting for 9.93%; only 12 have university education (most are 21–30 years old), as listed in Table 1. 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.

Table 1 Educational level of respondents

Educational level	Number of respondents	Percentage %
Illiterate	62	19.87
Primary school	69	22.12
Junior middle school	138	44.23
Senior middle school	13	4.17
College	18	5.76
University or above	12	3.85
Total	312	100.00

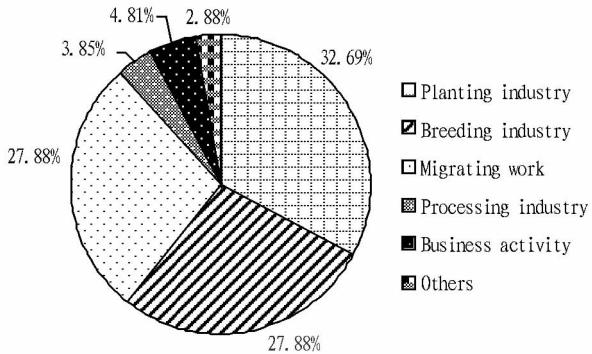
* Senior middle school includes special secondary school and technical secondary school.

3.1.2 Types of income. Among all respondents, 105 poor farmers have per capita net income lower than 900 yuan/year (poverty group); 99 farmers have per capita net income of 901–2 000 yuan/year (low income group); 84 farmers have per capita net income of 2 001–5 150 yuan/year (middle income group); 24 farmers have per capita net income higher than 5150 yuan/year (relative richness group). Data show that poverty group and low income group collectively account for 65.38% of all respondents, middle income group accounts for 26.92%, and relative richness group takes up 7.70%, as listed in Table 2. This indicates that more than 65% of respondents stay at low income level, and only few farmers have reached the relative richness level.

Table 2 Income level and types of respondents

Per capita income Yuan/year	Type	Number of people	Percentage %
<900	Poverty	105	33.65
901 – 2 000	Low income	99	31.73
2 001 – 5 150	Middle income	84	26.92
>5 150	Relative richness	24	7.70
Total		312	100.00

3.1.3 Income structure. The income structure of respondents indicates that planting, breeding and migrating are major income sources of farmers in study area, respectively 102, 87 and 87 farmers, while only 12 and 15 farmers obtain income from primary processing of agricultural products and business activities. 60.57% respondents take planting and breeding industries as main income source; 27.88% respondents obtain income mainly from migrating work; 11.54% respondents obtain income mainly from dealing with processing industry, business activities and other industries, as shown in Fig. 1. The data indicate that the problem of surplus labor in Taihang Mountain area of Shijiazhuang is mitigated to a certain extent, but labor there is still mainly engaged in agricultural production (planting and breeding industries).

**Fig.1** Income source of respondents

Generally, farmers in this area have low educational level and relatively low per capita income, and their income mainly comes from planting and breeding industries.

3.2 Factors obstructing development of rural informationization development

3.2.1 Obstruction of geographical environment. Farmers' information demand is influenced by environment and information infrastructure. The elevation of Pingshan County gradually rises from southeast to northwest, from the lowest point 120m in Dongshuiyan Village to the highest point 2 281 m in Tuoliang, with relative elevation difference up to 2 161 m. There are mainly five subtypes of landform, namely, sub-mountain, middle mountain, low mountain, hill, and pediment plain. Besides, there are other landform types, such as terrace, slope, valley, and low-lying land. The sub-mountain region has an elevation of 2 000 – 2 281 with high terrain and gentle slope and covering an area of 400 hectare; middle mountain region has an elevation of 1 000 – 2 000 m and covers an area of 39 400 hectare; low mountain region has an elevation of 500 – 1 000 m and covers an area of 107 800 hectare; Hill

and pediment plain regions have an elevation lower than 500 m, separately covering an area of 80 600 hectare and 76 600 hectare. Through many times of crustal movement in ancient times, it finally formed the landform outline of Pingshan County, namely being surrounding by mountains on three sides and taking on U shape.

3.2.2 Obstruction of income level.

(i) The difference of respondents with different income level in obtaining information. Survey results indicate that there is a great difference of respondents with different income level in obtaining information, and there is also a great difference in caring degree, as listed in Table 3.

Among the total 105 poor respondents, 18 farmers have demand for information of agricultural product price, only accounting for 17.14% (farmers select this option believe that only when price of agricultural products rises, can they obtain higher profit); 10 farmers have demand for information of agricultural means of production, accounting for 9.52%; only one farmer have demand for information of agricultural product processing, and no farmer cares about prediction of market condition of agricultural products. From these, we can know that poor farmers have low demand for various types of information. Their income level is low and they have limited or no information product for obtaining information. As a result, types of information they obtain are too narrow or they fail to obtain effective information.

