FACTORS AFFECTING THE EFFECTIVENESS OF BEEF CATTLE FARMERS COOPERATION IN GUANGNAN COUNTY, YUNNAN PROVINCE, CHINA

QI JIANLING

DOCTOR OF PHILOSOPHY IN ADMINISTRATIVE SCIENCE

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT
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ชื่อเรื่อง ปัจจัยที่ส่งผลต่อประสิทธิผลในการดำเนินงานของกลุ่มเกษตรกรผู้เลี้ยงโคเนื้อ
ในเขตกว่างหนาน มณฑลยูนนาน สาธารณรัฐประชาชนจีน
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บทคัดย่อ

วัตถุประสงค์ของการศึกษาวิจัยนี้คือ 1) วิเคราะห์ประสิทธิผลของความร่วมมือของเกษตรกรรายย่อยในการผลิตโคเนื้อในเขตกว่างหนาน มณฑลยูนนาน 2) วิเคราะห์ปัจจัยที่มีผลต่อประสิทธิผลในความร่วมมือในการผลิตโคเนื้อของเกษตรกรในเขตกว่างหนาน และ 3) กำหนดแนวทางที่มีประสิทธิผลต่อความร่วมมือที่มีประสิทธิผลสูงสุดในการผลิตโคเนื้อของเกษตรกรในเขตกว่างหนาน ทำการจำแนก 5 ประเภทความร่วมมือในการปรับปรุงพันธุ์ ได้แก่ รัฐบาล องค์กร สหกรณ์ ฟาร์มครอบครัว และเพื่อนบ้าน กลุ่มตัวอย่างประกอบด้วยเกษตรกรผู้เลี้ยงโคเนื้อที่อาศัยอยู่ในเขตกว่างหนาน มณฑลยูนนาน จำนวน 475 คน ซึ่งได้มาจากการสุ่มแบบสามขั้นตอน นอกจากนี้ทำการสัมภาษณ์และอภิปรายกลุ่มย่อยในกลุ่มผู้นำสหกรณ์ ผู้ประกอบการ ช่างเทคนิค และข้าราชการในพื้นที่ ทำการวิเคราะห์ข้อมูลเชิงปริมาณ โดยใช้สถิติเชิงพรรณนา และทำการวิเคราะห์เนื้อหาสำหรับข้อมูลเชิงคุณภาพ และรวมถึงการใช้การถดถอย OLS

ผลการศึกษารายงานว่าประสิทธิผลในการร่วมมือของเกษตรกรรายย่อยผู้เลี้ยงโคเนื้อในเขตกว่างหนาน มีความเป็นไปตามผลการศึกษาดังนี้ 1) เกษตรกรมีข้อจำกัดในการเข้าถึงช่องทางสนับสนุนจากภายนอก 2) ความสัมพันธ์กับละแวกใกล้เคียงเป็นช่องทางสนับสนุนที่สำคัญ 3) ความร่วมมือที่มีประสิทธิผลระหว่างเกษตรกรรายย่อยผู้เลี้ยงโคเนื้อกับผู้มีส่วนได้ส่วนเสียอยู่ในระดับปานกลาง อายุและเวลา ประสบการณ์การเลี้ยงโคเนื้อของเกษตรกรรายย่อยเป็นปัจจัยบวกหลักที่มีผลต่อความร่วมมือกับเพื่อนบ้าน ลักษณะครอบครัวเป็นปัจจัยบวกหลักที่มีผลต่อการร่วมมือกับองค์การกลางทั้งห้า เงินอุดหนุนจากรัฐบาลเป็นปัจจัยบวกหลักที่มีผลต่อความร่วมมือของรัฐบาล เกษตรกรรายย่อยและเพื่อนบ้าน นกจากนี้ความสัมพันธ์ระหว่างเกษตรกรรายย่อยนี้มีผลในทางบวกต่อรัฐบาล สหกรณ์ และเกษตรกรรายย่อยด้วยกันเอง

ข้อเสนอแนวทางการพัฒนามีดังนี้ 1) รัฐบาลควรเพิ่มเงินอุดหนุนที่เหมาะสมและเป็นการ

ปรับปรุงประสิทธิผลของความร่วมมือ 2) สนับสนุนเกษตรผู้เลี้ยงโคเนื้อในการขยายธุรกิจและปรับปรุงความสามารถในการเจรจากับสหกรณ์ 3) รัฐบาลควรกำกับ ดูแล และปกป้องผลประโยชน์ของเกษตรกรรายย่อยที่มีความร่วมมือกับบริษัทต่าง ๆ 4) ปรับปรุงและประกันความเป็นธรรมของเงินอุดหนุนจากรัฐบาลให้แก่หน่วยงานต่าง ๆ 5) ปรับปรุงประสิทธิผลการผลิตทางการเกษตรที่เกี่ยวข้องกับการเลี้ยงโคเนื้อ

คำสำคัญ : เกษตรกรรายย่อย, ความร่วมมือของเกษตรกร, การเลี้ยงโคเนื้อ, ธุรกิจการเกษตรประเภทใหม่

Title	FACTORS AFFECTING THE EFFECTIVENESS OF BEEF CATTLE FARMERS COOPERATION IN GUANGNAN COUNTY, YUNNAN PROVINCE, CHINA
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Degree	Doctor of Philosophy in Administrative Science
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ABSTRACT

The objectives of this study were to: 1) analyze effectiveness of the coordination of small scale beef cattle farmers in Gungnan county, Yunan province, People's Republic of China; 2) analyze factors effecting the effectiveness of the coordination of the small-scale beef cattle farmers; and 3) formulate guidelines for highest effectiveness in beef cattle production of the small-scale farmers. The coordination was classified into 5 types based on the coordination with the following 5 central organizations : 1) the government, 2) organization, 3) cooperative, 4) family's farm, and 5) neighbor. The sample group consisted of 475 beef cattle farmers in Guangnan county. Obtained by multi-stage sampling. A set of questionnaires was used for data collection and analyzed by using descriptive statistics. Another sample group consisted of cooperative leaders, entrepreneurs, technicians and government officials in the are. Data were collected by interview, focus group discussion and analyzed by using content analysis OLS regression.

Results of the study revealed that the effectiveness in the cooperation of the small-scale beef cattle in Guangnan were based on the following: 1) limitations on access to external support channels; 2) neighborhood relationships were and important channel of support; 3) effective coordinative between the small-scale beef farmers and stakeholders found at moderate level. Age and time span of beef cattle rearing of the small scale beef cattle farmers were main positive factors effecting the coordination with neighbors. For family traits, joining the cooperative was a main

positive factor effecting the coordination with the 5 central organizations. The government subsidies was the main positive factor effecting effective cooperation among the government, the small-scale beef cattle farmers had a positive effect to the government, the cooperative and small scale beef cattle farmers themselves.

The following were policy recommendations: 1) The government should add subsidies appropriately for improving effective coordination. 2) The small-scale beef cattle farmers should be supported in business expansion and negotiation with the cooperative. 3) The government should supervise and protect benefits of the small-scale beef cattle farmers having coordination with various companies. 4) Improvement and assurance of fairness in government financial subsidies to various agencies. 5) Improvement of the efficiency in agricultural production related to beef cattle rearing.

Keywords : small-scale farmers, cooperation of farmers, beef cattle rearing, new types of agricultural business

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CHAPTER 1
INTRODUCTION

Background of the Study

The mode of production of small-scale farmers in China, which is mainly based on family business, has achieved good results in the early period of China's reform and opening-up. However, with the improvement of agricultural production levels, the small-scale production model based on households has increasingly become an important factor that restricts the development of the rural economy in China. (Qinghai Guo, 2000).

Since the 1970s, we have already realized that increasing the input of production unilaterally is only an effective way from the national macro level or the individual level of production. The need for an organizational system is the root of the problem. Only a reasonable production organization system can fundamentally determine new production technologies' input and utilization effects. Therefore, studying how to improve the profitability of the agricultural economy and mobilize the enthusiasm and creativity of farmers' production and management from the economic development structure, organizational management means, and other aspects have become an essential subject in agricultural development research in China.

The reality is that the scale production of China's agriculture, including rural areas in western China, is developing slowly. For example, China's farmland transfer rate has been low. Until recently, the transfer of contracted management rights in rural China has been improved. However, compared with other developing countries, Chinese farmers' ultra-small-scale farming model has remained the same; farmland abandonment still exists in some areas. (Xu, 2016) Therefore, how to accelerate the transfer of farmland into patches and moderate scale, improve the use efficiency of farmland resources, achieve land scale and intensive management, and develop a

modern agricultural management system has become a significant issue for China's agricultural development.

To improve the efficiency of agricultural production and operation, we must first solve the current small-scale production and management methods. With the continuous strengthening of market economy awareness, the limitations of the household contract responsibility system have increasingly restricted the development of China's agriculture. Based on the principle of "return to scale" in Marshall's neoclassical economics framework, it can be seen that the biggest problem of the production management system characterized by small farmers as a unit is that the too-small agricultural production organization size leads to high production cost, transaction cost and low agricultural production efficiency, and even the root cause of the weak position of small farmers in the development of agriculture and the overall industrial development of the country (Zhu Surong, 2009). The small-area land decentralized operation of the family is not only not conducive to the popularization and promotion of advanced agricultural science and technology but also increases the management cost of agricultural production and management. Small farmers' production and management methods have yet to form a systematic and standardized management system, which is not conducive to improving small farmers' legal protection and management capacity. All in all, the scattered small-scale agricultural production and management methods can no longer meet the needs of the development of the market economy and do not meet the needs of the current development of China's national conditions (Liang Yong, 2001).

Secondly, according to the current situation of rural areas in western China, it is challenging to concentrate the land in the hands of a few people and develop large-scale agricultural enterprises or family farms of a specific size in the western region. The main reason is that the economy in Western China is very backward, and it is difficult for farmers to get other jobs to earn a living without land. So it is a more feasible way to produce in the Western region by employing agricultural cooperation. However, agricultural cooperative organizations represented by cooperatives have yet to be ultimately successful in China so far. Many things could still be improved

based on the overall development quality of farmers' professional cooperative organizations. For example, the problems of "small, scattered, and weak" are prominent. On a national scale, even in Jiangsu Province, where farmers' professional cooperative organizations are better developed, 25% of the farmers' professional cooperatives still need to live up to their name (Jiang Changyun, 2005). Farmers' professional cooperatives in Yunnan Province can achieve economies of scale. Only a few cases help farmers increase their income through cooperatives, and there are only a few successful cases in Yunnan province of China.

Third, peasant cooperation is an essential and feasible path to break the predicament of "agriculture, rural areas, and farmers," promote agricultural development, promote the progress of rural areas, and realize the increase of farmers' income. Theoretically, small farmers are naturally in a weak position when facing large-scale markets, especially product biology, geographical dispersion, and scale unevenness in agricultural production, which determine the inevitability of farmers' cooperation. International experience also shows that the problems faced by small-scale farmers in the development of the modern market economy can be overcome by providing members with services such as unified investment, unified sales, suitable packaging, and unified provision of technology and information through cooperatives (Yang Lisha, 2014). However, from the current reality of China, especially the development status of Yunnan, the degree of cooperation among farmers is relatively low, whether relying on social forces such as farmers with good ability in rural areas, large professional households, cooperatives, agriculture-related enterprises, or the government agricultural technology departments are challenging to promote adequate co-led farmers enthusiasm for farmers. The lack of enthusiasm and low degree of participation of farmers are the outstanding problems that have troubled the development of China's farmer cooperative organizations for a long time.

Significance of the Problem

Over the years, the Chinese government has promulgated many central "Document No. 1" with the theme of "agriculture, rural areas, and farmers." It shows the Chinese government's determination to solve the problem of agriculture, rural areas, and farmers, and does everything possible to increase farmers' income. To solve the problem of difficulty in selling agricultural products, the government "encourage the development of all kinds of agricultural specialized cooperative organization, purchasing and selling large and peasant brokers," to "the development of agricultural industrialization," "encourage connection leading enterprises in a variety of interests, driving the development of base and farmers," "focus on cultivating a batch of competitiveness, the driving force of leading enterprises and enterprise clusters demonstration base, leading enterprises, cooperative organizations and farmers organization form of. The organic combination" puts forward a series of specific policies to promote improving peasant cooperation level and help peasants increase their income. The joint entry of small-scale peasant households and other economic entities into the market is an institutional innovation under the household contract management system. It has made a compelling exploration in resolving the contradiction between small-scale production and large market. It can guide and help farmers' commodity production to take the road of specialization, socialization, and intensification, form economies of scale, enter the large market of socialization as a whole, reduce intermediate links, reduce transaction costs, and improve the comparative efficiency of the agricultural industry. It can turn part of the external economy into the internal economy, exert organizational synergy and industrial synergy effect, construct a new benefit distribution mechanism, jointly prevent natural and market risks, improve the operational benefits of participating entities, and achieve a win-win situation, can break through the bottleneck constraints of small farmers, remove the traditional institutional obstacles, and enhance the internal driving force of agricultural market development (Huang zu-hui, 2002).

From a realistic point of view, small farmers still need to improve in the process of rural social transformation. In this case, it is a way advocated by most scholars to improve farmers' market position and increase farmers' income by organizing individual farmers to cooperate. A small peasant household in China is a typical social person who grows up in a specific social relationship and social structure. Therefore, the cooperative behavior of small farmers is not simply the cooperation of economic interests as the sole objective. It is not entirely the so-called "rational man" behavior in economics, whose behavior is aimed at economic goals and includes pursuing power, prestige, and status for non-economic interests. It is inadequate to study the income increase of small farmers from the perspective of economic cooperation, and it is easy to ignore the essence of the "social man" of farmers.

On the other hand, improving the scale of production and operation unilaterally is not a breakthrough for China's agricultural development (Ji-Ping Chen, 2012). Simply relying on expanding the scale of agricultural land management as a core strategy to improve agricultural production efficiency and increase agricultural income is also contrary to the true connotation of agricultural-scale economic development (Xie Yuhong, 2005). In Central Document No. 1, issued by the State Council of China in 2013, it was proposed for the first time that the new farmer cooperative organization should develop into a diversified and multi-type organization. Meanwhile, a series of mechanisms and policies, such as support, management and protection, subsidy, and preferential treatment, were set up to improve farmers' enthusiasm for agricultural production. We must break the dilemma of small-scale decentralized production and management to move towards the development path of China's future agricultural organization and scale (Fu rong wang jing, 2015).

Whether it is "family farm," "enterprise + peasant household," "leading enterprise + peasant household," or other types of peasant specialized cooperative economic organizations, they can be regarded as cooperative and large-scale production organizations from the perspective of governance. Although, in practice, different organizational models have different practical effects and functions, the

ultimate goal is to achieve large-scale returns and improve the efficiency of production and operation by improving the scale of production and operation, integrating various means of production, and building a mechanism for linking the interests of workers in production. Although from the perspective of theoretical development, many studies have fully proved that large-scale, cooperative production and operation organizations can play a perfect guiding role in agricultural restructuring, income improvement, productivity improvement, etc., from the perspective of practice, the degree of farmer households' organization is still shallow. The main problem is that much of the research on agricultural production patterns focus on the necessity, role, and mode choice of China's development of new agricultural production and operation modes from the macro level. In contrast, relatively few research theories are analyzed and grasped from the perspective of farmers at the micro level. Due to the lack of theoretical research at the micro level, it is rare to form a production cooperative operation behavior that can fully meet the needs of small farmers.

The existing research provides necessary enlightenment and reference for understanding the influencing factors of the cooperative effect of small farmers under the current background and exploring the policy path to promote the cooperative effect of small farmers. However, there needs to be more specific factor analysis on the cooperation effect of small farmers and more research on how to integrate small farmers into China's modern agricultural system effectively. Therefore, research on the influence of production cooperation effect on small farmers is fundamental.

Therefore, from the perspective of small farmers, this study analyzed the influencing factors of the cooperative effect of small farmers. We are taking Small farmers in the entire production process of the various cooperative participants as the research object, including small farmers, enterprises, family farms, cooperatives, and the government, through the study of the impact of the cooperative effect, trying to stand in the perspective of small farmers involving the cooperative effect of farmers. The study of the impact of the main stakeholders on Farmers' production cooperation is of excellent reference value and practical significance to the

optimization and formulation of the existing production and operation system in China. (Huang Zuhui, 2008)

The significance of this Study: First, the survey and research results aim to improve small farmers' effectiveness in production cooperation and fully protect the interests of small farmers in formulating farmers' cooperative policies. Secondly, based on the study's results, this paper proposes a development mode that ensures farmers' cooperative effect.

Research questions

The main question of this study is: How do the cooperative relationships of different groups interact with each other in the cooperation between small farmers in Guangnan County of Yunnan Province and different stakeholders? Under the premise of ensuring the effect of cooperation, how to protect the interests of small farmers? So that small farmers can obtain a reasonable distribution of benefits throughout the production process in order to improve the effectiveness of cooperation, including the following research:

1. What types of farmer cooperation are involved in small farmers?
2. How does the evaluation of the effect of small farmers participating in farmer cooperation?
3. Which factors affect the effect of small farmers' cooperation?
4. How do small farmers and different stakeholders achieve practical cooperation?

Research objectives

1. To analyze the effectiveness of small farmers' cooperation in production in Guangnan County.
2. To analyze factors affecting the effectiveness of small farmers' cooperation in production in Guangnan County.

3. To formulate practical guidelines to optimize the effectiveness of small farmers' cooperation in production in Guangnan County.

Scope and Limitations of the Study

Wenshan Prefecture is an autonomous national state under the jurisdiction of Yunnan Province, located in the southeastern part of Yunnan Province on the southwestern border of China. The region studied is Guangnan County of Wenshan prefecture of Yunnan province, under the jurisdiction of Wenshan Zhuang and Miao autonomous prefecture of Yunnan province. Located in the southeast of Yunnan Province, Wenshan Prefecture covers an area of 2,977 square kilometers and governs eight counties (cities). Guangnan County is a large county for beef cattle breeding in Yunnan. Beef cattle breeding has a long history and a large number of farmers. In this study, a county in Guangnan County was selected as the research site according to the following criteria:

1. Economic development level: Guangnan County is at a medium level of economic development in Yunnan Province

2. Natural environment: This county is a typical mountainous area of Yunnan, and beef cattle breeding can represent the production situation in Yunnan.

3. Cultural environment: The county belongs to the Han, Yi, and Miao communities.

4. Farmers' cooperation: Guangnan County is Yunnan's largest beef cattle area. The history of beef cattle farming is long, and the forms of farmers' cooperation are diverse.

Reasons for choosing small beef cattle farmers in Guangnan County as research objects:

1. Guangnan County has a moderate economic development level in Yunnan Province and can represent most of Yunnan Province.

2. 88.6% of Yunnan Province's land and Guangnan County are mountainous. The beef cattle breeding in Guangnan County can represent the mountainous production in Yunnan.

3. The Han, Yi, and Miao nationalities in Guangnan County are all ethnic groups with a large population in Yunnan Province.

4. Beef cattle breeding is the most important agricultural product in Guangnan County. It has a long history of farming and involves the most significant number of farmers.

In the long-term beef cattle breeding production process in Guangnan County, a variety of forms of farmer cooperation have been formed.

The content of this study is limited to farmers' cooperation in beef cattle production. The cooperation of other aspects of farmers' community life is outside the scope of this study.

