

A Study on the Effect of Learning Ability on the Production and Management Behavior of New Professional Farmers – The Intermediary Role of Policy Cognition

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Abstract: The production and management behavior of new professional farmers is the key to agricultural development as well as agricultural and rural modernization. The research on the influencing factors of farmers' production and management behavior is of great significance to rural economic development and rural revitalization. In view of this, based on the survey data of 487 new professional farmers in Jiangxi Province, this paper discusses the relationship between the learning ability of these farmers and their production and management behavior, revealing the intermediary role of policy cognition. The results indicate that learning ability has a significant positive impact on production and management behavior, and policy cognition is an intermediary variable between learning ability and production and management behavior. Learning ability has a significant positive impact on policy cognition, whereas policy cognition has a significant negative impact on production and management behavior.

Keywords: New professional farmer; Learning ability; Production and management behavior; Policy cognition

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1. Research background

The 14th Five-Year Plan proposes to prioritize the development of agriculture and rural areas as well as to fully implement the strategy of rural revitalization. In order to accelerate agricultural and rural modernization, it is crucial to cultivate new professional farmers, develop a team of high-quality modern agricultural producers and operators, as well as release the potential agricultural production capacity. The "No. 1 Central Document" in 2012 proposed that we should vigorously cultivate new professional farmers as the main body of the development of modern agriculture in China. The production and management of new professional farmers will affect their main role and the development level of agricultural modernization in China. Therefore, it is of great significance to fully grasp the production and management behavior of new professional farmers as well as deeply understand the influencing factors of their production and management behavior in order to promote the strategic implementation of rural revitalization. At present, the research on farmers' production and management behavior mainly focuses on several aspects. The first is the analysis of the characteristics and transformation of farmers' management behavior. Yu Li and other

researchers believe that under the guidance and lead of various government policies, the production and management behavior of farmers in China mainly develops in the direction of marketization, specialization, socialization, and appropriate scale ^[1]. The second is the choice of agricultural land management scale. Xinyu Cao and other researchers have studied the agricultural land management scale around the country and analyzed the factors affecting the scale of agricultural land management ^[2]. The third is the analysis of the influencing factors of farmers' production and management behavior. Based on the theory of social cognition and planned behavior, Lv Xiao constructed an analytical framework and found that farmers' production and management behavior is mainly affected by individual characteristics, resource endowment, and location factors ^[3]. Although there are some achievements in this field of research, as an important tool to increase the stock of farmers' human capital, a number of scholars are paying more attention to the impact of new professional farmers' production and management behavior. In recent years, the Party and the State have been strengthening the training of high-quality farmers. It is worth exploring whether the improvement of farmers' learning ability will affect their production and management behavior. In existing studies, the policy cognition of farmers is often analyzed as a dependent variable, neglecting the relationship between farmers' learning ability and their production and management behavior. In view of this, considering the learning ability of new professional farmers and based on the field investigation of new professional farmers in five cities and five counties of Jiangxi Province, this study intends to explore the relationship among the learning ability, policy cognition, and production and management behavior of farmers, in order to provide some suggestions for promoting the increase in income among farmers as well as agricultural and rural modernization.

2. Theoretical analysis and research hypothesis

2.1. The influence of learning ability on production and management behavior

The development of agricultural modernization is a long-term process. It is imperative to establish the value of new professional farmers in the development of agricultural modernization, in which their learning ability plays a pivotal role. In this study, the learning ability of new professional farmers is defined as the ability of farmers to learn new things through external contact and training, and then finally decide whether to change their production behavior on the basis of their own understanding as well as weighing the internal and external comprehensive factors. The level of their learning ability will affect their acceptance of market information, market trend, and technological renewal in addition to the development of agricultural level and the process of rural modernization. As the basic form of human capital, education has a significant impact on rural economic development and the income level of farmers. Education can help farmers improve their agricultural efficiency. In the process of continuous learning through environmental, behavioral, and cognitive interactions, the behavior representation of the demonstration behavior of others can be acquired as a guidance to make corresponding actions ^[4]. Several studies have shown that learning can help farmers obtain different viewpoints and more technical information, thus affecting their market orientation and innovation consciousness, which then encourages these farmers to adopt different business behaviors ^[5]. In view of that, several assumptions have been made.

H1: The learning ability of farmers has a positive impact on their production and management behavior.

H1a: The stronger the learning ability of farmers, the higher the market orientation of production and management.

H1b: The stronger the learning ability of farmers, the stronger the innovation behavior of production and management.