Among the total 99 low-income respondents, 57.57% farmers have demand for information about price of agricultural products, 48.48% farmers have demand for information about education and health, and 35.35%, 33.33% and 30.30% respondents have demand for supply and demand of agricultural products, agricultural policies and regulations, and agricultural product processing respectively. About 21.21% low-income farmers have demand for information about agricultural means of production and agricultural product processing separately. About 2.02% low-income respondents have demand for other information. The above data show that the demand of low-income respondents for information is diversified, only the proportion of farmers demanding information about price of agricultural products is higher than 50.00%, the proportion of farmers demanding information about education and health is close to 50.00%, the proportion of farmers demanding other types of information is lower than 50.00%, and the proportion of farmers demanding prediction of market condition of agricultural products is even lower than 10%.

Among the total 84 middle-income respondents, 42.86% farmers care about information about price of agricultural products, agricultural means of production, education and health; 32.14% farmers have demand for information about labor employment and prediction of market condition of agricultural products; 28.57%, 28.57% and 25.57% respondents have demand for information about supply and demand of agricultural products, agricultural science and technology, and agricultural product processing; 17.86% farmers have demand for information about agricultural policies and regulations. The above data indicate that mid-

dle-income respondents still mainly care about information about price of agricultural products and agricultural means of production. Compared with low-income respondents, middle-income respondents are more interested in prediction of market condition of agricultural products. However, most respondents obtain information through market, so the reliability and truth degree of information are not high.

Among the total 24 rich group respondents, more than 80% farmers have demand for information about supply and demand of agricultural products, agricultural science and technology; about 70.83% respondents have demand for information about price of agricultural products; 75.00% respondents have demand for information about agricultural means of production; 62.50% farmers have demand for information about agricultural policies and regulations; 54.17% farmers have demand for information about agricultural product processing; 41.67% and 45.83% farmers have de-

mand for information about labor employment and prediction of market condition of agricultural products separately; 25.00% respondents have demand for information about education and health; 33.33% farmers have demand for other information. The above data indicate that the demand of rich group respondents for information is not limited to price of agricultural products and agricultural means of production. In fact, the number of farmers caring about these two types of information is not the highest. Instead, most rich respondents care about information of supply and demand of agricultural products, and agricultural science and technology, and the proportion of rich farmers demanding such information is higher than 80.00%. They believe that it is a key to obtain information about supply and demand of agricultural products and advanced agricultural technologies in the first time, which is a huge driving force for changes of agricultural production and living conditions.

Table 3 Types of information obtained by respondents at different income levels

Items	Poverty		Low income		Middle income		Richness	
	Number of people	Percentage %						
Supply and demand of agricultural products	8	7.62	35	35.35	24	28.57	20	83.33
Price of agricultural products	18	17.14	57	57.57	36	42.86	17	70.83
Agricultural science and technology	4	3.81	27	27.27	24	28.57	21	87.50
Labor employment	7	6.67	30	30.30	27	32.14	10	41.67
Prediction of market condition of agricultural products	0	0.00	9	9.09	27	32.14	11	45.83
Agricultural policies and regulations	6	5.71	33	33.33	15	17.86	15	62.50
Agricultural means of production	10	9.52	21	21.21	36	42.86	18	75.00
Agricultural product processing	1	0.95	21	21.21	24	25.57	13	54.17
Education and health	5	4.76	48	48.48	36	42.86	6	25.00
Others	2	1.90	2	2.02	3	3.57	8	33.33

(ii) Channels of respondents with different income level for obtaining information. The channel of poor farmers obtaining information is simple. Among poor farmers, more than 70.00% obtain information from friends, relatives and market; about 20% obtain information from economic men and village committee; 1.90%, 2.86% and 4.76% obtain information through telephone, newspaper and magazine and radio respectively; no one obtains information through network, mobile phone, enterprises, government departments and information intermediaries.

Among low income farmers, 50.00% obtain information mainly through market, friends and relatives; 45.45% obtain information through economic men; 15.15%, 22.22% and 31.31% farmers obtain information through radio, village committee and peddlers; 1.01% farmers obtain information through mobile phone; no one obtains information through network, enterprises, government departments and information intermediaries.

Among middle income farmers, 83.33% farmers obtain information through market; 61.90% farmers obtain information through peddlers; 57.14% farmers obtain information through friends and relatives; 42.86% farmers obtain information through village committee; 23.81% farmers obtain information through television and economic men; 4.76%, 3.57%, and 1.19% farm-

ers obtain information through enterprises, mobile phone, information intermediaries and government departments separately; no one obtains information through network.