In this paper, the limitations of the study are mainly reflected in the first, the farmer's cooperation is diversified. However, it is likely to have studied only some forms of cooperation. Second, the differences in the cultures of different ethnic groups may have different effects on the cooperation of farmers. Therefore, when choosing research sites, it is necessary to reasonably select research sites to make the research more representative.

Expected Results of the Study

Based on the primary attributes and characteristics of mountain agriculture in Yunnan Province, this study analyzed the factors influencing the cooperative effect of farmers in beef cattle breeding in Guangnan County.

From the farmers' perspective, the study includes the following: What are the driving factors of farmers' participation in cooperation? The influence of these factors on the effect of cooperation. From the farmers' perspective, this paper analyzes the factors that affect farmers' cooperation, including economic level, social level, and the correlation between these factors and cooperation results.

From the perspective of policy-making, this study will explore the specific path to promote the effect of farmers' cooperation in Yunnan's mountainous areas and expand the scale of agricultural production.

From the farmers' perspective, the study on the effect of farmers' cooperation in China needs more Study literature. This study will get some first-hand information and Study results, which can help researchers engaged in farmers' cooperative study and agricultural scale production in China in the future.

From the point of view of researchers, there are few research bibliographies on the effect of Chinese farmers' cooperation in China. This study will collect first-hand information and obtain research results, which can help researchers engage in the future cooperative research of Chinese farmers and standardized agricultural products.

Operational Definition of Terms

Three Rural Issues:

The "three rural issues" refer to the three major problems of rural areas, agriculture, and farmers. It refers to improving farmers' living conditions, industrial development, and social progress in the vast rural areas mainly engaged in the planting industry (breeding industry).

China in the 21st century is a dualistic society formed in history; the cities are continuously modernized, the secondary and tertiary industries are continuously developed, and the urban residents are constantly prosperous, while the progress of the countryside, the development of agriculture and the well-off life of the peasants are relatively lagging behind. China in the 21st century is a dualistic society formed in history; the city is continuously modernized, the secondary and tertiary industries are continuously developed, and the urban residents are constantly prosperous, while the progress of the countryside, the development of agriculture, and the well-off of the farmer is relative lag. This contradiction has become the core of the problem. It is also necessary to solve the problem of the connection between small farmers and large-scale social production in China's agricultural modernization process.

Cooperation:

Cooperation is a joint action and method between individuals and individuals, groups and groups to achieve common goals and cooperate with each other. The

collaborators engage in the same activity without distinction, such as engaging in specific labor without division of labor for homogeneous cooperation. In order to achieve the same goal, the partners have a division of labor, such as non-homogenous cooperation in the production of different processes according to the process. Primary conditions for cooperation: The basic conditions for successful cooperation must first have a consistent goal. Any cooperation must have a common goal, at least a short-term common goal. Second, we must have a unified understanding and norms. Collaborators should understand common goals, ways to achieve them, and concrete steps; partners must comply with commonly recognized social and group norms in joint operations. The third is to cooperate with each other. Creating a good atmosphere of mutual understanding, trust, and support is essential for practical cooperation. Finally, a specific material basis exists for cooperation to survive and develop. The necessary material conditions (including labor, land, production equipment, etc.) are the prerequisites for smooth cooperation progress. The best-fit distance in space and orderly time are all part of material conditions.

Farmer cooperation:

Cooperation comes from the Latin word Coopeaio, which means joining forces to achieve common goals and interests. Farmer cooperation is the vital link for the economic activities of the peasants as separate cooperative members to share, control, or dominate. The purpose is to realize the collaboration of the members, between members and organizations, among the organizations, and between organizations and governments. "Farmer cooperation" refers to the social interaction process in which farmers, to solve the problems and difficulties in production and life that cannot be solved only by one family, cooperate and coordinate with other farmers to achieve a beneficial result themselves and others. This kind of interaction process has formal interaction, that is, the establishment of formal cooperative organizations, etc.; there is also informal interaction, that is, cooperation through internal or external incentives. The cooperation in this paper is mainly cooperation at the production level, and other non-production cooperation is not the focus of this paper. The benefits of farmer cooperation have two aspects.

On the one hand, cooperation will increase material benefits. The central performances are as follows: First, cooperation increases the scale and contributes to the scale effect; second, cooperation makes it easy for partners to generate externalities, etc., which helps to achieve the aggregation effect. On the other hand, cooperation will increase spiritual gains. First, cooperation is a prerequisite for realizing human self-worth; second, cooperation helps remove uncertainty in the human spirit, and the team gives people a sense of belonging and security. This study focuses on the relatively stable farmer cooperation who have cooperated for more than one year or nearly a year.

Cooperative economy:

Cooperative economy refers to an economical form of individual ownership by members and joint ownership by cooperative members in which the laborers voluntarily share the labor, technology, Capital, and land. It is the inevitable product of social and economic development to a particular stage. On this basis, members can enjoy complementary services and the distribution of profits. A cooperative economy is an economic form in which the vulnerable groups under the market economy conditions face fierce competition and the ever-changing market and unite to help each other and reluctantly compete. The cooperative economy has the following characteristics: joint volunteer, freedom of entry and exit; democratic management, significant decisions are discussed and decided by the general assembly of the members; and the system of one person, one vote is implemented; members share the property. The goal of the cooperative economy is to increase members' income and provide complementary services for the production and life of members. The form of cooperation is diversified.

Cooperation system:

Cooperative production is the carrier of the cooperative economy, which is the operating system that comes with the development of the modern economy. The eight words "voluntary, mutually beneficial, democratic, and equal" are the basic principles recognized by China at this stage to establish and develop farmers' cooperative organizations.

Cooperative economic organization:

Cooperative economic organization refers to a specific market entity, enterprise, or association formed according to the principle of cooperation. The specific names of cooperative economic organizations are called cooperative and cooperative. According to their specific business scope, cooperative economic organizations can be divided into cooperative economic organizations engaged in professional production or service and cooperative economic organizations that comprehensively produce or serve. Divided by specific functions, there are cooperative economic organizations in production, circulation, consumption, and finance. Cooperative is a typical organizational form of cooperative economic organization. The surplus of cooperatives belongs to all cooperative members, so the distribution is based on the number of shares of various factors or members' contributions to the cooperatives. The greater the number of transactions between cooperatives, the more surplus they receive.

Benefits:

Sociology, Economics, Political Science, and Philosophy all take interest as the object and object of their research. Czech famous economist Ota Sikh defines interest as: "It is the need that people satisfy certain objective generation, have a lasting and concentrated purpose; or such satisfaction is not sufficient so that it is constantly being reconciled and repeated to meet its requirements." Zheng Hangsheng, a Chinese sociologist, said: "Interests are the objective conditions for people's survival and social life under the development stage of production and human needs. The need is the natural basis of interest, and the social resource is the carrier of interest and specific content. "The "interest" in this article mainly refers to economic interests, an economic relationship in social interaction by the principle of rational behavior and maximization of interests.

Stakeholder:

The word "Stakeholder" first appeared in the 1708 Oxford dictionary, which means that people "bet" in the activity, with the meaning of "bet" or "deposit." In the 1960s, Stanford Research defined "stakeholders" as "individuals or groups that lose their support and cannot survive." It shows that the development of enterprises is closely related to the input and participation of stakeholders; therefore, the

development of the enterprise is unable to leave the stakeholders, and the development of enterprises cannot leave the stakeholders, and the development of enterprises is also the development of the overall interests of stakeholders. In 1984, the American economist Freeman proposed that stakeholders are "any individuals and groups that can influence the achievement of corporate goals, or can be influenced by the process of achieving goals." This definition became a standard stakeholder paradigm in the late 20th century. The exciting relationship of this article refers to the farmers integrating resources inside and outside the village to seek more benefits and cooperation in the process of industrial development; In contrast, the degree of cooperation continues to deepen, and the interests of farmers form an association.

Farmer broker:

A farmer provides intermediary services for the varieties or projects of the transaction to induce the formation of transactions between others in the economic field of rural society. Briefly speaking, a farmer's broker is also called a business middleman involved in agriculture. It is an intermediary that contacts and organizes trades involving agricultural products. Farmer brokers built a bridge between farmers and the market, smoothed the rural sales channels, and promoted better development of agriculture, rural areas, and farmers. The farmer's broker is a product of the market economy, which encourages the peasants to actively participate in the market environment and become a part of the market economy. The farmer's brokers in this paper refer to farmers who spontaneously form in rural areas, engage in agricultural product purchases or trafficking activities in or around mountain villages, and obtain economic profits by taking a cut or earning a difference.

The effectiveness of farmer cooperation:

The effectiveness of farmer cooperation is reflected in the following aspects: Farmers have gained ecological, economic, and social benefits or improvements through cooperation. Including improving the liquidity of farmers' resources, improving the degree of organization of farmers, reducing transaction costs and market risks, easier obtaining state support, and, most important the satisfaction of farmers after cooperation.

CHAPTER 2

REVIEW OF LITERATURE AND RELATED STUDIES

Scholars have been thinking about cooperation for a long time. Early cooperation thought has been reflected in Christian Social and democratic thoughts. Utopian socialists Robert Owen, Saint Simon, and Fu Liye proposed a more complete economic and social cooperation idea. (Summer, 2010). The later generations are known as "the father of the cooperative economy" and systematically expounded the basic theory of cooperation in their new world moral book.

Moreover, he actively explored the practice movement of cooperatives. (Huang Xu well-known, 2011)Fourier comprehensively and systematically expounded the cooperative economy thought in his works Household Agricultural Cooperative Society, New World of Economy or Cooperative Behavior in Accord with Nature (Harrison, 2009).

The famous classical economist, Adam Smith, emphasized the importance of the division of labor in his famous book "the wealth of Nations," which primarily reflects the idea of cooperation based on the division of labor. (Dobb & Dobb, 1975)

At the beginning of the century, the socialist school represented by (Ricardo, 2015) also advocated cooperation in all fields. Under the guidance of a cooperative economy, western countries actively explore the practice of cooperative movement. In 1844, Britain's " Rochdale Society of Equitable Pioneers " was called a cooperative fan. The " Rochdale Principles " has been widely recognized and respected. (Shui-ping Zhang, 2007)In addition, they founded the Brighton Co-operator Association in 1827 and first founded a Union shop (a consumer cooperative). In the 1827-1834 years, he organized nearly 500 cooperatives and set off a wave of "Brighton cooperatives." Therefore, Wilhelmkin has become a thinker and practitioner of cooperatives. In the long-term cooperative practice, Wilhelmkin gradually concluded that labor, knowledge, and Capital are the three essential elements of cooperatives, and labor is the basis for cooperation. (Yeo, 2016)

The working class transforms economic organizations and realizes social progress by organizing cooperatives. Therefore, in a sense, the cooperative practice developed in the Western world in this period is, to a certain extent, a social community movement initiated in the capitalist environment to safeguard the common interests of the vulnerable groups, with the working class as the main body.

The cooperative economic thoughts of Marx and Engels are mainly embodied in books such as Capital. He expounded on the contradictions between the small peasant and market economies regarding commodity exchange, production scale, and resource allocation in his books. He argued that such conflicts and conflicts would inevitably defeat the small peasant economy with the market economy. In order to meet the requirements of the market economy, small-scale peasant households must eventually move towards alliance and implement pleasant cooperation. (Serena, 2006) (Carver, 1982); (Sher, 1975)

Relevant theories

Bounded rationality

This theory has always reflected the rational behavior of economic actors since the beginning of the economy as an independent discipline. For example, from the perspective of individualism and order formation, he thought philosophically about rational human behavior. He believed that human beings could only know a small part of the whole society, so they could only inspire immediate benefits in their fields of activity, so no matter whether a person was wholly selfish or the most kindhearted altruist, he could care about it. Human needs account for only a tiny part of human needs. It is believed that in most social paradoxes, cooperation is higher than people's expectations, which stems from the social rules of trust, respect, and reciprocity among people. Therefore, under the non-strict institutional arrangements, we need to build a behavioral model of bounded rationality and moral behavior with the help of trust, respect, and reciprocity, which is consistent with the research results of biology and evolutionary psychology (Friedrich von Hayek & Deng zhenglai, 2015). Sen (2018) has made a new definition of the connotation of

"bounded rationality." He regards self-interest as a necessary condition of rationality. He ignores what kind of rational freedom should be pursued by individuals. Rational self-interest views overestimate self-interests and underestimate self-reasoning (Yao Yang, 2001). The development of the theory of bounded rationality originates from the questioning and Reflection on the hypothesis of rational man in economics. Traditionally, the individual who pursues the maximum profit is established as the starting point of economic analysis, which establishes the basic paradigm for analyzing producer behavior in neoclassical economics (Ruo-yu Zhong, 2004). Marginal income analysis establishes the individual pursuing maximum utility as another starting point of economic analysis. It establishes the basic paradigm of consumer behavior analysis for neoclassical economics and modern mainstream economics. These two paradigms are intrinsically unified in pursuit of maximizing their interests. Therefore, people with such behavior tendencies are summed up as "Economic men," They are regarded as the premise hypothesis of all economic analysis, that is, economic rationality. Then, people realized that the theory of complete rational decision-making based on the "economic man" hypothesis is only an ideal model (Downs, 1957), which is far from the decision-making behavior in reality. Replacing "economic man" with "social man," the research field of decision-making theory has been dramatically expanded, and a new theory, the theory of bounded rational decision-making, has emerged (Liu Shan, 2015; Simon, 1960). The model of bounded rationality is relatively realistic, which lies between complete rationality and complete irrationality. The main point is that there are contradictions in the connotation of the means-goal chain. Simple means-goal chain analysis will lead to inaccurate conclusions that decision-makers pursue rationality but not to the maximum extent. It is the criterion of "satisfaction" rather than the optimal criterion in decision-making compared with the entirely rational limited rational decision-makers (Dang JiYun, 1994). Herbert Simon's theory of bounded rationality is a theory that considers constraints that limit a decision-makers ability to process information. He proposed introducing incomplete information, the cost of processing information, and some non-traditional objective functions for decision-makers into the economic

analysis (Jian-jun Huang, 2001). However, economists have considered these three parties for over half a century.

Contract Theory

The theory of freedom of contract and its related value judgment is called the philosophical basis of classical economics. Therefore, Smith advocated the natural order and its expansion order. Classical contract thought has three characteristics. The contract results from the choice of the parties with free will. The contract signed by the parties is not interfered with by any foreign forces. The classical contract is based on free choice and is against the government's or legislature's control or intervention. Contracts are individual and discontinuous. The contracting parties in Smith's contract have two meanings: what kind of contract they want to sign and compensation for breach of contract. There is no lasting cooperative relationship established through contracts in classical contracts. The contract is in real-time. Because individual contracts stipulate the rights, responsibilities, and obligations of the parties involved in the transaction, the terms of the agreement are clear, and there is no need to plan what will happen in the future. Therefore, the contract's negotiation, signing, and performance are all current. Contracts in classical economic theory fail to define and logically prove the basic economic categories involved in contracts. It leaves a broad space for the development of neoclassical economic contract theory. (International Symposium on Contemporary Marxist economic theory, 2006) (BaoZheYu, 2009) From the perspective of contract theory in the neoclassical economy, from the entire competition market of walrus, when the contract occurs in the imbalance between supply and demand, the market participants form the contract according to the price mechanism until the market equilibrium is achieved (Zi-jiang li, 1994). Ichworth's contract curve, as a kind of transaction in an inheritance contract, further recognizes the uncertainty of contract and becomes an essential foundation of modern contract theory. (ZHANGHui-fang and TAOKun-gang, 2005) Following the development of the general equilibrium model, he established the dynamic trading theory of macroeconomics. Starting from the analysis of personal equilibrium, the general

equilibrium, the equilibrium of enterprises, and the general equilibrium of production were deduced. In contrast, the general equilibrium of transactions was the basis of other equilibriums (Haijun & De-yun Xu, 2006). The neo-classical contract has three characteristics: the abstractness of the contract. Any contract results from both parties' bidding and the equilibrium point of the transaction. It is the result of the natural order of the market. The completeness of the contract, the terms of the contract can be written in advance, can be fully implemented afterward, the parties can accurately predict the unexpected events occurring in the course of the implementation of the contract, and make the treatment agreed by both parties.

Modern contract theory relaxed the hypothesis of neoclassical theory, replaced complete rationality with bounded rationality, and amended the "blackboard economics" with transaction cost and property right concept zero. (Physicaverlag, 2009) Coase thought that the information and market were incomplete in the real world, with limited rationality and transaction costs. Based on this, they agreed that the contract needed to be completed. How to transform market failure caused by bounded rationality, uncertainty, and information problems into tradable contracts is a problem to be solved by contract theory.

Because of limited rationality and opportunism, contracts are doomed to be incomplete. The more incomplete contracts are, the more governance structures with lower incentive intensity, less adaptability, more administrative control, and more bureaucratic characteristics should be matched. Market and government can be regarded as two extreme governance structures corresponding to complete and incomplete contracts, respectively.

Solutions to the problem of incomplete contracts mainly include: 1) The state or legal organs make up for the inefficiency caused by incomplete contracts through legislative or judicial procedures. 2) Solve the problems under incomplete contracts through the market, various bureaucratic organizations, and other governance structures. 3) We can achieve the optimal level of socially dedicated investment through a simple selective contract or re-negotiation design. In reality, most contracts rely on habits, integrity, reputation, and other social Capital to participate in the completion of the law is a matter of no choice.

Therefore, the governance mechanism derived from contract theory is to find solutions between market mechanism and government for market failure due to bounded rationality, uncertainty, and information problems.

Behavioral Science Theory

Behavioral science theory is a new discipline of human behavior, a comprehensive science that began to form in the 1930s. It has developed into one of the primary schools of management research abroad. It is an essential branch of management science. It grasps the law of people's behavior through studying people's psychological activities and finds new ways to treat employees and improve labor efficiency. Before the emergence of behavioral science management theory, classical management theory prevailed in the West.

Illsley (1964) Behavioral science is a frontier discipline that integrates applied psychology, sociology, social psychology, anthropology, economics, politics, history, law, pedagogy, psychiatry, and management theories and methods to study human behavior. It studies the laws of the generation, development, and mutual transformation of human behavior in order to predict and control human behavior.

1. **Main Viewpoints of Behavioral Science Theory**

1.1 Highlights human factors and human research.

Behavioral science reflects the progressive requirements of human social development. Behavioral science carries out the idea of being people-oriented and takes human resources as the primary resource. It attaches great importance to the development and utilization of human resources. It advocates treating workers with a humanitarian attitude through improving working conditions, improving the quality of working life of workers, training their productive skills, mobilizing people's enthusiasm, and thus improving labor efficiency. These ideas are conducive to promoting product development and social progress.

2. A perfect discipline system has been formed by absorbing and drawing lessons from the achievements of related disciplines.

Behavioral science actively absorbs the scientific knowledge of psychology, sociology, anthropology, and other disciplines. It applies the scientific methods of social investigation, observation tests, typical experiments, and case studies to study human behavior, especially the behavior of workers in production. It put forward some theories and methods to mobilize human enthusiasm and has been applied in enterprises with considerable results. Many managers, sociologists, and psychologists have studied human behavior from the perspectives of its characteristics, environment, process, and causes and formed a series of theories, making behavioral science an important school of modern Western management theory (Cameron & Collins, 2000).