2.2. The intermediary role of policy cognition in the relationship between learning ability and production and management behavior

In addition to direct influence, learning ability may also indirectly affect farmers' production and management behavior through a series of intermediary mechanisms. The behavioral transformation theory holds that the transformation of individual behavior is mainly composed of "knowledge – belief – behavior." Knowledge is the premise of behavior transformation, behavior transformation is the target result, and belief is the internal driving force as well as the intermediate variable of knowledge acting on behavior transformation [6]. Therefore, both, direct and indirect links exist between learning ability and production and management behavior. Firstly, learning ability can influence the policy cognition of farmers, so as to enhance their understanding about market and national trends. Education improves farmers' learning ability and human capital. The improvement of learning ability enhances their communicative ability and identification ability, and eventually improves their cognition as well as understanding of national policies. Secondly, their cognition of agricultural policy affects their market-oriented cognition level and then their production and management behavior. Cognition is the guide of action. Farmers are the main participants in the implementation of agricultural policy. The effective implementation of agricultural policy mainly depends on the participants' cognitive level and their corresponding behavior. Other theoretical analyses and empirical investigations have also shown that there is a significant relationship between farmers' cognitive level and decision-making behavior [7]. Therefore, an assumption has been made.

H2: The learning ability of farmers will indirectly affect their production and management behavior by affecting their policy cognition.

To sum up, the theoretical framework of this study is obtained as shown in **Figure 1**.

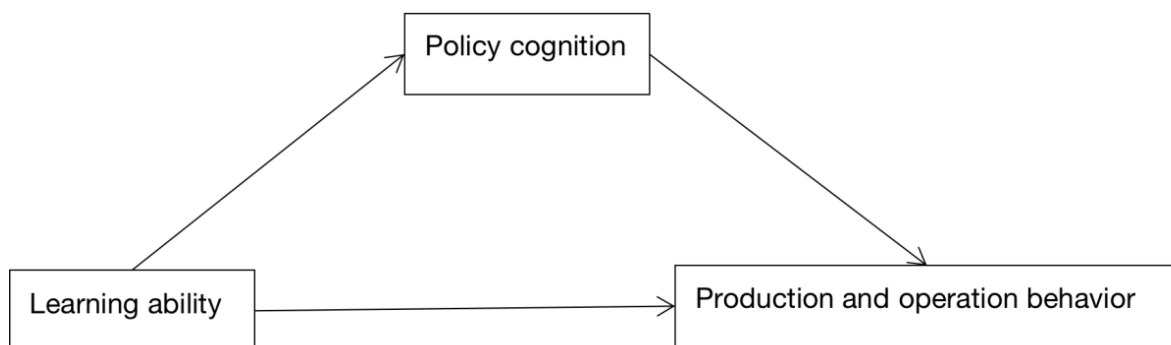


Figure 1. Theoretical framework

3. Research design

3.1. Data source

The data used in this study are derived from a questionnaire survey conducted in 5 cities and 5 counties in Jiangxi Province from July 2019 to September 2019. The survey, which used multistage sampling to select the survey sites, mainly focused on the individual characteristics of farmers, their learning ability, their production and management behavior, as well as their policy cognition. Firstly, five cities and five counties were selected via typical sampling in consideration of the terrain and economic factors in Jiangxi Province; following that, three natural villages were randomly selected from the five sample counties, and 30-40 farmers in each village were randomly selected as respondents for the survey. A total of 534 questionnaires were distributed, and 504 questionnaires were recovered, with a recovery rate of 94.38%. After excluding the invalid questionnaires, 487 valid questionnaires remained.

3.2. Research variables

The explained variable is the production and management behavior of farmers. Referring to the consumption table by Xianhui Geng and Zhen Zhong, two explanatory variables (market orientation and innovation behavior) are selected to represent the production and management behavior of farmers^[5,8]. Two items are selected for each explanatory variable, which include “whether the planting scale is adjusted as needed,” “whether the planting area is diversified,” “whether new technology is adopted,” and “the willingness to learn new methods.”

The main explanatory variable is the learning ability of farmers. Based on the scale by Ge Guo and Gebauer, learning ability can be divided into three domains: basic learning ability, communicative ability, and identification ability^[4]. Among them, basic learning ability is measured by “education level”; communicative ability is measured by “joining a cooperative” and “frequency of external contact”; identification ability is measured by the “functionality of training information” and “the ability to understand and distinguish true from false in regard to all kinds of information.”

The intermediary variable is the policy cognition of farmers. With reference to Zhenlin Weng’s scale, it is measured by seven domains, part of which includes “the guidance service of Agricultural Technology Department,” “government support for agricultural planting,” and “the satisfaction with three subsidies”^[9].

4. Empirical results and analysis

In order to ensure the effectiveness and rationality of the research design, the variables are tested first using SPSS 26.0 for reliability and validity test. From the results, Cronbach’s Alpha is 0.656, indicating that the reliability of the questionnaire is good; KMO value is 0.719, Bartley ball test is 1329.731, and the significance level is 0.000, indicating that the validity of the questionnaire is good. In addition, orthogonal rotation is carried out by the maximum variance method, and the principal component analysis method with eigenvalue greater than 1 is used to extract the factors. The factor load of the measured variables is greater than 0.45, indicating that the validity of each variable is good.