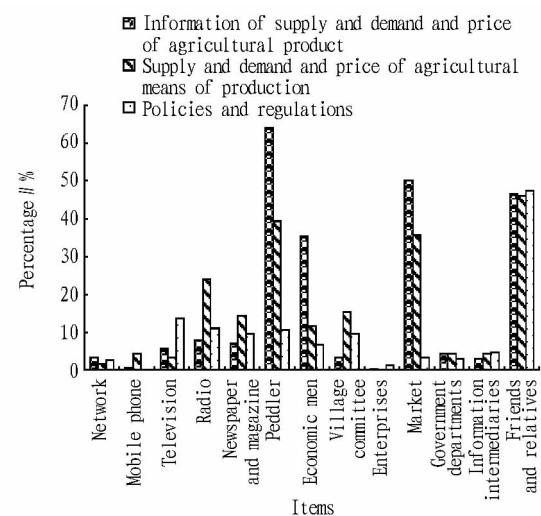
The above data indicate that farmers obtain information mainly through market, friends and relatives, and the channel for obtaining information is single. In the process of interview and visit, when talking about network and mobile phone information, many farmers just heard of, some poor farmers even did not hear of the network or mobile phone. Due to not knowing way of information dissemination, they doubted the information disseminated and insisted on obtaining information through the old channel. Rich farmers have more channels in obtaining information than poor, low income and middle income farmers. However, there are still some problems. Most rich farmers still obtain information mainly through traditional dissemination channel (market, television, friends and relatives), while few rich farmers obtain information through modern information dissemination channels. For example, only 5 rich farmers obtain information through network, accounting for 20.83%; only 1 farmer obtains information through mobile phone, accounting for 4.17%, as listed in Table 4. We also found that respondents seldom obtain information through newspaper, magazine, government departments, village committee and radio.

Table 4 Channels of respondents with different income level for obtaining information

Items	Poverty		Low income		Middle income		Richness	
	Number of people	Percentage %						
Network	0	0.00	0	0.00	0	0.00	5	20.83
Mobile phone	0	0.00	1	1.01	3	3.57	1	4.17
Television	2	1.90	9	7.09	20	23.81	18	75.00
Radio	5	4.76	15	15.15	11	13.10	4	16.67
Newspaper and magazine	3	2.86	7	7.07	16	19.05	10	41.67
Peddlers	19	18.10	31	31.31	52	61.90	8	33.33
Economic men	22	20.95	45	45.45	20	23.81	7	29.17
Village committee	25	23.81	22	22.22	36	42.86	9	37.50
Enterprises	0	0.00	0	0.00	4	4.76	17	70.83
Market	76	72.38	57	57.58	70	83.33	19	79.17
Government departments	0	0.00	0	0.00	1	1.19	5	20.83
Information intermediaries	0	0.00	0	0.00	2	2.38	1	4.17
Friends and relatives	74	70.48	54	54.54	48	57.14	17	70.83
Total	105	—	99	—	84	—	24	—

3.2.3 Obstruction in information dissemination channel. From Fig. 2, we can see that farmers obtain information of supply and demand and price of agricultural products mainly through peddlers, market, friends and relatives. Most farmers said that they don't know how to obtain information of supply and demand and price of agricultural products. Our survey data indicate that more than 60.00% farmers obtain information of supply and demand and price of agricultural products through peddlers. On the one hand, this reflects that farmers care about information of supply and demand and price of agricultural products. On the other hand, it reflects that farmers are passive in obtaining such information. In other words, they will care about such information only when they have demand or desire to purchase. Besides, farmers obtain information of supply and demand and price of agricultural means of production mainly through friends, relatives, peddlers and market. The survey data indicate that farmers are not urgent in obtaining such information. Less than 50.00% farmers obtain such information through friends, relatives, market and peddlers. Most farmers stated that they always obtain information through these channels, and there is no change for many years. This reflects that farmers are unwilling to change the existing information obtaining channel. In addition, less than 50.00% farmers obtain information of policies and regulations through friends and relatives, indicating that farmers in study area do not care about policies and regulations much. We found that farmers in Taihang Mountain area obtain information of supply and demand and price of agricultural products and agricultural means of production mainly through peddlers, friends and relatives. This area is relatively backward in rural economic development and information network construction lags behind. What's worse, farmers stick to the established practice, so their information obtaining channel is single and narrow. As modern information dissemination tool, network and mobile phone fail to be widely popularized in farmers of this region.

Through statistics of farmers with different income level in channels of obtaining information, it is known that rich farmers

**Fig. 2** Channels of respondents in obtaining effective information

have more diverse and centralized channels in obtaining information. They believe that information is the key to win, and a piece of good information can change development direction of a person. Since they have certain economic foundation and interpersonal relationship, the information they obtained has certain credibility. More than 70.00% rich farmers obtain information through friends, relatives, mobile phone and market. About 20.83 to 41.67% rich farmers obtain information through other information dissemination channel, while only 4.17% rich farmers obtain information through mobile phone and information intermediaries.

4 Conclusions and discussions

Farmers in Pingshan County of Hebei Province are low in educational level. Among respondents, 60.57% farmers obtain income from agricultural production (planting and breeding industries). The average income of local farmers is lower than the average level of Hebei Province. Since this area is complex in terrain and far from information center, its information infrastructure construction

develops slowly, which is an important factor restricting local rural informationization development. There is certain difference in respondents with different income levels obtaining information. In obtaining information, the higher the income, the more types of information they obtain and the higher demand they have. In information obtaining channels, it is generally single and narrow. Low income farmers know little about information tools. Higher income farmers have relatively rich channels for obtaining information.

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