3. Proposes the role of informal organizations.

Such informal organizations play two roles in protecting workers from losses caused by the negligence of internal members, such as increasing production quotas due to overproduction or aggravating the burden of peers due to underproduction, and protecting workers from losses caused by interference by managers other than informal organizations, such as lowering wage rates or raising production quotas. Mayo and others believe that informal organizations exist, whether recognized or not. It is interdependent with formal organizations, and it will affect enterprises' production efficiency and goal by influencing people's working attitudes. Therefore, managers should face up to the existence of such informal organizations and use informal organizations to serve the activities and objectives of formal organizations.

Transaction Cost Theory Research

1. Concept of Transaction Cost

Coase (1937) first recognized the importance of transaction cost in the analysis of institutional economics. The article "The Nature of Enterprises" points out that "the cost of trading through price mechanism or market exchange means" is the transaction cost, including the cost of providing price, the cost of bargaining, and the cost of concluding and executing contracts. Coase divides transaction costs into two

parts: the cost of obtaining market information and the cost of negotiation and performance. Coase believes that as a transaction complex, the economic function of an organization is to represent a number of factory owners to participate in market transactions, thereby reducing the number of traders and transaction costs. Coase's central idea is that the difference in institutions' operating costs (transaction costs) causes enterprises (organizations) to replace the market. The emergence and development of cooperative organizations can be seen as a process in which product markets are replaced by factor markets, resulting in savings in transaction costs. These continuing costs and those related to political organizations in the system constitute the essential elements of transaction costs (Shen, 2013). Furubotn and Richter (2005) argued that transaction costs should include not only "the operating costs of the economic system" but also "the costs of establishing, maintaining or changing the basic institutional framework of the system ."He divides transaction costs into market transaction costs, managerial transaction costs, and political transaction costs. Among them, market transaction costs refer to the cost of using the market and the internal ordering of enterprises; managerial transaction costs include establishing, maintaining, or changing the cost of an organization's design; political transaction costs include "establishing, maintaining and changing the cost of formal and informal political organizations in a system," and "the cost of running the government" (Furubotn and Richter, 2005). Alchain (1969) regards transaction costs as information costs. He believes obtaining and processing information about potential trading opportunities is an expensive activity that can be accomplished in different ways (Jaraite & Kažukauskas, 2012). Commons (1931) holds that the essence of economic relations is transactions and that the whole society is an organic organization composed of innumerable transactions. It also points out that "transaction" is the most basic form of economic activity and the transfer and acquisition of material ownership between individuals. Commons divides "trading" into three types: managed and quota trading (Sancilio, 2013). Then Williamson (1979, 1985) concretized the concept of transaction cost with three characteristics: uncertainty, frequency of transaction, and degree of asset-specific investment, and put forward two hypotheses: bounded rationality and opportunism (Bogt, 2003).

2. Research on the Relation between Transaction Cost and Organization (Enterprise) and Market

Alchain and Demsetz (1972) recognized that the problems of economic organizations are closely related to finding the most economical way to measure productivity and reward. It is believed that enterprises are formed as an effective organizational form to strengthen team production. Through this organizational arrangement, supervision costs (one of the transaction costs) can be reduced, and the behavior efficiency of factor owners can be enhanced (Herath & Weersink, 2009). Williamson (1988) put forward the concept of transaction cost economics and pointed out that transaction cost economics is an economic organization study that takes transaction cost as the fundamental analysis unit and examines the details of various management structures and human factors (Lafontaine and Slade, 2010). Barzel (1982) studied the same problem from the most common commodity exchanges between buyers and sellers, emphasizing the relationship between the commodity assessment cost and the market organization choice. There are many ways to organize the market. The following are the following: quality assurance, sharing contracts, brand investment, and information hiding (Cui Bing & Xiang, 2008). Yifu Lin (1990) thinks that the traditional cost-benefit analysis only considers the production cost; that is, as long as the marginal product value of each input is equal, it can get the best. However, organizational costs should also be included in the selection of institutional arrangements. Maintenance costs are the costs of enforcing the rules in such special institutional arrangements, i.e., transaction costs (Li, 2005).

Dietrich (1994) also believed that the most essential nature of an organization is a production-sales unit. The evolution of institutional arrangements should not only minimize transaction costs but also involve other factors; that is, institutional changes depend not only on the savings of transaction costs but also on the increase of benefits brought about by institutional changes (Xu Cheng Xing, 2003). In addition, North (1994) believes that with the increase in the number of traders, the frequency of transactions is gradually increasing. As a result of information asymmetry, breaches of contract, fraud, and other acts will occur in large numbers. Free-rider behavior will become a problem, which will gradually increase transaction

costs. Therefore, a form of cooperation to reduce transaction costs, increase revenue or reduce costs is needed to change this. In each case, an organization is established (Rodriguez et al., 2011). Zhang Wuchang (1983) also pointed out that the emergence and development of cooperative organizations can be seen as a process in which the product market is replaced by the factor market, resulting in the savings of transaction costs (Li-Qun Zhou and Cao Liqun, 2002).

Game Theory

With the development of game theory, especially the development and application of repetitive abandonment theory, new trends have emerged in the study of cooperative organization theory: the cooperative as an "alliance" has gradually developed, and in these studies, game theory has become an essential analytical tool widely used. Game theory, also known as game theory, is a branch of mathematics. It is mainly used for the analysis of competition problems. The result of competition depends not only on the individual's choice and opportunity but also on the choice and opportunity of other participants. The conflict between individual and collective rationality and the endless pursuit of individual egoism will eventually lead to a "balanced" situation. "Equilibrium" is a non-cooperative game equilibrium (Liu Xiaowei et al., 2004). In reality, the situation of the China-Africa cooperation equilibrium far exceeds that of the cooperation equilibrium. Therefore, "balance" is a significant expansion on the basis of the game theory and economic behavior of Von Neumann and Morgenstern, or even a revolution (Xinjiang li, 2011). At the same time, the abandoning theory also explains the importance of cooperation in competition. It proves that in the case of non-cooperation, an individual's pursuit of utility maximization may produce bad results for individuals themselves and possible collaborators, among which the widely cited examples include the "prisoner's dilemma," "Samaritan dilemma" and "contributor's dilemma" (Wang Jiahui, 2005). Therefore, competition can only operate in a somewhat perfect environment. Individual rational choices in joint action must consider the choices of others. Therefore, "cooperation" inevitably results from rational choices under competitive conditions.

"The results of these competitions show that, under the right conditions, cooperation can emerge in a world without centralized self-interest," Axelrod said. (Hui, 2016). Specifically: Even if most people are reluctant to cooperate, cooperation can be achieved through a small group of individuals who are willing to return cooperation. Cooperation should be based on returns and future impact, which is necessary enough to stabilize returns. Cooperation is not based on genuine trust but on the continuity of the relationship. When conditions are met, players can cooperate through trial-and-error learning, imitation of other successful players, or a blind process of selecting successful strategies and eliminating unsuccessful ones. In the long run, the maturity of the conditions for establishing a stable cooperation model between the two sides is more important than the mutual trust between the two sides. Friendship is not necessary for cooperative evolution. In a suitable environment, cooperation can even occur between enemies. From the point of view of game theory, it is not only a novel method to study what a good strategy in a prisoner's dilemma is to explore cooperation but also to provide a social action perspective for studying the mechanism of Chinese farmers' cooperative cooperation.

To sum up, most of the previous discussions on achieving cooperation to break through prisoners' dilemmas are based on the proposition of social integration; that is, cooperative order is part of social order. In addition, centralization, trust, and friendship are not necessary conditions for cooperation. Strong reciprocity, feedback, and compassion are the basis and conditions for cooperation. Therefore, the cooperative mechanism includes the viewpoints of social action, social Capital, national social interaction, etc.

Research on Farmer Cooperation

In 1968, Laidlaw (1968) pointed out that a critical problem facing agriculture is establishing a system adapting to the changes of demand, focusing on the familiar agricultural system - cooperatives, pointing out that the space for the development of cooperative systems could be improved. (UN official website, 2014)

Since the middle of the last century, the theoretical research of peasant cooperative organization can be roughly divided into three schools: represented by "Phillips," "Altay," and "Schultz," it is considered that "cooperatives are manufacturers" and further expand its connotation; (Xiao-Jun Yang, 2011) Cook, Chapel and so on. Cooperatives take, as a representative, regard cooperatives as a "contract set," pointing out that each cooperative is a group of producers through a series of development through the joint contract to obtain expected benefits and ultimately realize the transformation of product diversity (Shuang-long wang & Hai-hua zhou, 2012). North (1994), as the representative, proposed that "the emergence of organizations is to reduce transaction costs" (Da Fengyuan and Zhang Weidong, 2010).

1. Research on the Membership of Cooperatives

There are also many scholars in related fields, starting from the perspective of cooperative members, to model the decision-making behavior of cooperative members. For example, Karli et al. (2006), based on the survey data on the decision-making ability and understanding of the agricultural cooperative members in the southeast of Anatolian, the two Yuan logic model was used to determine the factors affecting the probability of farmers joining the agricultural cooperatives (Kinoko, 2011). Basu (2008), based on the survey data of all farmers in two different villages in India, we used Logistic regression to analyze the characteristics of farmers who affect the membership in Indian dairy cooperatives (Jia-tao Chen, 2015: Huang Ningyang & Gong Meng, 2010). Kalogeras et al. (2009) By analyzing the survey data of 120 cooperative members and using the joint analysis method, the paper points out that the effectiveness of agricultural cooperatives is related to the attributes of their members and the strategic attributes of their organizations (Xiao-Feng Zhao, 2017).

Some scholars have studied the organizational structure of cooperatives, including heterogeneity based on the different interests of farmers, investment incentives, and the design of decision-making regulations (Cook et al., 2004; Hu Xinyan and Bi-Liang Luo, 2008). Some scholars use social and economic factors and social factors to evaluate the performance of cooperatives. The results show that the organizational structure of cooperatives and the support of the government, including loans and free machinery, are the main factors affecting the performance of cooperatives (LouFeng, Cheng Shiguo, and FanQi, 2016)

Soboh et al. (2009) research also shows that if the cooperative can provide better services for its members, the cooperative will have better development prospects, and members will have a higher evaluation of it. In addition, the profitability of cooperatives is also an essential factor affecting farmers' satisfaction with cooperatives. (Jia-tao Chen, 2015)

Osterberg et al. (2009) considered that members' assessment of the success of their cooperatives was related to their participation in the management of cooperatives (Liang Qiao et al., 2014). The results show that the difference between the member's duty to the cooperative and the trust degree to the cooperative's director depends on the cooperative's profitability and the managers' managerial experience. Through comparative analysis of the performance evaluation of the two cooperatives, some scholars point out that cooperatives can also provide many invisible values that cannot be measured in money. These "invisible" values include providing market guarantees for members' products and agricultural sources, reducing price risk, providing agriculture and market services, strengthening farmers' market negotiation position, and market cooperation ability.

2. Collective Action

Collective action is the theme of economics, sociology, politics, and public management. The phenomenon of collective action cannot be separated from any group or collective action or action (Da-peng Ren and Hai-xia Guo, 2008). As early as the beginning of the 20th century, Pyotr Alexeyevich Kropotkin (1914) explored the life of human society from the perspective of biological evolution and put forward the opposite view of Darwinism. It also examines several critical historical periods of

human society through mutual assistance and cooperation. It draws the basic conclusion that human beings can build a harmonious social life by relying on the instinct of mutual assistance without resorting to authority and coercion. A society without coercion and authority can guarantee a free and perfect society for all (Yang Yumei, 2008). Merce (1962) explores the consistency of social action from the perspective of social movement and social structure (Zhi-ling Zhu, 2013). Olson (1966) explores the possibility of collective action from the incentive mechanism within the organization (Zheng Zifeng, 2011). Bentley's group theory (1968) holds that individuals with common interests will act voluntarily to promote their common interests. Only when all group members have common interests or goals and realize this goal will improve the situation of all group members will rational individuals act to achieve this goal (Ya, 2008). North (1961) understood the collective behavior under the organization from the institutional change of the new institutional economics. In the past year, some economists and social scientists have deliberated and revised the hypothesis of neoclassical theory in order to find out the lack of this theoretical explanation, which is a kind of understanding of the essence of human coordination and cooperation (Liu Junrong, 2003). Ostrom (1993) explored the collective behavior of public affairs governance. Through extensive experimental research, it was found that in the social paradox similar to the tragedy of public places, the level of actual cooperation based on trust and reciprocity rules was higher than expected. This discovery challenges the traditional theory and reflects on constructing a rational decision-making model (Zhang Kezhong, 2009).

The collective action logic of Olsen (1971) has systematically studied collective action based on the traditional rational decision perspective. It holds that unless there is a relatively small number of people in a group or unique mandatory means to motivate individuals to act in the common interest, rational individuals who pursue their interests the most will not act in the interests of their joint or group (CAI Liang Liang, 2014). At the same time, under the premise of individual rational choice, collective interests can be divided into two categories: compatible and exclusive (CAI Liangliang, 2014). According to the view of game theory, in the compatible case, it is a positive sum game, while in the entire case, it is a zero-sum

game (Liang-Qiao Zhang and Feng Congwen, 2001). Compared with the exclusive situation, it is more likely to realize the collective common interests under the compatible situation. It reveals that a collective with common interests only sometimes generate collective action because the phenomenon of free riding exists widely in the group. Therefore, a rational person will not participate in collective action because it costs private costs, and the collective benefit is shared. Therefore, Olsen designed a mandatory and selective incentive organizational strategy. The former refers to a centralized way of forcing group members to participate in collective action. The latter refers to the combination of positive rewards and negative punishment, giving rewards to members who participate in collective action without punishment. At the same time, using his collective action theory, we analyzed the necessary condition for the prosperity of our country's economy and society. We must clearly and clearly define all personal rights and make them safe. The contract can be carried out fairly and effectively without predating private rights. On this basis, we established the "market expanding government." It refers to having sufficient power to form and protect private property rights, to implement contracts effectively, and to form restrictions on the plundering of individual rights to promote social and economic prosperity (Yi Xianrong, 2001).

Ostrom (2000) analyses and evaluates the relevant theories of "tragedy of the commons," "prisoner's dilemma," and "logic of collective action" and their governance models, respectively. The persuasiveness of these models is due to the fact that they grasp the critical aspects of many different problems in different backgrounds around the world. Those constraints assumed to be fixed for analysis are, in reality. These models will be dangerous in scenarios where they are also assumed to be fixed and based on the generalization and application of model results (Hu Shu Yang and Zhao Lijiang, 2015). As a form of economic organization, the production efficiency of a collective economic organization is not determined by the organization itself but by whether the problem of supervision and incentive cost can be well solved (ZhuLiYun, Li Tong, Zhao Huifeng, and Guo Yang, 2007). Amartyasen (1985) believed that the inefficiency of collective action in history primarily stems from the inefficiency of incentives caused by external political factors. As a social

phenomenon, collective action runs through the whole human society. As long as there is a cooperation problem in the supply of public goods that a single individual can not achieve, there is a phenomenon of collective action (Yang Yifeng, 2010). As a theory, the study of collective action runs through the whole social science field. As long as there is a problem of overcoming the "free rider" predicament in cooperation, we must use the theoretical analysis framework of collective action (Li Juanna, 2007).

3. Study on Cooperation Willingness

Scholars' research on farmer cooperation also focuses on farmers' willingness to cooperate and its influencing factors. Most scholars support cooperative behavior or cooperative organizations to bring farmers higher income, but the willingness of farmers to cooperate and its influencing factors should be more diversified.

According to Robotka and Phillips (1953) purpose of farmer, cooperation is to obtain scale economic benefits. Furthermore, other scholars support farmers to participate in cooperation based on the desire for market information to meet the growing demand of consumers (Huang Zuhui, 2008). Raaana Wteize, an Israeli scholar, in his masterpiece, From Poor Farmers to Modern Farmers, mainly emphasizes the study of farmer cooperation from the organization's perspective and effectively alleviates the disadvantage of farmer groups by establishing cooperatives and other organizational structures. In addition, this paper studies the vertical coordination of the food industry in the United States from the perspective of transaction costs. It holds that farmers' participation in cooperation primarily aims to reduce transaction costs (AvrahamHanadari and Changjiang, 1999). Schrade (1998) pointed out that farmers' participation in cooperation can enhance their market competitiveness and reduce their market risks (Chunjie and Jintian, 2013). In addition, research by scholars such as Ruster (1996) shows that the head of household has a degree of risk appetite, the education level of the head of household, the history of producing agricultural products, the scale of production of farmers, the distance between farmers and farmers and the consumer market, and the local government. Support and infrastructure conditions in the local rural areas influence farmers' participation in agricultural product sales cooperation. An essential factor in cooperation (Li-Qing Xi, 2010). The above scholars have studied the factors affecting farmers' willingness

to cooperate from different perspectives, which provides a valuable reference for this study.

4. A Study of Cooperative Motivation

Laanan Weitze, an Israeli scholar, in the book "From the impoverished peasants to the modern peasants, the rural development strategy and the comprehensive development of the rural areas of Israel," expounds that the strength of the weak lies in unity and emphasizes the study of the peasant problem from the perspective of the organization (Avraham Hanadari & Han Changjiang, 1999).

Doyetal (1992) has certain advantages in this respect. Farmers establish cooperative relations with these organizations to obtain necessary market information (Jia, 2006). Barkema (1993) believes that farmers participate in cooperation in order to adjust their production decisions so that their products can adapt to market changes and ensure product sales (Taixiang, 2011). The above two scholars believe that the purpose of participating in the cooperation is to obtain market information and meet the growing needs of consumers.

Frank (1992) found that farmers participate in cooperation to reduce transaction costs from the perspective of transaction costs. (susbin Long-bao wei, 2004)

Schrader (1998) thinks that farmers participate in cooperation to enhance market competitiveness and reduce market risk (Chunjie and Jintian, 2013).

Williamson (1975) defines transaction costs from asset specificity, uncertainty, and efficiency. On this basis, the principle of determining the boundary of enterprises is analyzed, and the concept of effective boundaries is proposed from the perspective of core technology. (Yao Chuanjiang Xiao Jing, 2004)

Chinese researchers Huang Zuhui et al. (2002) have put forward the factors that affect the development of farmers' cooperative economic organization, which can be generally attributed to product characteristics, production clusters, cooperative members, and institutional environment.

Sun Yafan (2003) analyzed the types, functions, operational mechanisms, institutional performance, existing problems, and development trends of peasant

cooperative economic organizations in reality by investigating the development status of peasant cooperative economic organizations nationwide.

Huang Jun and Haiying Gu (2005) analyzed the dilemma of peasant household cooperation in the game analysis and realistic interpretation of the cooperative behavior of Chinese farmers. Finally, farmers' cooperative behaviors and ways in real life were explained. Li Yibo and Zhu Kaojin (2006) analyzed the institutional factors, the insufficiency of cooperative organizations, the absence of contractual spirit in rural communities, and the family ties that affected farmers' cooperative behavior in the article "Research on Farmers" "Cooperative Behavior."

Jinyong Guo (2008) studied the factors influencing farmers' willingness to cooperate from the marketing perspective in Empirical Research on Farmers' Cooperative Behavior in Agricultural Product Marketing.