4.1. The influence of learning ability on production and management behavior

From the influence of learning ability on the production and management behavior of farmers, the learning ability of farmers positively affects their production and management behavior at a significance level of 1%, indicating that the stronger the learning ability of farmers, the more their production and management behavior conforms to the economic law, thus proving H1; the learning ability of farmers positively affects their market orientation at a significance level of 10% and their innovation behavior at a significance level of 1%, indicating that the higher the learning ability of farmers, the more their production and management behavior will change with the market demand, and the higher the adoption of new technologies and methods among these farmers, thus proving H1a and H1b. In addition, education level has a positive impact on the production and management behavior of farmers at a significance level of 10% and their innovation behavior at a significance level of 5%, indicating that the higher the farmers’ education level, the higher the acceptance and adoption of new technologies; however, there is no significant correlation between their education level and market orientation. It can be seen that education only has a partial impact on farmers’ behavior, and the level of education does not affect their attention to market information and market characteristics. At a significance level of 1%, communicative ability has a positive impact on the production and management behavior of farmers as well as their market orientation, indicating that the higher the frequency of external contact, the higher their information acquisition ability, the wider the access channels, and the more they can take on different business behaviors along with information changes. Identification ability has a positive impact on the innovative behavior of farmers at a significance level of 1%, indicating that the higher the identification ability, the better the information understanding ability, the better the

discrimination to make correct decisions for technology adoption in the face of influence and disturbance, the higher the degree of adoption of innovative behavior, and the more they are inclined to adopt innovative technologies.

4.2. The intermediary role of policy cognition

Table 1 shows the estimation results of the model with intermediary variables. From the estimation results, the overall fitting degree of the model is good. According to the results from the mediation effect test, there is a significant positive influence between the learning ability of farmers and their production and operation behavior. There is a significant relationship between learning ability and policy cognition, as well as between policy cognition and production and management behavior. Among them, learning ability has a positive impact on policy cognition, whereas policy cognition has a negative impact on production and management behavior. It shows that the stronger the learning ability of farmers, the higher their cognition and satisfaction with the national agricultural policy. The stronger the policy cognition of farmers, the more conservative the production and management behavior of farmers. The main reason is that the national policies relevant to agriculture and rural farmers have a good effect in benefiting the people. These agricultural policies play a significant role in revealing the bottom of agriculture. The deeper the understanding of farmers about agricultural policy, the more they can understand the national agricultural cue, and the more preferential subsidy opportunities they can obtain through their adjustment of agricultural production and management behavior.

Table 1. Intermediary effect of policy cognition on learning ability and production and management behavior

	Route	Coef.	P
Policy cognition	← Learning ability	.1793***	.0000
Production and management behavior	← Learning ability	.1032***	.0000
	← Policy cognition	-.0561**	.0309
Production and management behavior	← Learning ability	.0931***	.0000
	Total effect	.0931***	.0000
	Direct effect	.1032***	.0000
	Indirect effect	-.0101***	.0000

Note: ***, **, and * represent significant at the level of 1%, 5%, and 10%, respectively.

5. Conclusions and suggestions

Based on the survey data of 487 new professional farmers in 5 cities and 5 counties of Jiangxi Province, this study focuses on the impact of farmers' learning ability on their production and management behavior as well as discusses the intermediary role of policy cognition. From the results of this analysis, several conclusions are made: (1) the learning ability of farmers has a positive impact on their production and management behavior, in which the higher the education level of farmers, the stronger their communicative ability, and the more their production and management behavior will change with the market demand and new technologies; however, their identification ability has no significant impact on their production and management behavior; (2) the learning ability of farmers has a positive influence on their market orientation and innovation behavior, in which the stronger the learning ability of farmers, the stronger their market-oriented behavior, the higher their innovation consciousness, and the more likely they are to adopt

innovative behaviors; (3) policy cognition is an intermediary variable between learning ability and production and management behavior; learning ability positively affects policy cognition, but policy cognition negatively affects production and management behavior, in which the stronger the learning ability of farmers, the higher their cognition and satisfaction with the policies, but the higher the policy cognition, the more difficult it is for farmers to change their production and management behavior.

Based on the above conclusions, this study proposes several policy suggestions. First, it is necessary to strengthen the vocational education and training in agriculture, improve the vocational education system in agriculture, and promote the high-quality development of agricultural education. Various measures should be taken to improve farmers' education level, strengthen the popularization of new media and internet-related knowledge among farmers, as well as encourage them to adapt to the process of agricultural and rural modernization. Second, it is necessary to enrich foreign communication channels for farmers and improve their communicative ability. In addition to the technical service training provided by relevant government departments, agricultural exchange service stations should also be set up for farmers, so as to provide favorable support for their production and operation. Third, it is necessary to broaden their access to information and improve their information level. This initiative will expand their information volume and help them to understand the agricultural market situation as well as abide by technology renewal. Fourth, it is necessary to strengthen the publicity of agricultural policies and strictly standardize the policies to serve people. We need to strengthen the publicity and promotion of policies related to agricultural farmers, improve the awareness of farmers toward agricultural policies, standardize policy beneficiary groups, and prevent agricultural slack caused by policy welfare.

Disclosure statement

The authors declare no conflict of interest.

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