5. Main Schools of Cooperative Theory

Scholars' research on cooperative economic theory is divided into two schools; one is the school of thought, which advocates that farmers build cooperatives based on product lines and emphasizes that farmers form a market power with a certain monopoly degree. Two, the market competition scale school believes that farmers enter the market through cooperatives, and on the one hand, it improves farmers' status in the market. Increasing farmers' income, on the other hand, will enhance the competitiveness of the market. Cooperatives play the role of social public goods as a market competition yardstick. Therefore, the government should implement public support policies. Under the guidance of these ideas, different forms of cooperatives have gradually developed in various parts of the world, which also promotes the continuous improvement of cooperative economic theory. The development of farmer cooperation abroad can be divided into three modes: European mode, American mode, and Japanese-Korean mode (Shengwen, 2007).

The main characteristic of the European model of farmer cooperation is its strong specialty, represented by Germany, France, and Denmark. Its peasant cooperative organizations fully represent the interests of peasants and serve as a bridge and link between peasants and the market and the government. The purpose

of farmer cooperation is to expand the scale of agricultural production, save costs, enhance the market competitiveness of agricultural products, enhance the added value of agricultural products, promote the use of large-scale modern machinery and equipment, and improve the utilization rate of production tools. The scale of peasant cooperation in the European model is large, the cooperation among cooperatives is close, and the peasant cooperation system is relatively perfect.

The main characteristics of the American (Ting, 2005) mode of farmers' cooperation are management science and a wide range of types represented by the United States, Canada, and China. The forms of farmer cooperation are various, but a cooperative only manages one kind of product, which involves sales, storage, transportation, and deep development of products. It fully reflects the characteristics of agricultural industrialization and modernization. The cooperative economy of farmers in the American model is characterized by prominent characteristics, a high degree of freedom, and less government intervention. Its task of cooperation is to safeguard the interests of farmers, promote advanced agricultural production technology, help farmers enhance their market competitiveness, and coordinate the relationship between farmers and the government.

The characteristics of Japan and South Korea Shanming, Xun, and Jinhua (2015) are closely related to the government. They are represented by Japan, Korea, India, and Israel. This kind of farmer cooperation mode is the coexistence of comprehensive and professional farmer's associations, mainly responsible for implementing government policies. At the same time, the government also gives a lot of financial and policy support to cooperative organizations.

Although the forms of peasant cooperation are various, their essential characteristics are the same, such as democratic management, voluntary joining, and freedom of withdrawal. The ultimate goal is to safeguard the interests of peasants and help them solve the difficulties of production and life. More and more countries attach importance to promoting farmers' income through farmer cooperation. Farmer cooperation in many developed countries has become essential to rural development. With the progress and development of the times, peasant cooperation will also be more perfect and diversified.

China's Research on Farmers' Cooperation

Chinese scholars mainly focus on the definition, type, and inevitability of farmers' cooperation, farmers' willingness to cooperate, habits of cooperation, influencing factors of farmers' cooperation, farmers' cooperation, and the relationship between government and farmers. In recent years, some scholars have extended the study of farmers' cooperation to the incentive mechanism of internal cooperation (Luo Qianwen, 2009) and agricultural specialization (Yang Dan, 2011).

1. Research the Definition, Type, and Necessity of Farmer Cooperation

The definition of farmer cooperation Xiong Wansheng (2008) holds that the concept of cooperation can be divided into broad and narrow. In a narrow sense, farmer cooperation refers to two or more farmers providing equal and shared goods or services to a certain extent self-sufficient; in a broad sense, reciprocal and modern enterprises can be regarded as cooperation. Qiu Menghua (2008) further pointed out that peasant cooperation refers to the social interaction process between peasants and other peasants to solve their problems and difficulties in production and life. These problems and difficulties can only depend on peasants to unite individuals and families, and other peasants coordinate their actions to achieve beneficial results for themselves and others. Formally, farmer cooperation can be divided into the following two categories: social exchange network cooperation and collective action cooperation. Xinyou and Fang (2010) believe that farmers' cooperation refers to the process of meeting the needs of farmers and individuals and groups in the process of leaping social rationality and economic rationality in order to meet or maintain their interests, to separate individual risks and to draw the necessary social resources. Individuals and groups reach a joint action. Tang Yuanxiong and Chen Wenjiang (2011) believe that farmer cooperation is a kind of joint action between farmers to achieve particular common interests or goals. However, it needs to be emphasized that cooperation between Tang Yuanxiong and Chen Wenjiang does not necessarily take the form of organization; on the contrary, as long as coordinated actions are cooperative on the types of farmer cooperation. Luo Xingzuo (2004) is representative of the classification of farmer cooperation types. He divides cooperation into two types: Exogenous cooperation, i.e., forcing people to cooperate by bringing dispersed

individuals into a particular organizational system through external pressure. The goal orientation of cooperation is national. The most typical example is the people's commune system; the second is endogenous, i.e., market-based voluntary cooperation, which is market-based and benefits-based. Through internal rules to achieve cooperation or regional-based autonomous cooperation, that is, to a particular region as the boundary, to the community interests and standard norms based on identifying community affairs to achieve organizational governance. Some scholars classify farmer cooperation into family mutual assistance and public welfare (Mingming, 1997), social exchange network cooperation, and collective action cooperation (Qiu Menghua, 2008). Xiao Zanjun and Liu Xing (2007) classified cooperation into two types: informal labor cooperation and formal labor cooperation. They pointed out that with the deepening of the reform of the market economy system, the marginal productivity of rural labor will gradually increase and show a differentiation trend. The opportunity cost of rural labor will gradually evolve into a sequence from big to small. The market mode will further replace informal labor cooperation, and rural informal labor cooperation will eventually withdraw from the historical stage.

Liang ShuMing (2011). Thirsty is based on a cultural perspective to explore the attributes of Chinese rural areas and farmers. Liang Shuming (2005) pointed out that Chinese society has always been decentralized and unorganized. It has no tradition of organizational discipline and cooperation. Faced with the challenges of modern society, the most severe problem in China is the need for habits, forms, and ideas in collective life. Due to the lack of training in collective life, Chinese people have two serious problems: a need for more discipline and organizational skills. To achieve modernization, China must unite farmers to form an organized and active organization based on rational and ethical relations. Huang Zuhui (2000), based on the analysis of the industrial characteristics of agriculture, shows that farmers can form a more powerful counterforce through mutual cooperation so as to change the weak position of individual farmers in market negotiations. Fu Chen (2006), based on the perspective of agricultural industrial characteristics, further analysis also supports the inevitability of farmers' cooperation. Fu Chen (2006) pointed out that as long as

the most fundamental characteristics of agricultural production, namely, the geographical dispersion, the biological nature of production, and the non-uniformity of scale exist, the cooperation of farmers will inevitably exist.

Niu Ruofeng (2000) and Ruofeng (1999) also believed that competition and cooperation are two wheels of the market economy and two main forces to promote the progress of the modern economy and society. Du Yintang (2002) and Jiang Minlun et al. (2005) have found that reducing market risk losses and improving market negotiation ability are two primary motivations for farmers to choose cooperation and enter the market through farmers' professional cooperative economic organizations.

Other scholars have analyzed it from the perspective of institutional economics. Miao Xiaoling (2005) and Feng Daojie (2007) applied the cost-benefit theory to the emergence of farmer-cooperative economic organizations.

2. Rational Small Agriculture School

The primary representative of the school is Siodin Schulz (Pan Jintang, 2003). The school follows the hypothesis of humans in Western economics and holds that small farmers are rational "economic men" and pursue maximum profits. According to this school, modern investment at a reasonable cost is needed to transform traditional agriculture. Once modern technology factor input can guarantee profit at the current price level, farmers will not hesitate to become the pursuer of maximum profit. Therefore, the way to transform traditional agriculture should maintain the function of farmers' production organization and free market system but ensure the supply of modern production factors at a reasonable cost in existing organizations and markets.

Under the hypothesis that farmers' economic behavior is rational, the school also analyses the root causes of farmers' poverty. The school believes that differences in initial conditions should not explain the achievement of developing countries but should be explained by policy differences. A country's poverty is not due to the vicious circle of poverty but because bad external conditions do not cause bad policies but because of inappropriate domestic policies. Agriculture was once the biggest victim of lousy economics. Industrialization was pushed to the point

where agricultural development was undermined, agriculture was squeezed, farmers' response to the stimulus was ignored, and the economic importance of the deteriorating land was ignored. Improper economic analysis has led to economic policy failures and significantly distorted agricultural stimulus. Using this school's judgment seems more appropriate to explain the agricultural and household economic growth changes before and after China's rural reform. According to this school, the most fundamental goal of economic system reform is human capital growth.

3. School of Organizational Production

Chayanov of Russia mainly represents the school. The school holds that the economic development of peasant household management differs from that of capitalist enterprises in two main aspects. It relies on its labor force instead of employing a labor force. Its products are mainly to meet the self-sufficiency needs of families rather than to pursue the maximization of market profits. Farmer's labor input can not calculate its cost because it is not expressed in the form of wages, and input and output are often inseparable as a whole, so in pursuit of maximization, farmers choose the balance between satisfying their own consumption needs and labor hardship, rather than the balance between profits and costs.

According to the research and analysis of this school, the reason for the differentiation of peasant households is the change in the proportion of workers and consumers in the family cycle, not the peasant differentiation brought about by commercialization. The school believes that the transformation of the Russian household economy must go the way of Stalin's collectivization and the Western free market. Instead, it should focus on spontaneously forming small cooperatives. Although the school was suppressed during the period, the fact that the economic development of the peasant household in the less developed countries continued to develop makes this theory still strong vitality.

4. Historical school

The school is mainly represented by Huang Zongzhi in China. After analyzing several other schools, Huang Zongzhi believed that small farmers had the rationality to pursue maximum consumption. According to the school, farmers continue to put

in their labor even when marginal remuneration is meager, probably because the employment opportunities in rural areas are almost zero, so the opportunity cost of labor is almost zero.

After analyzing several centuries of agricultural development in China before liberation, he proposed that China's agriculture is "growth without development" and "overdense commercialization." It is considered that China's rural reform in the 80s was a process of anti-densification. Generally speaking, any farmer is pursuing "utility maximization," and the value of the farmer here is related to specific factors, including the synthesis of natural, economic, social, and cultural factors. Therefore, different patterns of farmer households' economic behavior are the products of specific factors, which show certain rationality of existence. Huang Zongzhi's comprehensive analysis of small farmers is based on the classification of small farmers. He believes there is a certain surplus of wealthy farmers or farmers, and self-cultivated farmers mainly producing for their consumption is in line with the image of small farmers replaced by materialism (Chen Yongqin, 2007).

5. Theory of Optimizing Farmers

The primary representative of the school is Frank Alyce of England. There are five types of theories: profit-oriented farmers, risk-averse farmers, labor-averse farmers, some farmers who participate in the market, and stratified farmers. Each theory assumes that farmers are pursuing the maximization of one or more family goals, according to the classic paper by Michael Lipton (2004) (Dinopoulos & Segerstrom, 2004). Law is "the pursuit of optimization of the farmer theory." The five theories aim at maximizing profit or utility but have different assumptions.

The most basic policy implication of the profit maximization farmer theory is that farmers' families respond to agriculture's input and output prices in accordance with the economic theory. The speed and extent of their response depend on their resource constraints and the degree of market failure.

The risk aversion theory holds that government intervention should be used to compensate for the adverse effects of risk aversion on agricultural productivity and growth. It holds that government policy is based on an unstated assumption that it aims to lead farmers' economies toward complete competition.

The theory of the hierarchical system holds that the system of peasant cooperatives should change the social environment of peasant production, and the economic incentives of individual peasant households should be changed eventually. It also emphasizes that the educational concept should be modernized and "vertical cooperation." Through such common goals and actions, peasant households will increasingly unite, their output will be further improved, and their production will be further deepened.

6. Research on Farmers' Willingness and Ability to Cooperate

Guo Zhihai (2009), through the survey of farmers' willingness and demand for cooperation in rural areas, we find that farmers' understanding of rural specialized cooperative economic organizations could be higher, but the demand is strong. The ideal cooperative system for peasant households is not very different from the traditional cooperative system in terms of a "one person, one vote" voting system. However, it also emphasizes the principle of the shareholding system in terms of the distribution system and entry and exit system. Therefore, in formulating relevant laws and regulations, we should consider the traditional cooperative system principle but also the related principles of the stock system. Only by combining the two can we formulate a cooperative way that meets the needs of farmers and has vitality. Hu Minhua (2007) believes that the emergence of farmers' cooperative behavior is the unity of their willingness to cooperate and their ability to cooperate. Among them, the willingness to cooperate is a vital prerequisite and basis for the emergence of rational farmers' cooperative behavior. The establishment of cooperative economic organizations must take into account the external environment on which they rely. These variables reflecting cooperative ability are necessary realistic conditions for rational farmers to cooperate. At the same time, it is also an essential determinant of the degree of farmers' cooperation and the development of cooperative economic organizations.

Some scholars pointed out that there is a typical phenomenon of "good peasants are not good at each other." From generation to generation, the small-scale peasant class relied on mutual assistance to solve a large number of cooperation problems. However, when faced with the enormous challenges caused by the

modern market, and political and social changes, the peasants showed apparent decentralization and numbness, which is regrettable and annoying. Therefore, Professor Cao Jinqing (2003); Linlin and Junjun (2003), a famous sociologist in China, put forward the famous proposition of "good farmers and bad people" in "China by the side of the border." He Xuefeng (1999) thought that although it is not true to say "farmers are good and bad at all" in general terms, it is because farmers' cooperation ability is excellent in places where traditional organizations exist and in traditional Chinese society. However, it is appropriate to use "farmers' good points and bad scores" as the accurate portrayal of most rural areas in China due to the strong impact of the revolutionary movement. Furthermore, the continuous infiltration of the market economy has led to the gradual decline of traditional organizations in some rural areas of China, the increasing atomization of farmers, and the high cost of cooperation between the increasingly atomized farmers, leading to the difficulty of cooperation. It ultimately leads to the fact that "bad cooperation" is a fact. The study of Dang Guo Ying (2007) shows that the crux of Chinese farmers' "mismatch" is not the lack of so-called cooperative quality but the lack of external social forces willing to cooperate with them reasonably. Luo Xingzuo (2006), in his book "water control: state intervention and farmers cooperation," discusses the mechanism of farmers' cooperation in water control studied in depth; that is, farmers can cooperate on what basis. However, other scholars hold the opposite view. Wu Si (2001) disagreed with regard to "mismatch" as a "national character" of Chinese farmers. He believes that farmers' non-cooperation or difficulty in cooperation is only the natural result of farmers' seeking profits and avoiding disadvantages. Yong (2007) it is pointed out that "farmers' good points and bad combinations" are not "doomed," but all of them should be attributed to the benefits of "dividing" and "combining." Driven by interests, peasants can be "benevolent" or "benevolent." In short, we need to consider the willingness and ability of farmers to cooperate. The reason why it is difficult for peasants to form practical cooperation is not that they lack so-called "economic man rationality," but because of the particular logic of action formed by peasants in their daily life: not how much I get or lose, but that others can not get extra benefits from my actions in vain. Luo Xingzuo (2004) also believed that farmer cooperation is a

group behavior, mainly including endogenous and exogenous types. Whether farmers choose cooperation is not a value judgment; on the contrary, it is a fact judgment. It is a confusing and unclear question to talk abstractly about whether peasants are "benevolent" or "benevolent" without investigating the types and bases of cooperation. Zhao Quanmin and Li Yi (2004) investigated the cooperative economy of Chinese rural society from the social capital perspective. They found that "special trust" based on kinship or blood relationship is a critical action logic for Chinese farmers to move towards cooperation, prompting individual farmers to cooperate and form cooperative economic organizations in the face of market challenges. Furthermore, the "scale limit" scope ultimately restricts the expansion of cooperative economic organizations to a larger scale and space.

7. Study on the Influencing Factors of Farmer Cooperation

Chinese scholars have made some exploratory research on the related factors of farmers' participation in cooperative organizations from the micro perspective of farmers' cooperative behavior and have made many academic achievements. These achievements are mainly manifested in the following three aspects:

Research on the norms of factors affecting farmers' cooperation. Some scholars, such as Huang Zuhui et al. (2002), have found that the variables that affect the development of farmers' professional cooperative organizations can be attributed to product characteristics, biological cluster factors, cooperative member factors, and institutional environmental factors. Zhao Xiaofeng (2004) further pointed out that the factors affecting farmers' choice of cooperation mainly manifest in the following aspects: high system operation costs, high system operation costs, scarce rural elites and authority, low quality of left behind farmers and traditional factors; Rational Peasant ratio.

Guo Hongdong and Qian Cuihong (2004) studied the degree of peasant household culture age area of agricultural land operation income ratio sell complex problem planting history back large proportions of the salesman farmers organize sales, and many other factors that affect the will of farmers to participate in the cooperation Chen Chong (2007) for the empirical study of the influence factors of

farmers' participation in cooperation has concluded similar views dong-ping Zhang (2007), (Xianghu, Xinye, and Fu, 2008) analyzes the cultural degree family labor age and gender for farmers by education degree of land management scale factors such as the impact on farmers to participate in the cooperation organization Xiang-hu lu thought, such as factors affecting farmers to participate in the will of farmers' professional cooperative organizations mainly include: the type of agricultural leading agricultural commercialization degree of dominant agricultural products sales price fluctuation in the agricultural product market radius of the leading agricultural products accounted for the proportion of total household income farmers in the process of agricultural production and operation difficulties to cultivated land area of family size and family heads individual characteristics and so on.

8. Research on Peasant Cooperation Model

Liu Jinsong (2004), according to the difference in business scope, the new agricultural cooperative economic organization can be divided into three types: the main body of circulation service, primary product, and comprehensive. It is considered that the cooperative economic organization with the main body of circulation service is a new type of agricultural cooperative economic organization urgently needed by the Chinese farmers for the actual situation of China's agricultural development. Jun et al. (2005) and others believe that the formation mode of new farmers' professional cooperative economic organizations mainly includes three types: supply and marketing-oriented, community cooperative economic organizations oriented, and farmers' spontaneous leading. Based on the institutional analysis framework of Yang and Liang (2007), the specialized cooperative economic organizations in Contemporary Rural China are divided into two categories: spontaneous institutional arrangements for cooperation and institutional arrangements led by the government. Fan Xiaojian (1999) thinks that there are two ways to develop rural cooperative organizations in China: the first is the idea of great integration and excellent cooperation, that is, the integration of credit, supply and marketing, technical services, and the integration of small towns and cooperatives, which drives farmers to form comprehensive cooperatives. This is similar to the Comprehensive Agricultural Association of Japan; the second is based on the existing

development and improvement. Road, that is, community cooperatives, professional cooperatives, supply and marketing cooperatives, and credit cooperatives have their system, long-term coexistence, self-transformation, and self-development. Huang Zuhui (2000) believes that farmers' cooperation can be divided into horizontal cooperation and vertical cooperation. Among them, traditional farmer cooperation primarily manifests as horizontal cooperation. This kind of cooperative organization mainly focuses on linking scattered farmers together to form a solid counterforce to the market and protect the fundamental interests of farmers themselves. From the perspective of the development process of farmer cooperation in Western developed countries, farmer cooperation characterized by vertical integration is the further development and innovation of traditional agricultural cooperation. It is linked with market competition and is called a new or new generation of farmer cooperation mode in academia.

9. Research on the Cooperation between the Government and the Farmers

The relationship between government and peasant cooperation is essential in studying peasant cooperation. Different scholars have different suggestions on the role of government in peasant cooperation. More scholars believe that the government should play a role in promoting farmers' cooperation. Zhao Yu and others (2013) believe that the most effective way for the government to maximize the benefits of poverty alleviation and development is to divide the powers and labor between the government and the peasant households rationally, develop their strengths and avoid their weaknesses, and cooperate closely. Shen Duanfeng (2007) pointed out that the current discussion on peasant cooperation and organization needs to emphasize the peasant's voluntariness and pay attention to the compulsory role of the state. Liao Yunfeng (2004) believed that under the market economy, the government's assistance to rural cooperative economic organizations should not only be reflected in financial support but also legal support and protection, establish macro-management and coordination institutions of cooperative economic organizations, and correctly guide the theoretical innovation of cooperative system and cooperative economy.

The training and cultivation of the required talents and so on. Cao Jinqing (2002) thinks that because of traditional experience, China's small farmers can not go to spontaneous contract integration solely on their own experience and strength. They must import new cooperative organizations and principles from outside to rural areas and farmers. Nevertheless, it can only be done indirectly by local governments and officials. Yuan Peng (2001) believes that the role of the government in peasant cooperative organizations should be more embody the strengthening of cooperative legislation, the formulation of economic support policies, the provision of public goods, and other macro aspects of creating a sound institutional space for the healthy growth of the farmers' cooperative organizations. Zhao Xiaofeng (2007) believes that the current stage of agricultural development is facing the stage of plight, which makes the farmers' cooperation objective and necessary. Due to some constraints, rational peasants prefer not to cooperate. The paradox of subjective and objective choice requires the decisive intervention of state power. Jiang Yufu (2007) pointed out that the government must effectively participate in peasant cooperative organizations through legislation, guidance, cultivation of cooperative culture, and other means to enhance the cooperative ability of farmers, but the government only actively participates in the low cooperative ability of farmers. Once the peasant organizations fostered by the government are on the right track, the government must abdicate in time. Dang Guoying (2007) questioned the role of the government in promoting peasant cooperation. He used facts to illustrate that the relationship between government control and peasant cooperation tended to be one by one; the closer the government control was, the more difficult it was for peasants to cooperate. The existence of the government will replace the role of NGOs, and this substitution is only sometimes efficient. Chinese people can cooperate among the people, but if government involvement in society is too deep, it will stifle many possibilities of civil cooperation.

Cheng Shulan (2005). Guo Lu Lai (2006), Kong Xiangzhi and Chen Danmei (2007), and Xiangzhi and Shulan (1997) scholars from cooperative economic organizations are the self-help economic organizations formed by socially vulnerable groups. They have positive external effects on promoting economic competition,

political democracy, and social stability, and achieve the unification of fairness and efficiency in a particular range and extent; and the anti-market nature of the institutional arrangements of the peasant cooperative organizations. The weak nature of the agricultural industry demonstrates the theoretical basis of the government's support for farmers' cooperative organizations.

In summary, there are many studies on farmer cooperation, but there are few related studies on the effect of small-scale farmer cooperation and preliminary analysis of the factors affecting the effect of cooperation, so more research is needed (Chong, 2007). Rural cooperation in China is constantly occurring in many aspects. In agricultural production, there is great difficulty in the convergence between small farmers and big markets, especially in scale. Small farmers' production costs, stability of production quality, continuity of products' annual supply, and the close relationship between market brands and purchasers will make small farmers enter the market competition. The contest was at a disadvantage. On the one hand, from the perspective of enterprises, under the Chinese rural operation mode with small farmers as the main body, the operation of enterprises is difficult to obtain because of the constraints of agricultural means of production. On the other hand, from the government's point of view, the government needs to develop the local economy and raise farmers' income as the government's goals. In one respect, the goals of the government, enterprises, and small farmers are the same. However, because they represent different stakeholders, they have a competitive relationship. They cooperate on the basis of fully considering the interests of the three parties. The cooperation between them is effective and sustainable.

Conceptual Framework

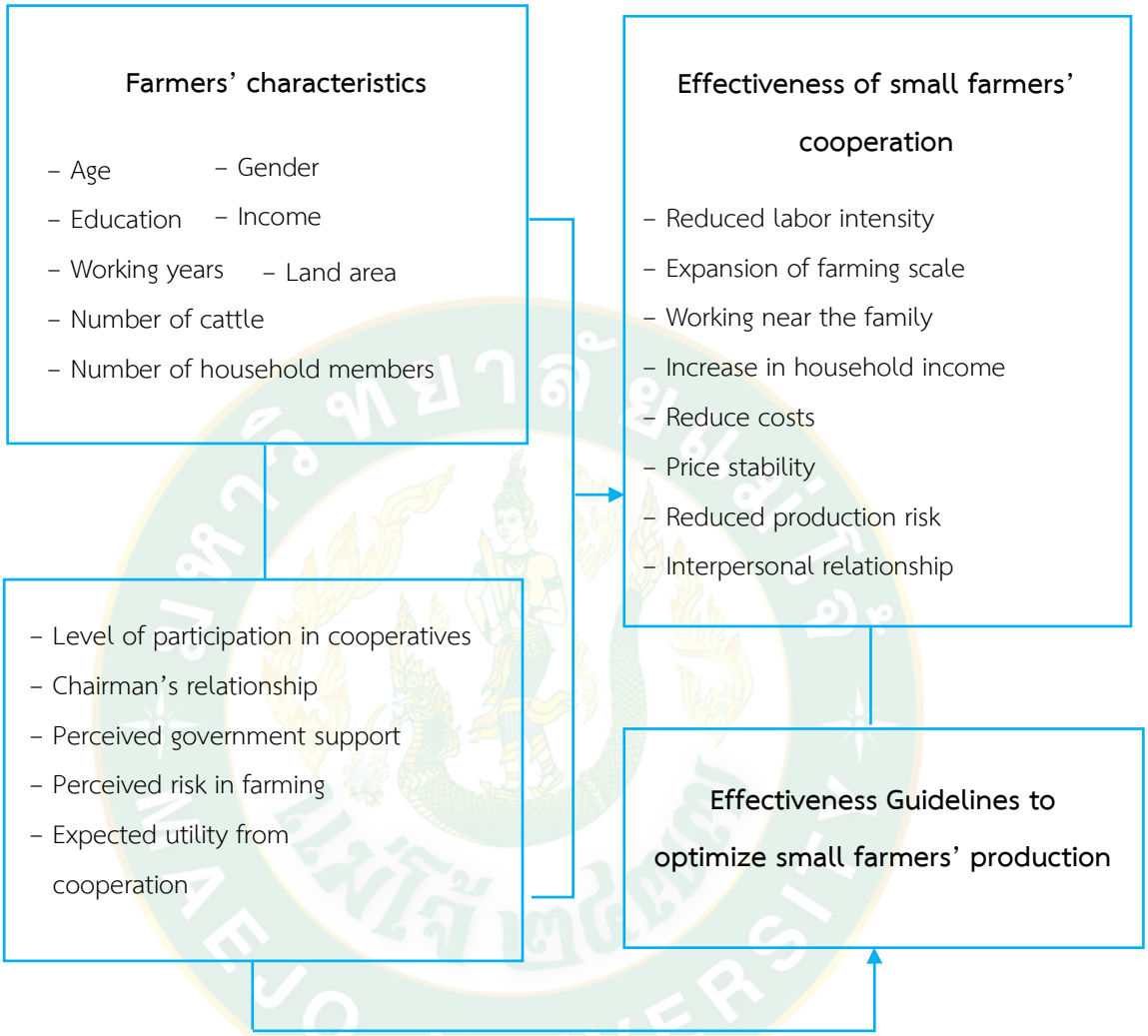

Figure 1 Conceptual Framework

Some scholars believe that qualitative data has more advantages than quantitative data in social science research, including Shaw (2003) and Goodman (2005). Among many other data collection methods used in qualitative research, the focus group technique has been adopted for its higher value, including Reid (1994), Sinclair (2000), and Tucker (2005) et al.

After collecting quantitative data, in consultation with the local beef cattle farming management, it was decided to collect qualitative data from business owners, cooperative leaders, small farmers, and agricultural expert interviewees in the form of a focus group technique.

To this end, two groups were arranged, one in the rural Guangnan Beef Cattle Farming Cooperative (Meeting 1) and the other in the grassroots agricultural extension office (Meeting 2). Meeting 1 was completed with the help of members of the cooperative, and the criteria for participants were mainly :

1. The president and other persons in charge of the cooperative,

2. Members of cooperatives and farmers who have accumulated rich breeding experience in surrounding areas.

3. Cadres and other village leaders in the countryside (including influential elders in the village)

Meet2 with the help of grassroots agricultural extension staff, the following are the criteria for selecting participants:

1. Breeding experts

2. Grassroots promotion personnel

3. The person in charge of the enterprise

The group for Meet1 is scheduled for May 10, 2020, and the group for Meeting 2 is scheduled for May 11, 2020. In the discussion of the two groups:

The researchers used the following steps when conducting group discussions:

Step 1: Through the introduction of the intermediary, get to know the person in charge of the local cooperative, village cadres, and some farmers, and through communication, deepen the impression and emotion, and then introduce and explain the purpose and goal of the visit and the activities to be carried out. Moreover, get their support.

Step 2: Before the meeting begins, identify issues and prioritize with those attending the meeting through informal settings, home visits, etc. The goal is to help meeting participants describe their situation clearly and comprehensively, including (a) What needs to be discussed? (b) Why are you discussing (c) What do you find out about this problem (c) What do you think should be done (d) What do you need the

government to do for you? This investigative phase involves defining and describing the problem to be investigated and the context in which it exists. Questions will focus on the agricultural practices currently used by small farmers.

As facilitators of the activity, the investigators asked the participants about their problems, constraints, and issues in their cooperation in beef cattle farming.

After a complete discussion, the researchers formulate the agricultural strategy, and experts in beef cattle breeding, processing, and marketing are invited to provide opinions and suggestions for further refinement.

The research process is divided into three stages: the initial stage, the research stage, and the closing stage.

early stage

This phase includes the activities necessary to prepare for the actual study. The preparatory phase is critical in determining the research's aims and objectives, the expected results, and the benefits provided to the research subjects, including site selection and sampling procedures.

research stage

This phase involves data collection, including survey research and focus group discussion methods. The relevant information collected is 1. Farmer characteristics; 2. Farmer resource endowment; 3. Farmer's current method of beef cattle; characteristics of cooperation.

The final stage

Activities at this stage include data interpretation and analysis and writing results, conclusions, and recommendations.

CHAPTER 3

RESEARCH METHODOLOGY

This section provides the layout of the research methodology. It resumes with some general information about the study location. From here research method will be discussed in intricate detail to obtain data.

Locale of the Study

This study mainly uses qualitative methods to study the content of the study. Through the study of phenomena, we can see the essence of the problem through phenomena. The study will collect a large number of first-hand data to study the problem. The research methods are guided by grounded theory, and the researchers use scientific and empirical methods to solve the problems step by step through research.

By collecting the economic, social, and cultural information of beef cattle farmers, we can understand the main ways and effects of farmers' cooperation, find out the main factors affecting the effect of cooperation, and use the implementation of national policies to promote the optimization of cooperation, improve the effectiveness of cooperation, and promote farmers' income and rural development.

This study will select the county of Yunnan Province as the research site. The research site will be shown in the three pictures below.

Figure 2 China map

The province is located in the southwest of China, with a population of 47 million, a mountainous plateau, and a mountainous area accounting for 88.6% of the province's total area. The climate is a subtropical and tropical monsoon climate. The primary income of small farmers is derived from grain, flue-cured tobacco, vegetables, fruits, Chinese herbal medicines, and animal husbandry. Beef cattle farming is one of the primary sources of farmers' income.

Figure 3 Map of Yunnan

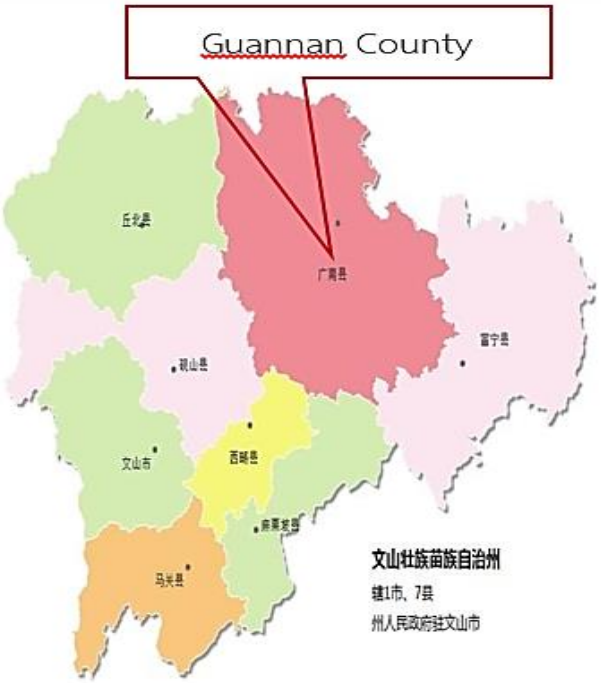

Figure 4 Map of Guangnan County

The county is 480 km, with 7810 square kilometers, 94.7% of the mountainous and half mountainous areas, and 624 thousand mu of arable land. 61.8% of the population are ethnic minorities. In addition to relying on the farming industry, beef cattle farming is most farmers' primary income source. The county is also the province's main area for beef cattle farming. Guangnan County is located in the northeastern part of Wenshan Prefecture, Yunnan Province, with favorable climatic conditions, abundant rainfall, abundant sunshine, and abundant pasture resources. Local farmers have the tradition of raising cattle. At the same time, the county is one of the six famous cattle in the province. Guangnan County is rich in natural resources and excellent varieties of resources, and the beef cattle industry has great potential for development. In 2017, the number of beef cattle in stock was 415,000, with more than 80,000 employees and about 30,000 households. The beef cattle industry plays a crucial role in agriculture, and the development of the beef cattle industry has become an essential way for farmers to get rid of poverty and become rich.

Research methods

The concrete methods commonly used in social science research can be divided into two categories: fixed quantitative and qualitative. Quantitative research means to explain social phenomena or processes by measuring the quantitative characteristics and changes of variables and analyzing the quantitative relations. Qualitative research focuses on describing, analyzing, and revealing the characteristics and essence of phenomena or processes. Quantitative and qualitative research institutes collect materials and use analytical methods with distinct differences, and each has its advantages and limitations.

Usually, researchers can choose appropriate methods according to the research objectives and characteristics of the object of study. The quantitative research method is more suitable for deducing the whole from samples, and the qualitative research method is more suitable for revealing the whole picture and

overall characteristics of the object of study. Sometimes, a specific study may include or combine two methods.

Quantitative research means to explain social phenomena or processes by measuring the quantitative characteristics and changes of variables and analyzing the quantitative relations. Qualitative research focuses on describing, analyzing, and revealing the characteristics and essence of phenomena or processes.

1. Questionnaire survey

A questionnaire survey is one of the most commonly used methods for collecting data in sociological research. The questionnaire method systematically inquires about the social background, attitude, and behavior of the subjects to find out the causes or influencing factors of social phenomena and processes. Survey and research methods include comprehensive survey and sample survey—a comprehensive survey to investigate every individual of the subjects to be studied. The sampling survey is based on certain sampling principles, selecting some individuals from the subjects to be studied as samples and then investigating these samples.

The basic steps of the questionnaire survey method include: determining the survey population, selecting a sampling plan, designing questionnaires, implementing surveys, summarizing and recording data, analyzing data, and so on.

The first step of the questionnaire method is to identify and determine the overall survey. The so-called survey population is the whole or all individuals of the subjects to be studied. The first is to grasp the overall situation of the research object, and the second is to establish a framework for sampling. The second step is to select and determine the sampling plan according to the sampling population's characteristics and specific research needs.

After determining the sample selection scheme, we need to design the questionnaire. Questionnaires consist of various questions and are used to ask questions to the respondents. A questionnaire is a tool for collecting data. The quality of the questionnaire design is directly related to whether the collected data can effectively serve the research. Therefore, the design of questionnaires in social

surveys needs to be guided by specific theories. The designed questions aim to test theoretical hypotheses and can measure the respondents' social and economic status, attitude, and behavior. Questions in the questionnaire can be divided into closed and open questions according to the different forms of questions and answers. Closed-ended questions give respondents a choice of answers, such as "Do you pay attention to the government's agricultural extension support policy?"

(1) pay attention to it frequently;

(2) pay attention occasionally;

(3) pay close attention to it almost."

The open question is to let the respondents give their answers. For example, "What do you think of the current farmers' cooperation?" according to the different contents of the questions, the questions in the questionnaire generally include three main categories: first, factual issues such as gender, age, and family members; two, behavioral problems, such as work and other behavioral experiences; three, attitude problems, such as Consciousness, concepts, and evaluation.

As a measurement tool, the reliability and validity of questionnaires should be considered in the design process. Reliability refers to the consistency of the results obtained by repeated measurements with the same measuring tool; validity refers to whether the tool is suitable for measuring the object.

Before finalizing the questionnaire, it is usually necessary to conduct some trial investigations, i.e., interviews with the preliminary draft of the questionnaire, to determine whether there are inaccurate, vague, and unrealistic problems in the questionnaire.

The implementation of the survey is the critical step of the survey. After the questionnaire is collected, it is necessary to summarize the data and input the results into the database for analysis. Data entry is to input the contents of respondents' answers according to specific codes and input them into a well-compiled database structure. At present, data entry is usually done by using data entry software.

After all the questionnaires are entered, the data must be logically checked. The purpose of data checking is to find the obvious logical errors or deviations in the

answers, records, and input of the respondents, investigators, or inputters. Checking and cleaning data can improve data quality and lay a foundation for data analysis. After the database is sorted out, it is necessary to use appropriate statistical methods of data analysis to analyze the data according to the research objectives in order to verify or prove its research hypothesis and explain the research problems according to the results of data analysis.

2. Field Survey Method

Fieldwork refers to in-depth observation and interviews in living with the object of study to achieve a comprehensive and profound understanding of the object of study and its culture.

Fieldwork, also known as fieldwork, is a standard method in Anthropology and Archaeology. Fieldwork refers to in-depth observation and interviews in living with the object of study to achieve a comprehensive and profound understanding of the object of study and its culture. Fieldwork is significant in studying the cultural characteristics and changes of some small communities and specific groups.

The fieldwork's main task is to answer questions such as who, what, when, where, and why. To answer the question of "who," we need to pay attention to the background and characteristics of the characters in the field, including age, gender, social status, and personality characteristics. In fieldwork, researchers often remind themselves of what the local people said and what they did, and when and where they did it. Finally, we need to think about why the local people say that and do that.

In field investigation, participating in observation and in-depth interviews is often necessary to obtain important information and materials. Participatory observation means that the observer enters the life or workplace of the observer, participates in their life and work activities, and observes the various behaviors and changes of the observer in the participation process. Participatory observation often has excellent advantages in exploring the subjects' deep-seated ideology and internal relations. It enables researchers to understand the track of the development of their ideology on the basis of understanding the social situation of the subjects.

In addition, participatory observation is often used to study small groups and their behavior. When using the participatory observation method to obtain research materials, we need to pay attention to the following issues: First, we need to clarify the theoretical objectives of observation to participate in it without being deeply involved. The observation in scientific research differs from the general observation in daily life. Before researchers observe, researchers need to study design, understand the theoretical problems to be observed, and plan to observe objects and observe them. At the same time, in the participation process, we must clearly define and observe our theoretical objectives around them. Secondly, to make the observation data more accurate and credible, the observer needs to control the observation environment and variables while avoiding the conventional reaction that affects the observer. Otherwise, the results of observation are likely to be biased.

3. In-depth interview

In-depth interviews are also an important way to obtain information and information in field surveys. Only by communicating with the local people can we understand the inner world of the local people and truly understand the inner meaning of the local culture. The necessary way to communicate and communicate is an in-depth interview, which means making friends with the respondents and having a deep heart-to-heart talk. In-depth interviews should generally be conducted selectively, and typical subjects should be selected to communicate with them and build up feelings to have a deep heart-to-heart talk. Sometimes, it may be helpful for the research to select local information-savvy persons or so-called local "understanders" as the objects of in-depth interviews.

In the field survey, researchers should pay attention to the relationship between the emic and etic approaches when dealing with the data obtained in the field. The so-called thematic orientation refers to the ideas or attitudes the subjects think of; the so-called objective orientation refers to the reasons or motives researchers or outsiders tend to think about. On the one hand, researchers should observe in the field and conscientiously understand, understand, and understand the local people's thematic concepts; on the other hand, researchers should analyze the

significance and causes of these thematic concepts from outsiders' perspectives. Researchers should combine thematic orientation with guest orientation and take a comprehensive view of the information obtained in the field.

After the fieldwork is completed, researchers need to write fieldwork reports. The primary way of writing field survey reports is ethnography. The so-called ethnography refers to a detailed and comprehensive field investigation report describing the various forms and characteristics of the object of study. Ethnography is characterized by descriptive and Chronicle techniques. It aims to display the overall characteristics of the object of study and the process of activities and delineates the cultural images of specific communities and groups.

4. Experimental method

The experimental method is a typical method of scientific research, especially in natural science research; the experimental method plays an important role. At present, experimental methods have been introduced into social science research. The so-called experimental method is to study the causal relationship between variables under certain conditions. In order to control the possible influence of some independent variables on dependent variables, the experimental method often divides the subjects or subjects into two groups: one is the experimental group, and the other is the control group. The causal relationship between some variables was tested by comparing the experimental results of the two groups.

There are two methods of partition: first, the random grouping method; second, the free pairing method. The subjects were randomly divided into an experimental group and a control group. According to the variables, such as educational input, income level, education level, gender, age, nationality, etc., the experimental subjects were allocated to the experimental and control groups. In social science research, because the object of study is human, there are ethical problems and other limitations in the laboratory experiment method, so the natural experiment method is usually used.

In small-scale research, experimental methods can often be used. The experimental method is often combined with the observation method. Usually, in

this experimental method, researchers can use the field observation method, that is, to observe the behavior and attitude of the object in the specific place and actual situation where the phenomenon or process occurs.

5. Comparisons

Social phenomena studied by sociology are contemporary or present phenomena in a general sense. In order to explore the historical development track and changing law of social phenomena, sociological studies often borrow historical and cross-cultural comparison methods.

The methodological principle of supporting historical comparative law is that the appearance of social phenomena is not accidental or spontaneous but continuous or influenced by specific forces. Therefore, from the track of historical development or causal chain or through the comparison of different backgrounds, we can find the real cause of current events or phenomena.

There are two primary sources of historical comparative law: government documents, including government and institutional documents, archives, statistics, and other historical materials preserved; the other is folk historical materials, including local historical materials handed down from the folk and folk oral historical materials.

The most common and convenient way to collect government or official documents is to go to relevant archives, museums, and libraries to access and extract historical documents related to research issues. The collection of folk historical data usually needs to go to the local area to inquire about and consult the tangible and material historical materials such as village records, genealogy, land deeds, and so on, retained by the residents. In addition, some historical memory materials, such as oral historical materials, can also be collected from the local residents through interviews.

In the historical-comparative method, analogy and ideal-type analysis are commonly used methods of analyzing historical data.

Analogy analysis means comparing the performance and characteristics of specific phenomena or events at different stages based on classification and deducing the causes and changing rules of such phenomena.

Index Selection

Starting from different purposes, the research indicators are divided into different types, and different social indicators have different functions. There are several essential indicators in the questionnaire survey: descriptive indicators and evaluation indicators, observational indicators and planned indicators, input indicators, production indicators, output indicators, economic indicators, and non-economic indicators.

Data collection methods

The data in this study are mainly obtained through face-to-face questionnaires. A random sampling method was used to conduct a questionnaire survey. The number of surveys was sampled according to the total amount of 30 thousand farmers in Guangnan County. The sampling formula was as follows:

N: Total number of subjects

n: Sample Number

E=0.05

$$n = \frac{N}{1 + N \times e^2}$$

According to the formula, the number of sample surveys is 400.

Data Processing Method

The data collected in this study will use SPSS software for data entry, collation, and analysis, mainly using SPSS software for descriptive statistics and correlation analysis.

Research process

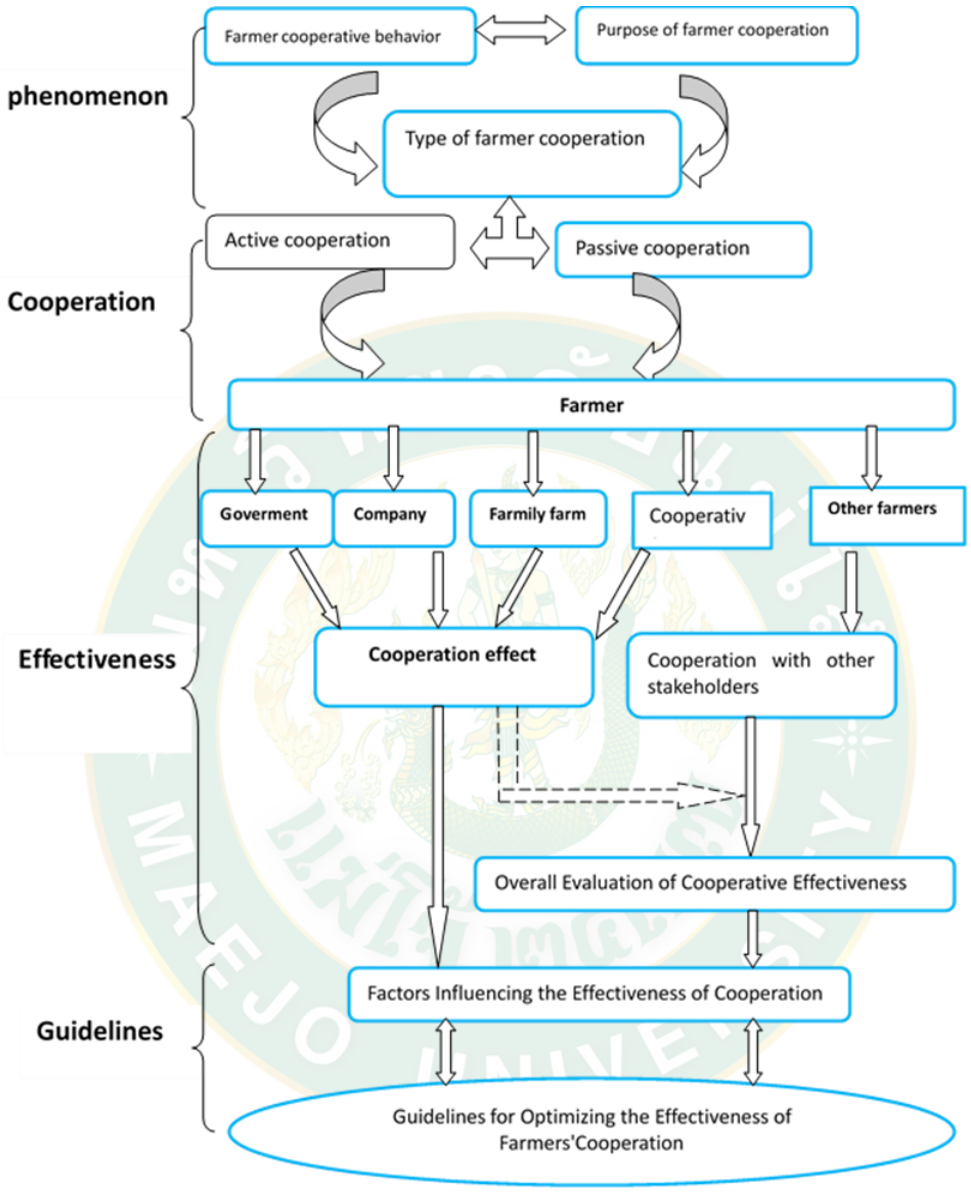

Figure 5 Research process

CHAPTER 4
THE TYPES OF COOPERATION OF SMALL FARMERS IN BEEF CATTLE BREEDING IN GUANGNAN COUNTY

Guangnan County is an economically underdeveloped mountainous area inhabited by ethnic minorities. There is neither too cold in Winter nor too heat in summer. And it has plenty of rainfall and sunshine. The area of mountainous and semi-mountainous areas accounted for 94.7%. Here belongs to the hilly region of a plateau. There are abundant grassland resources. Local farmers have a history and tradition of raising cattle for 2,000 years and are highly motivated to raise cattle. With the improvement of mechanization in agricultural production and the promotion of small agricultural machinery, farmers' primary purpose is that breeding cattle raises revenue. Only a few (interview object that seven farmers who breed 1 head of cattle have purposes which are to use both beef cattle and draught cattle. 2 units have the purpose of the cattle in the local festivals bullfighting) have other purposes, Due to the low proportion, it was neglected in the study.

Due to the relatively close traffic and information in Guangnan County, the mountain villages are less impacted by modern urban culture, and the mountain villages are still typical traditional villages. Currently, China's beef cattle breeding is based on captive breeding. However, beef cattle breeding in Guangnan County mainly adopts the traditional stocking method in the mountain, which is relatively rare in beef cattle breeding areas in China.

Object 1 Types of cooperation small farmers

According to the research thinking of this paper, this chapter mainly describes the characteristics of cooperation between small farmers and other agricultural business entities in Guangnan County by analyzing the types of farmer cooperation. Existing research has studied farmers' cooperation from different angles. This paper classifies and analyzes the types of cooperation with small farmers from the

perspective of beef cattle breeding. According to the object of beef cattle breeding cooperation, small farmers' cooperation in Guangnan County includes the government, enterprises, cooperatives, family farms (farmers who raise more than 10 beef cattle but less than 20 beef cattle) and the neighborhood. In order to facilitate the research, family farms, and their neighbors are collectively referred to as other farmers as a type of cooperation. There are four types of cooperation, and their cooperation content and characteristics are as follows:

The cooperation pattern between small farmers and government

This pattern of cooperation mainly involves the government helping farmers develop production in the form of projects. And it aims to increase farmers' income. The government's assessment standard of cooperation mainly examines the increase in farmers' income. At the same time, the change in farmers' income is used to evaluate the work performance of government staff. For example, the more farmers' incomes increase, the better their performance will be. Meanwhile, Government staff is much more likely to be rewarded and promoted.

1. Content of cooperation

Guangnan County is one of the poorest areas in southwest China. In 2021, the Per Capita Disposable Income of rural residents in China reached 18,931 yuan. Yunnan Province reached 14,197 yuan, but Guangnan County was only 12,636 yuan. It is only 2/3 of the national average (¥18,931). The income level of local farmers in Guangnan County still lags behind the goal of shared prosperity in rural areas of China set by the Chinese government. In order to increase the income of farmers in Guangnan County, Our Government provides farmers with free production materials in the form of projects such as feed, veterinary medicine, mating, and new varieties of calves. And the government could arrange for small farmers to visit the beef cattle breed demonstration, Conduct technical training, Provide technical guidance, and Provide free beef cattle breeding insurance and other services to improve local farmers' income. In this kind of cooperation, not all projects are aimed at all farmers, but some farmers are selected as cooperation objects according to project implementation needs. Farmers also can choose to participate or not to participate.

Farmers will often actively seek cooperation to obtain free or low-cost support. In the cooperation, the government provides funds and technology. While receiving free support, small farmers participating in the project are responsible for conducting demonstrations, promotions, and publicity for other farmers. These let more farmers join and improve the implementation efficiency of the project. This is also a typical government-driven pattern of agricultural extension.

2. Characteristics of cooperation

1) Small farmers have an individual right to speak in cooperation with the government. Currently, the Chinese government's evaluation of essential rural staff largely depends on the farmers' staff evaluation. Therefore, in cooperation with the government, small farmers can put forward their suggestions or opinions. The government staff can choose whether to accept or improve the information after receiving it. The staff generally pay more attention to it to win the praise of farmers. However, this kind of cooperation is dominated by the government. So the target of cooperation will generally have requirements from the government; for example, they need to be village leaders in rural areas, farmers with good breeding technology, farmers with a large number of breeding, or farmers with the lowest household income in rural areas. These all can be the priority of participating in the project. After the government selects farmers as partners, they can freely choose whether to cooperate or not. In general, farmers are willing to participate in the cooperation with the government.

2) In cooperation, the government should consider improving production efficiency and taking care of the rural vulnerable groups. The government should consider that the farmers in cooperation have a more significant influence on the surrounding farmers. Implementing the project could drive more farmers to improve the effectiveness of the project. At the same time, we should also take care of the vulnerable groups in rural areas and help low-income farmers increase their income, improve their lives and narrow the income gap with surrounding farmers through project cooperation.

3) In cooperation, the services provided by the government are public welfare. In the process of cooperation, the government provides funds and services to small farmers for free; Small farmers shall do relevant work according to the requirements of government staff. To do that can make small farmers achieve the expected goal of the project and have a good demonstration effect of beef cattle breeding. At the same time, small farmers can actively cooperate with the government staff to do an excellent promotion job, which can drive more farmers to choose suitable varieties and adopt advanced technology.

The cooperation pattern between small farmers and enterprises

The cooperation pattern between small farmers and enterprises is the largest one in China. This cooperation pattern is influenced by the level of local industrial and economic development and the number of local enterprises. The more local businesses there are, the more such partnerships they have. Guangnan County is an economically backward area. The local beef cattle breeding enterprises only have two, so the cooperation between small farmers and enterprises in Guangnan County is relatively simple.

1. Content of cooperation

The cooperation between small farmers and enterprises in Guangnan County is straightforward, mainly in three forms. The first is that breeding enterprises use excellent breeding bulls to provide high-quality frozen sperm for farmers to complete mating services. And they charge the service fee according to the market price. Secondly, breeding enterprises directly sold the eliminated calves to nearby farmers who have good relations with the enterprise. Calves of the same size are 5 to 10 percent cheaper than the market price because these calves are eliminated. In this way, enterprises can quickly deal with the eliminated calves while reducing circulation costs and quickly returning funds. The Third is simple acquisition cooperation. Enterprises buy commodity cattle as raw materials for enterprise processing from farmers according to the market price, Then the enterprise offers processed products for sale.

2. Characteristics of cooperation

1) Small farmers are the passive part with the right to choose in cooperation. As there are only two local enterprises, the enterprises are close to a monopoly in the region. (If you go out of town to buy, you must have a more significant cost). Small farmers can choose whether to cooperate with enterprises or not. However, after choosing cooperation, small farmers are in a disadvantageous position in the cooperative relationship and have no right to speak. Small farmers are passive recipients of the prices and services proposed by enterprises. Whether they receive the services provided by enterprises or in the sales process of both parties, they need more resources to play games with enterprises.

2) Both sides can achieve win-win results through cooperation; on the one hand, through the frozen sperm service and the purchase of calves, small farmers can obtain high-quality beef cattle resources and a safe epidemic prevention guarantee. (The level of enterprise breeding is high, and the eliminated calves are better quality than those purchased in the market. Especially the problem of epidemic prevention, to the enterprise to buy calf disease prevention advantage is more pronounced). On the other hand, small farmers sell their commodity cattle to processors and don't have to worry about selling their beef cattle. If small farmers' cattle are good enough, enterprises can pay a premium for them rather than going into circulation and buying them at regular prices. Enterprises can profit by providing frozen sperm services to small farmers and disposing of eliminated calves. They can also profit by processing high-quality beef cattle from small farmers.

3) The cooperation between the two sides is relatively loose. In the cooperation between small farmers and enterprises, both sides take the maximization of their interests as the goal, and both sides have opportunistic ideas. If the quality of the frozen sperm service provided by the enterprise is not satisfactory to small farmers, the farmer will find other service providers. If the enterprise feels it cannot make money, it can stop providing the service to the farmer at any time. Suppose the two parties feel that the price of obsolete calves sold by the enterprise to small farmers and commodity cattle sold by small farmers to the enterprise is

inappropriate. In that case, both parties may directly enter the local market and trade instead of cooperating with the other party.

The cooperative pattern of small farmers and cooperatives

This cooperation pattern is based on one and more farmers with large scale and solid economic strength as the core. In accordance with the articles of association of the cooperative, the cooperative shall join other farmers to form a cooperative on the principle of willingness, fairness, and mutual benefit. Farmers join cooperatives to become members and carry out breeding activities together.

1. Content of cooperation

In Guangnan County, most farmers raise cattle, but their motives (commercial, draft, and bullfighting cattle) numbers and levels vary widely. Breeding enterprises and farming with a large number of beef cattle in the local area (farmers Breeding 20 or more beef cattle are called extensive farming by the local government) have good management, feeding experience and good economic strength. Due to its significant influence and appeal in rural areas, it can take the initiative to establish cooperation and organize free-range farmers of different sizes. , Then it can improve the organization and scale of farmers by joining the cooperatives. Small farmers can become cooperatives' founders and core members and play a crucial role in cooperatives. Cooperatives have specific requirements for the breeding number of small farmers who apply to join.

Generally, It is eligible to join the cooperative when farmers are required to raise more than three cattle because all members of the cooperative are aimed at beef cattle breeding and sales. It also is convenient for the internal management of the cooperative. The cooperatives will regularly and irregularly conduct technical training for their members.

Then they ask the government to support the project and buy the production goods from manufacturers. They sell those to members at a discount to the retail price. They help cooperative members sell beef cattle and make them understand the market information quickly. At the same time, small farmers participating in

cooperatives can also participate in the management of cooperation. And they have the right to give suggestions and proposals to the cooperative.

2. Characteristics of cooperation

1) Participation of small farmers has improved their ability to withstand market risks. The primary purpose of small farmers' participation in cooperatives is to strengthen their ability to resist market risks. Large farmers have a more extensive operation scale and sales volume through the establishment of cooperatives. At the same time, they improve the competitiveness of their products and the ability to resist market risks. In the name of cooperatives, they can apply for subsidies and project support from the government to obtain more support from the government. In addition, with the help of the cooperative power to improve the game chip with the market, farmers can obtain lower feed prices, lower drug prices, and better sales prices from the market.

Through participating in cooperatives, small farmers can obtain the government's support, relatively cheap production and breeding technology guidance, and relatively reasonable selling prices. These help small farmers improve production efficiency, reduce production costs and increase income.

2) The main motivation for participating in cooperatives is profit. The essence of cooperatives is a mechanism that is that small farmers, large farming, and enterprises pursue economic interests through cooperation. The benefits of cooperatives are distributed according to the shares held, with the head of cooperatives getting most of the benefits and small farmers getting a small part. The establishment of cooperatives is implemented in accordance with the principle of "risk and benefit sharing." However, in reality, both large and small farmers will take the maximization of their interests as the goal of cooperation.

Small farmers join the cooperative's primary motivation to acquire corresponding profits. The cooperatives have clear rules about the distribution of interests, but if cooperative members can meet the expected return, members will be optimistic about cooperative activities. For example, extensive farming doesn't organize cooperatives to carry out the work, and small farmers only participate in

cooperative activities for a short time. It is common for small farmers to vote without thinking, and The cooperative society will cease to exist.

3) The head of the cooperative has a crucial influence on the operation of the cooperative. In the pattern of cooperation between small farmers and cooperatives, the person in charge of the cooperatives (extensive farming) often has more economic and social capital among farmers and a higher social status in the countryside. On the other hand, the person in charge of the cooperative occupies a large proportion of the cooperative's investment and has the primary decision-making power for the significant issues in the cooperative. They play a crucial role in the cooperative and are also responsible for organizing the members to carry out various activities and ensure the normal operation of the cooperative.

The pattern of cooperation between small farmers and neighbors (the family farm and their neighbors)

The family farm in this paper is classified according to the classification standards of the local government. The local government defines the farmers with 10-20 animals as family farms. The family farm in this paper is only engaged in the breeding industry, not the processing and service industry.

1. Content of cooperation

The content and form of cooperation between small farmers and family farms, small farmers, and their neighbors (other farmers) are the same. For example, the form is the cooperation between farmers in production. Mutual help is the main content of cooperation, so the two (small farmers and family farms, small farmers and their neighbors) are analyzed as a pattern. This kind of cooperation is social cooperation in traditional society.

Farmers' cooperation is established on the basis of the village community. This is a village custom formed in long-term living together. They could meet the need for production and life support, including free capital turnover, helping each other take care of the beef cattle, sharing successful breeding experiences, exchanging good calves, and providing market information, etc. The cooperative behavior among small farmers primarily depends on the behavior norms among

acquaintances, which also maintains the cultural traditions of traditional villages. It is common for neighbors to help each other raise beef cattle for short periods (less than a week). There was also a situation with small, well-connected farmers who would feed their cattle together. If one of them is in charge of year-round breeding, but the cattle dies in an accident, the farmer is not liable but is not paid. If the breeding process is successful, the custodian farmer will receive half of the newborn calves each year as payment for his labor. This kind of breeding cooperation is almost limited to the villagers in this village, and cooperation with villagers in other villages is not found in the interview. However, relatives often borrow money from each other without any charge. This kind of mutual fund cooperation between relatives is less affected by geographical restrictions.

2. Characteristics of cooperation

1) The cooperation between farmers is a relatively stable cooperative relationship. This mode of cooperation is based on the stable relationship formed by living together with similar living habits and values for a long time, and it is also the result of mutual selection over a long time. Long-term communication between farmers will promote the deepening of emotion, and cooperation will be more frequent and stable. The cooperation also will form a relatively stable virtuous cycle.

2) The cooperation between farmers is based on geography, kinship, and consanguinity. In this cooperation pattern, the number of neighbors cooperating is relatively large. In general, the shorter the distance between houses, they will have the closer relationship (neighbor + friend) and more frequent cooperation. Cooperation between relatives can be unaffected by distance. The closer the relationship between relatives and blood. They will have the higher the frequency of cooperation, the greater scope and amount of cooperation. Within a certain range of economic costs, this kind of cooperation does not consider the cost. Moreover, farmers compensate each other for helping them through some traditional communication mechanisms. For example, they daily visit each other.

3) The differential mode of association has obvious characteristics. The cooperation between farmers seems simple, but it has its boundaries. They will clearly define who to cooperate with and who not to cooperate with. Fei Xiaotong

(1948) believes that the basic form of Chinese society is composed of the hierarchy of social relations. There are particularities to the scale. That is measured according to the distance from "oneself." The core of farmers' cooperation is to pursue the maximization of the interests of acquaintances. In Guangnan County, the object selection of small farmers' cooperation is based on the relationship between near and far to form a differential order. For example, Nuclear family members ⟶ relatives with good relations ⟶ friends with good relations ⟶ neighbors with good relations ⟶ relatives, friends and neighbors with general relations are extended. Influenced by this concept, the cooperation between small and other farmers positively relates to interpersonal relations. Small farmers who are able to handle interpersonal relationships well are more likely to cooperate with other farmers. If small farmers are not popular, there will be less cooperation.

Finding

China has become the world's second-largest economy, and its industrial economy is in the leading position in the world. However, the development level of China's agricultural economy still needs to catch up. As the least developed area in Yunnan Province, the level of farmer cooperation could be higher in Guangnan County. Small farmers' consciousness of the market economy could be more assertive. The influence of traditional culture on farmers' cooperative behavior is still relatively significant, and farmers' cooperstill needs to be not wholly implemented in accordance with the law of the market economy. On the other hand, cooperation between farmers and relevant subjects can also bring some benefits to local farmers and play an essential role in solving some problems in rural development. To sum up, farmers' cooperation in these four cooperative patterns is based on the following:

Firstly, small farmers’ cooperation is voluntary. No matter whether the object of small farmers' cooperation is the government, enterprises, and other farmers, small farmers' cooperation is established voluntarily. Small farmers can make a reasonable decision whether to cooperate or not according to their situation so as to maximize their interests.

Secondly, the cooperation motivation of small farmers is mainly driven by interests. Chinese farmers are rational interest pursuers. Farmers' production and management risks can be reduced through cooperation, and their income effects can be improved. Among the four cooperation patterns of small farmers in Guangnan County, the cooperation with the government, cooperatives, and enterprises is driven by economic interests. Emotional factors greatly influence the cooperation between small farmers and other farmers. The production cooperation with other farmers is mainly based on labor exchange and mutual economic assistance. Cooperation is also a kind of economic cooperation in nature.

Thirdly, the cooperation of small farmers is greatly affected by emotional factors. The cooperation of small farmers is mainly to pursue the maximization of family and individual interests. But the small farmers in Guangnan County are not just "economic men"; they pay more attention to the interpersonal relationship with their partners. Cooperation cannot be completed if small farmers have negative impressions and contradictions about the people they intend to cooperate with. On the contrary, neighbors and relatives with good relations will insist on cooperation even if it will cause economic losses to a certain extent. However, economic losses caused by cooperation are rare in this case.

Comparison of cooperation pattern of small farmers in Guangnan County

Cooperative Partner / Small farmers	government	enterprise	Cooperative	Neighbor
Cooperative initiative	unidirectional	bilateral	bilateral	bilateral
Cooperation leader	government	enterprise	Cooperative	Equal relations
Purpose of cooperation	non-profit	profit	profit	non-profit
Partners gain economic benefits	No	Yes	Yes	Yes
Competition exists	No	Yes	Yes	Yes
Competitive advantage	No	No	No	No
Impact income	More	More	More	More
Cooperation ways	government +Farmer	enterprise+ Farmer	Cooperative+ Farmer	Farmer+ Farmer

Through the comparison, we can find:

The cooperation between small farmers and the government is purely public welfare. In the early stage of cooperation, government workers dominate in selecting people as partners. However, once the cooperative relationship is formed, the evaluation of small farmers has a more significant impact on the assessment of government workers. Therefore, after the cooperative relationship is formed, the status of small farmers in cooperation will be significantly improved. The benefits of cooperation between small farmers and the government are the highest among all the partners. But the government needs more resources to cater to the interests of all small farmers. In addition, small farmers can obtain better benefits with relatively low costs by cooperating with the government. This kind of cooperation can bring a lot of benefits to small farmers, but it is also easy for them to cultivate dependence psychology.

The cooperation between small farmers and local enterprises is a typical market economic behavior coupled with social behavior. From the beginning to the end of such cooperation, enterprises are in the leading position and can influence the direction of cooperation. When cooperating with small farmers, enterprises prioritize their economic interests and consider their local social image. Therefore, in cooperation with small farmers, they will give appropriate profits to small farmers, but this kind of profit-making behavior is limited. Making money through cooperation with small farmers is always the primary purpose of cooperation between enterprises and small farmers.

The cooperation between small farmers and cooperatives is a mutually supportive economic behavior. In theory, small farmers and cooperatives have equal status in the cooperation, but in practice, the extensive farming cooperatives have the right to speak. Cooperatives organize the majority of small farmers and strengthen the market competition power. Small farmers also can obtain government support with the help of cooperatives. The person in charge of the cooperative gains the most from the cooperation, but the cooperative can play the ability effect of the cooperative to reduce the market risk. At the same time, through the strict

supervision of the national government departments on cooperatives, small farmers can get more benefits from cooperatives.

Small farmers' cooperation with other farmers (the family farm and neighbors) is mainly social behavior and accompanied by economic behavior. The cooperation between small and other farmers is an equal and mutual help behavior based on emotion. That is the continuation of the fine Chinese tradition with the deepening of the market economy concept; it is inevitable to consider the economic cost; the economic cost range depends on farmers' psychological quality and economic strength. But cooperation between farmers does not consider economic issues within a particular economic cost.

Small farmers' cooperation in Guangnan County is a microcosm of Chinese rural social development. These cooperative phenomena reflect the process of the Chinese (Guangnan County) Small-scale Peasant Economy transforming into a Market Economy. This process is to complete the transformation from the traditional cooperation pattern of consanguinity, kinship, and geography to the modern cooperation pattern with modern mass production. In other words, it is a change from cooperation based on emotion to cooperation based on contractual connection.

Object 2 Effect Evaluation and Influencing Factors analysis of Small Farmers' Participation in Farmer Cooperation

Based on the survey data of 475 households in Guangnan County, this chapter evaluates the effect of small farmers' cooperation. It analyzes the influencing factors affecting small farmers' production and cooperation effectiveness. The research ideas of this chapter are as follows: Firstly, The data sources and sample characteristics are introduced and described, then the weight coefficient method is used to evaluate each sub-index and the comprehensive effect. On this basis, OLS regression is used to analyze the influencing factors of the comprehensive effect. This is trying to determine the main factors affecting small farmers' cooperation in Guangnan County. Finally, according to the research conclusions, several suggestions for optimizing the effectiveness of small farmers' production and cooperation in Guangnan County were provided.

Data Sources and Sample Characteristics

1. Data Sources

The study was conducted in Guangnan County, Yunnan province. It takes multi-stage random sampling. During the sampling process, the required number of small farmers was selected by stratified random sampling from each selected sample village. We randomly selected 5 towns with a relatively concentrated number of cattle farmers (Zhulin Town, Zhuljie Town, Yangliujing Town, Zhetu Town, and Jiumo Town). Each township randomly selected 6 natural villages, a total of 30 natural villages, and each village conducted a 15-20 households survey. We issued a total of 504 questionnaires, and a total of 475 valid questionnaires were collected. (Small farmers in the sample of this study are defined in accordance with the classification standards of the Chinese Ministry of Agriculture and Rural Affairs. The farming scale is less than 50, including 50. They are all called small farmers)

2. Sample characteristics

2.1 Age of respondents

The average age of the respondents was 49.23 years, the oldest farmer was 77 years old, and the youngest farmer was 23 years old, with a standard deviation of 12.894. The range with the most extensive distribution of the number of people is between 41 and 50 years old, accounting for 25.90%. This indicates that most farmers are older, and the number of young people involved in raising cattle is relatively tiny. As shown in the table, the proportion of farmers over 60 years old is 20.20%.

It indicates that although the farmers are older, they are willing to invest in the breeding business. The proportion of farmers over 41 years old reached 71.80%, indicating a relatively strong path in the management activities of farmers. There are at least 35 respondents between 21 and 30 years old, accounting for 7.40%, which proves that young farmers could be more willing to engage in beef cattle breeding. Chinese scholars Xu Na and Zhang Liqin et al. (2014) believe that the production efficiency of the aged labor force in agricultural production is low, and the input level of various production factors is lower than that of the non-aged labor force. Beef cattle breeding needs to be engaged in planting grass, grazing, Cleaning the sheds, and other production activities, which requires excellent physical and energy of breeders. Therefore, only farmers aged 20-50 have the energy and physical strength to carry out farming, but farmers aged 51 and above account for 45.90% of the respondents. However, with the growth of age, they are often unable to do the farming business, and their production efficiency is significantly reduced. The aging of the breeders in the surveyed areas is serious. If there are young people joining in recent years, the development of the beef cattle breeding industry will continue. However, Peng Wei Zhuojia (2021) also found that the aging of the rural labor force is partially negative. Compared with the young rural labor force, the aging rural labor force has more significant advantages in agricultural production technical efficiency.

Table 1 Age distribution of farmers

Variables	grouping	frequency	percentage
Age	21-30	35	7.40
	31-40	99	20.80
	41-50	123	25.90
	51-60	122	25.70
	More than60	96	20.20
Total		**475**	**100**
Min	23		
Max	77		
Ave.	49.23		
Standard Deviation	12.894		

2.2 Gender of respondents

As shown in Table 2, 374 people are male, accounting for 78.70% of the total respondents, and 101 people are female, accounting for 21.30%. This means that men are the prominent practitioners in the sample area in the beef cattle industry. Beef cattle breeding involves a large amount of work and labor, and the natural grazing and breeding mode of beef cattle in Guangnan requires high physical requirements. Hence, men have more advantages in production activities and industrial development. Moreover, women play more roles in production activities, which often limits their ability to have more energy for beef production activities.

He Jun (2010) and CAI Hong (2019) believe that firstly, the restriction of traditional gender norms to rural women, rural women is hampered by the burden of housework and care. Secondly, their quality limits their development in the agricultural industry. Although women play a significant role in agricultural production activities, they are still vulnerable groups due to the restriction of physiological conditions and the influence of the social environment. They are more vulnerable than men in terms of physical strength, energy, and ability to acquire production factors.

Table 2 Gender distribution of respondents

Variables	grouping	frequency	percentage
Gender	male	374	78.70
	female	101	21.30
Total		**475**	**100**
Min	0		
Max	1		
Ave.	0.79		
Standard Deviation	0.42		

2.3 Education level of respondents

As seen from Table 3, the education level of the vast majority of respondents in the sample area is in the primary school stage, with 244 accounting for 51.40%. The illiterate rate is 28 percent. This shows that the education level is generally low in the sample areas. The labor force is difficult to transfer from rural to urban areas, and the quality of farmers is difficult to support farmers to engage in more complex agricultural production activities. The simple beef cattle breeding activities are more consistent with the quality of farmers. On the other hand, the low level of education of farmers could be more conducive to the development of beef production to a high level, the acceptance of new feeding technology, and the expansion of the breeding scale. Among the farmers engaged in beef cattle breeding, only 0.8% have a college degree or above, indicating that only some farmers with high education are willing to engage in the beef cattle breeding industry. According to researcher Li Jing (2004), farmers' current educational and cultural level in Western China is significantly lower than in other regions. Illiterates and semi-illiterates in China are mainly concentrated in the West. Guan Ailan (2015) Improved farmers' education level and targeted training for farmers can help promote land transfer, level of agricultural digitization, and agricultural technology invention and dissemination. , Then they can improve production performance. The sample area is located in southwest China, where the education level of farmers is relatively

different from the national level. With the continuous development of modern beef cattle breeding technology, the traditional extensive beef cattle breeding mode has obvious disadvantages in modern market competition. Improving the cultural quality in the industry will play a very positive role in accepting the new information and technology of breeding.

Table 3 Education level of respondents

Variables	grouping	frequency	percentage
Education	illiteracy	133	28.00
	Primary school	244	51.40
	Junior high school	78	16.40
	High school	16	3.40
	College/Bachelor degree or above	4	0.80
Total		**475**	**100**
Min	0		
Max	15		
Ave.	3.99		
Standard Deviation	3.55		

2.4 Land area owned by respondents

The sample area is located in a mountainous area with relatively rich land resources. Each household occupies an area of 5.54 mu of land resources which reaches the national average level as far as the average land area of Chinese farmers is 1.4 mu. However, as can be seen from Table 4, the majority of respondents with

0-5 mu of land are 320 households, accounting for 67.37%. And there are 12 farmers with more than 20 mu. It shows that through land leasing, the land began to concentrate in the hands of large farmers, cooperatives, and enterprises.

Chinese scholar Kong Xiangzhi (2018) pointed out that we should be made to build a three-level cooperative (association) system at the county, township

and village levels. To carry out a service system for agriculture with land trust as the core. It can solve the fragmentation problem of family operation through large-scale service and open up a new path to achieve moderate-scale agricultural operation besides land transfer.

The transfer of farmers' land can not only promote scale management to solve the problem of land fragmentation but also promote cooperation and exchange between farmers and institutions.

Table 4 Distribution of land area owned by respondents

Variables	grouping	frequency	percentage
Land scale	0-5mu	320	67.37
	6-10mu	109	22.95
	11-15mu	20	4.21
	16-20mu	14	2.95
	More than 20 mu	12	2.53
Total		**475**	**100**
Min	0		
Max	50		
Ave.	5.54		
Standard Deviation	5.66		

2.5 Household labor force scale

One-third of peasant families have two workers. Most families have children who are still in school. Young couples who have lost the labor force cannot leave the countryside to work in cities because they have to take care of the elderly and children. It is concerning the size of the total household labor force, the number of two to four people accounted for 76.85 %. The results of the seventh census in our country showed that the average population of each household is 2.62, and the labor force of only half of the families in sample areas has exceeded the average population in our country. It indicates that labor resources in sample areas are still

rich, which can be reasonably distributed work to improve the efficiency of the beef cattle breeding activities. There are 40 families with more than 6 labor forces, accounting for 8.42%. These families have abundant labor forces and can engage in other production and business activities in addition to beef cattle breeding, which is beneficial to the improvement of family income. In this way, they can increase the scale of farming on the one hand and engage in other industries on the other hand. Kong Xiangzhi (2019) believed that the allocation of peasant family labor should be determined according to the goal of family operation. Most of the labor force is influential in the development of rural areas. But there is a surplus labor force simultaneously and the problem of labor transfer. Therefore, a large-scale family labor force is not necessarily conducive to the development of agriculture, and it is necessary to make a reasonable allocation according to the goal of family experience to promote the improvement of agricultural production efficiency.

Table 5 Labor Force scale

Variables	grouping	frequency	percentage
Household labor force	0	3	0.63%
	1	17	3.58%
	2	146	30.74%
	3	105	22.11%
	4	114	24.00%
	5	50	10.53%
	6	24	5.05%
	7	12	2.53%
	8	4	0.84%
Total		475	100
Min	0		
Max	8		
Ave.	3.35		
Standard Deviation	1.46		

2.6 Respondents' Participation in Cooperatives

As can be seen from Table 6, 358 farmers in the sample area did not join the cooperative, accounting for 75.37% of all the surveyed farmers. A large proportion of people belong to something other than professional cooperatives. A large part of the reason is that the sample area has specific restrictions on the breeding scale of farmers who join cooperatives. Some cooperatives require farmers with breeding sizes of more than 6 beef cattle to be eligible to join cooperatives, which also makes it difficult for many farmers with small scale to join cooperatives. Some relatively large-scale farmers are also unwilling to join cooperatives because of the restrictions on the cooperative management system. Non-cooperative members need help getting the support provided by the government to the cooperative, which has a significant impact on the production and life of small farmers. It is difficult to overcome the market drawbacks small farmers face.

Su Xin (2017) believes that the average number of members of specialized farmer cooperatives has a positive effect on the improvement of agricultural production efficiency and can alleviate the adverse impact of rural labor transfer on agricultural production. Zhang He (2018) found that farmers with 11-50 breeding heads were more willing to join cooperatives or cooperate with others in order to obtain better information resources and markets. By joining professional cooperatives, farmers can get more effective technical training and benefit from purchasing and selling materials. However, the profit of cooperatives is mainly held by the core members of cooperatives, and the marginal members have fewer benefits. Therefore, the development of cooperation between farmers and cooperatives still needs to be adjusted by evolution.

Table 6 Respondents' Participation in Cooperatives

Variables	grouping	frequency	percentage
Cooperative participation	No=0	358	75.37
	Yes=1	117	24.63
Total		**475**	**100**
Min	0		
Max	1		
Ave.	0.25		
Standard Deviation	0.43		

2.7 Part-time jobs in the respondents' families

It can be seen from Table 7 that among the surveyed farmers, there are 123 households, and 25.89% of the households have part-time jobs, and most of the farmers do not go out to work. The reason is also analyzed in the front. Because the quality of the labor force is not high, it is difficult to transfer from the countryside to the city. In addition, the beef cattle breeding scale of farmers in the sample area is generally small, and the labor force for beef cattle breeding at home is a little, so some family members go out to work. According to the field survey, the migrant workers who have not left their hometown will also find short-term jobs around the village in their spare time to maintain the family.

Li Jingjing (2021) said that the positive effects derived from the part-time operation of farmers mainly manifest as the reservoir of farmers' employment and the increase of farmers' income. Its negative effects are mainly manifested as weakening agricultural operations and delaying agricultural scale operations. At the same time, migrant workers' families pay huge emotional costs and weaken farmers' environmental protection behavior. Agricultural production activities do not need farmers to do full-time work. Sometimes also don't have that much of the labor force demand, so concurrent business appropriately is beneficial to increasing farmers' income. But once farmers go out to work, the income is more than farming'. , Then more and more farmers choose to work outside, which leads to the rural

migrant workers in the production and operation of development slow down or even reverse.

Table 7 Part-time jobs of respondents

Variables	grouping	frequency	percentage
working outside	0	352	74.11
	1	123	25.89
Total		**475**	**100**
Min	0		
Max	1		
Ave.	0.26		
Standard Deviation	0.45		

2.8 The number of beef cattle raised by the respondents

It can be seen from Table 8 that the number of beef cattle farmers with 1-5 head is the most, which can reach 61.89% of the respondents. This indicates that most beef cattle farmers in the sample area are retail investors who raise several heads. From the perspective of the breeding scale, the average breeding scale of beef cattle farmers is 8.54 heads, among which the largest size is 218 heads. The number of households with more than 10 heads was only 77, indicating that few farmers formed a breeding scale in the sample area. Only 14 households raised more than 50 beef cattle. These large farmers will drive the development of the local aquaculture industry. Small farmers can also get a certain degree of voice promotion on the sales side, depending on the large ones. In the field research process, large farmers have little influence on the farming of small farmers. The opinions and behaviors of large farmers can play a particular role in the demonstration of small farmers. However, local beef cattle farming has a long history, which has a limited impact on farmers with more extended breeding experience.

This is consistent with the sample areas. Some farmers, especially those with 0-5 head size, think their breeding scale needs to be more significant to cooperate with others or join cooperatives. And some cooperatives have also established a number of breeding entry thresholds. Farmers with a relatively large scale are more likely to make favorable decisions when they have conflicts of interest with other business entities (including small farmers).

Table 8 Beef cattle breeding quantity Table of respondents

Variables	grouping	frequency	percentage
The total number of cattle	0-5heads	294	61.89
	6-10heads	104	21.89
	11-25heads	57	12.00
	26-50heads	6	1.26
	More than 50 heads	14	2.95
Total		**475**	**100**
Min	0.00		
Max	218.00		
Ave.	8.48		
Standard Deviation	18.19		

2.9 Distribution of beef cattle breeding years of respondents

Local beef cattle farming has a long history, and most families have experienced the inheritance of breeding experience for several generations. According to the beef cattle breeding years shown in Table 9, 193 people have been bred for more than 21 years, accounting for 40.60%. On the one hand, it indicates that the breeders are generally older in beef cattle breeding; on the other, it indicates that beef cattle breeding is an industry with obvious dependence on breeding paths. The maximum value is 68 years, indicating that some older adults have raised cattle since childhood. The average breeding age is 20.43 years, which also indicates that most breeders in the sample area have their own production and

management habits for beef cattle breeding and that most breeders have rich experience in traditional beef cattle breeding in the early stage.

Table 9 Distribution of beef cattle breeding years of respondents

Variables	grouping	frequency	percentage
Farming years	Less than 5 years	108	22.70
	6-10 years	62	13.10
	11-15 years	40	8.40
	16-20 years	72	15.20
	More than 21 years	193	40.60
Total		**475**	**100**
Min	0		
Max	68		
Ave.	20.43		
Standard Deviation	15.07		

2.10 Proportion of income of respondents' households raised cattle

It can be seen from Table 10 that the proportion of the household income of cattle raising in household income in the sample area. There are 115 farmers, 24.21% of whose income ultimately depends on beef cattle breeding, and the most significant proportion is 50% of income. The income from cattle raising of 214 farmers accounted for 45.05% of the total household, indicating that most of the farmers' income came from beef cattle breeding, and beef cattle breeding in the sample area had a significant impact on farmers' income. The surveyed household heads' income from cattle raising is the primary economic source.

Table 10 Cattle raising income as a proportion of household income

Variables	Proportion of income	frequency	percentage
Raising cattle accounts for the family income	100%	115	24.21
	50%	214	45.05
	30%	102	21.47
	Less than 25%	44	9.26
Total		**475**	**100**
Min	1		
Max	4		
Ave.	2.16		
Standard Deviation	0.90		

2.11 Receive the technical guidance of modern beef cattle

It can be seen from Table 11 that 312 farmers can quickly get technical support from the government, cooperatives and other channels, accounting for 65.68%. More than half of the farmers can quickly get technical help, but it can be seen from Table 12 that there are 379 farmers accounting for 79.79% of them, who have yet to receive guidance and training in beef cattle. This indicates that some farmers in the sample area may have yet to receive training in modern beef cattle technology, and beef cattle breeding is mainly based on traditional technology.

According to Yuan Ruolan et al. (2022), a study found that participation in agricultural technical training can improve the agricultural production efficiency of farmers by 9.32%, and agricultural technical training has a significant positive effect on the agricultural production efficiency of farmers at different sub-sites. Farmers who participate in technical training can improve the efficiency of their agricultural production regardless of their quality basis. Therefore, agricultural technical training is essential. Expanding convenient access to technology and encouraging farmers to participate in technical training is necessary.

Table 11 Whether it is convenient to obtain guidance help

Variables	grouping	frequency	percentage
Is technical guidance or assistance readily available to you when you need it?	0	163	34.32
	1	312	65.68
Total		**475**	**100**
Min	0		
Max	1		
Ave.	0.66		
Standard Deviation	0.48		

Table 12 Whether you have received beef cattle sales guidance

Variables	grouping	frequency	percentage
Have you received any instruction or training in beef cattle production or marketing?	0	379	79.79
	1	96	20.21
Total		**475**	**100**
Min	0		
Max	1		
Ave.	0.20		
Standard Deviation	0.40		

2.12 External support situation

Table 13 External support for farmers

category	Variables	Ave.	Standard Deviation	Min	Max
	Loan amount	25637.89	49309.23	0	370000
	Accept training	0.2	0.4	0	1
	Government subsidies	0.15	0.36	0	1
	Technical guidance	0.66	0.48	0	1
	Number of farmers with good connections	16.61	24.82	0	200

The external support channels are limited, so the relationship with neighbors is a vital support channel. The table shows that the funds and technical support obtained by the research objects from cooperatives, financial institutions, governments, and science and technology departments need to be revised. The average loan amount of the surveyed farmers was 25637.89 yuan, but the sample number of households that did not get loans was 291 (some of them were unwilling to borrow), accounting for 61.26%. Moreover, only 15% of the research households have received government subsidies, and most of the research households have yet to receive government subsidies, so exogenous financial support is seriously insufficient. And the number of households receiving government training is only 20%, and 80% of the surveyed farmers have yet to receive technical training from the science and education departments. Therefore, neighborhood relationship has become an essential channel for obtaining external support. The above table shows that the average number of households maintaining friendly relations with their neighbors is more than 16. Generally, household heads in the survey get along well with their neighbors, and neighborhood relationship is essential for obtaining external support.

2.13 Characteristics of the degree of relationship with different subjects

Table 14 Degree of relationship with different subjects

Variables	Ave.	Standard Deviation	Min	Max
I have developed close ties with the government	3.37	0.56	3	5
I have developed close ties with the cooperative	3.08	0.31	3	5
I have developed close ties with the enterprise	3.11	0.37	3	5
I have developed close ties with the large farmers	3.86	0.79	3	5
I have developed close ties with the surrounding ordinary farmers	4.47	0.72	3	5
I have developed close ties with the village committee	3.63	0.72	3	5

In order to investigate the cooperation between different stakeholders, this study mainly involves five kinds of cooperation between small farmers and the government, cooperatives, enterprises, large farmers and neighbors. According to the effect of farmer scoring on the main body, the five mean scores are shown in Table 14. The relationship between small farmers and the surrounding ordinary farmers is the closest. In the 1-5 scores, the close relationship between farmers and the government, cooperatives, enterprises, large farmers, ordinary farmers, and village committees is investigated. The relationship degree is as follows:

In general, the relationship between the survey household and the government, cooperatives, enterprises, large farmers, ordinary farmers, and the village committee is at an above-medium level. Among them, the survey household has the

closest relationship with ordinary farmers. As shown in Table 14, the average score of the surveyed household in evaluating their breeding relationship with ordinary farmers is 4.47, close to the entire score of 5. This shows that the establishment of the survey household and ordinary farmers has a broader range of contact frequency, information exchange, and mutual help degree than other households. The average level of the other four research subjects and the government, cooperatives, enterprises, and large farmers is between 34, and the close degree of the survey household heads and cooperatives is the lowest, only 3.08, which is at the average level. It is worth noting that the minimum value of the five relationship evaluations is all 3, and no survey object gives a negative evaluation of 12 points, indicating a harmonious social relationship among different interest subjects in the local area. Although there is a conflict of economic interests, different interest subjects can live harmoniously.

A comprehensive evaluation of the cooperation effect

1. Evaluation Method

We use the centralization factor method to analyze, obtain the weight, and conduct a weighted evaluation to evaluate the cooperation effect between different subjects. We used the weight factor analysis table. There are two main methods to determine the weight: the subjective evaluation method and the objective weight method. Subjective evaluation means that relevant professionals evaluate each index according to their subjective cognition, such as the Delphi and expert consultation methods. There are many kinds of objective weight methods. To sum up, the objective evaluation method is a method to determine the weight according to the variation of indicators, mainly including the principal component method and entropy method. From the perspective of actual production and management, different subjects are affected by subjective ideas on the breeding effect. If the weight is determined only from the deterioration, there will be a significant deviation. Based on this, we adopted the subjective Weight evaluation method. After consideration, this study believes that the weight factor analysis table is the most appropriate method among the subjective evaluation methods. The weight factor

judgment table refers to a method in which the expert group composed of evaluators makes and fills in the weight factor judgment form and then determines the weight value from each expert's weight factor judgment form. The specific steps are as follows:1. Identify members of the Expert Group; 2. Formulate the evaluation index factor judgment table. 3. Experts fill in the weight factor judgment form. 4. Make statistics on the weight factor judgment table filled by the experts; Calculate the score value of each line of evaluation index; Get the average score of evaluation index and Evaluation index weight calculation. In order to evaluate the cooperation effect more scientifically and comprehensively, we divided the experts into three categories, each accounting for 20%, formulated 10 weight factor judgment tables according to regions and varieties, and scored the relative importance of each index of 13 indicators of different interest subjects.

A four-point to-two index to mark significant degrees is divided into five levels. For example, index A is far more critical than index B in 4 points, index A is more important than index B in 3 points, index A and index B are equally crucial in 2 points, index A is less critical than index B in 1 point, index A is far less critical than index B is 0 points. We use the formula expressed as:

$$W_i = \frac{\overline{t_\iota}}{S} w_i \qquad 2\text{-}1$$

represents the index weight. $\overline{t_\iota}$ Indicates the average score of an index after being scored by relevant personnel. $\boldsymbol{S}$Is the total score of each index. The weights were scored as follows:

2) Comprehensive effect calculation

The measurement of the cooperation effect of five subjects: On the basis of exact weights, the calculation formula for the comprehensive effect of the 13 sub-item effects is as follows:

$$\eta_i = \sum E_i \times W_i \qquad 2\text{-}2$$

In the type,η_i represents the comprehensive effect of cooperation between farmers and five subjects. E_i represents 13 itemized effects, and W_i Denotes the weight.

Table 15 Weight calculation results of each sub-index

	Evaluation of the effect of cooperation with subjects	W_i
1	A good relationship with principals	0.01
2	I think the subject is very supportive of beef cattle breeding	0.03
3	The subject support makes me more tolerant of breeding risks	0.08
4	I raise cattle with less labor intensity under the support of the subject	0.04
5	With the support of the subject, my income from cattle has increased	0.1
6	The number of cattle I raise has increased with the support of the subject	0.2
7	My cost of raising cattle has gone down with the support of the subject	0.15
8	With the support of the subject, I sell cattle at a stable price	0.1
9	With the support of the subject, my breeding risk is reduced	0.12
10	I'm farming on a larger scale than I used to	0.04
11	With the support of the subject, it's easier for me to raise cattle near my home	0.03
12	I have better relationships with my neighbors than before	0.08
13	The support of the cooperative subjects improves my happiness	0.02

Data source: weight factor analysis table method

2. Evaluation result of single effect

To evaluate the cooperation effect, this study adopted (1) a Good relationship with principals; (2)Think the subject is very supportive of beef cattle breeding; (3) The subject support makes me more tolerant of breeding risks; (4) I raise cattle with less labor intensity under the support of the subject; (5) With the support of the subject my income from cattle has increased; (6) The number of cattle I raise has increased with the support of the subject; (7) My cost of raising cattle has gone down with the support of the subject; (8) With the support of the subject, I sell cattle at a stable price; (9) With the support of the subject, my breeding risk is reduced; (10) I'm farming on a larger scale than I used to; (11) With the support of the subject, it's easier for me to raise cattle near my home; (12) I have better relationships with my neighbors than before; (13) The support of the cooperative subjects improves my happiness. The details are as follows:

In terms of the cooperation effect with the government, among the above 13 indicators, the cooperation between farmers and the government is effective (mean≥3). However, the cooperation effect is at a general level (mean<4), only within the optimal level range. Among the 13 cooperation effects, the best was "I have a better relationship with my neighbors than before" (mean=3.82). In terms of the cooperation effect with cooperatives, similar to government cooperation, the cooperation between farmers and cooperatives is practical (mean≥3). But the cooperation effect is at a general level (mean<4), and all the items do not reach the optimal level. Among the 13 cooperation effects, the cooperation effect of "the support of the cooperative subjects improves my happiness" was the best (mean=3.82). Similarly, in terms of the cooperation effect with the enterprise, the cooperation effect between the farmers and the enterprise is effective (mean≥3). But the cooperation effect is at a general level (mean<4), and all the items do not reach the optimal level range. Among the 13 cooperation effects, the best was "I have a better relationship with my neighbors than before" (mean=3.82). The cooperation between the research objects and large farmers was good, and the cooperation effect between farmers and enterprises was practical (mean≥3). But the cooperation effect was at a general level (mean<4), and all the items did not reach the optimal

level range. Among the 13 cooperation effects, the best was "I have a better relationship with my neighbors than before" (mean=3.82).

Table 16 Evaluation of 13 single items cooperation effect of five cooperation subjects

Variables	Government		Cooperatives		enterprises		Large farmers		Neighbors		Ave.	
	Mean	SD.	Mean	SD.	Mean	SD.	Mean	SD.	Mean	SD.	Mean	SD.
Good relationship with principals	3.46	0.62	3.29	0.59	3.24	0.54	4.04	0.74	4.59	0.66	3.72	0.41
Think the subject is very supportive of beef cattle breeding	3.71	0.76	3.31	0.53	3.27	0.51	3.89	0.76	4.35	0.69	3.71	0.39
The subject support makes me more tolerant to breeding risks	3.3	0.52	3.21	0.48	3.15	0.35	3.71	0.7	3.92	0.76	3.46	0.38
I raise cattle with less labor intensity under the support of the subject	3.19	0.42	3.21	0.52	3.08	0.28	3.45	0.64	3.59	0.65	3.31	0.34
With the support of the subject my income from cattle has increased	3.26	0.56	3.24	0.53	3.11	0.34	3.3	0.58	3.36	0.6	3.25	0.39
The number of cattle I raise has increased with the support of the subject	3.35	0.59	3.25	0.48	3.16	0.37	3.32	0.55	3.42	0.59	3.3	0.37
My cost of raising cattle has gone down with the support of the subject	3.19	0.46	3.18	0.41	3.08	0.28	3.19	0.46	3.22	0.48	3.17	0.29
With the support of the subject , I sell cattle at a stable price	3.18	0.46	3.19	0.44	3.11	0.34	3.26	0.46	3.25	0.49	3.2	0.29
With the support of the subject, my breeding risk is reduced	3.15	0.48	3.25	0.5	3.2	0.47	3.54	0.54	3.63	0.58	3.35	0.31
I'm farming on a larger scale than I used to	3.23	0.49	3.28	0.58	3.15	0.41	3.26	0.56	3.26	0.44	3.23	0.39
With the support of the subject, it's easier for me to raise cattle near my home	3.5	0.52	3.35	0.59	3.26	0.51	3.83	0.57	3.98	0.6	3.58	0.36
I have better relationships with my neighbors than before	3.82	0.69	3.5	0.71	3.36	0.61	4.01	0.68	4.51	0.66	3.84	0.45
The support of the cooperative subjects improves my happiness	3.67	0.69	3.55	0.77	3.34	0.59	4.01	0.68	4.45	0.63	3.81	0.44
Total	3.39	0.56	3.29	0.55	3.19	0.43	3.6	0.61	3.81	0.6	3.46	0.37

Data source: Survey data collection

3. Comprehensive effect evaluation results

According to the centralization factor method, the evaluation results of comprehensive index weight are as follows:

Table 17 The comprehensive effect of the five cooperative subjects

Variables	Ave.	Standard Deviation	Min	Max
Government	3.32	0.38	3	4.83
Cooperatives	3.26	0.41	3	4.51
Enterprises	3.16	0.30	3	4.34
Large farmers	3.46	0.39	3	4.49
Neighbors	3.60	0.39	3	4.72

Data source: Calculated according to the weight factor analysis table

Through the complete value factor table analysis, we can see that the mean value is practical. As shown in the table, between 3.16 and 3.60, all are greater than 3, which indicates that the evaluation results of the survey objects on the five subjects are all valid. All five scores were valid. Generally, after the sum of all the results, the minimum value is 3. Among them, the influence effect of neighbors and large farmers on the surveyed farmers is 3.60. The enterprise has the most negligible effect, and its evaluation of its effect is 3.16, which is the lowest effect. It is worth noting that all the result pairs did not reach 4; it indicated that the effect was at the medium to upper level but did not reach the optimal level. The discretization results show that the cooperation between small farmers and stakeholders is practical, but the effect is medium to upper level and not optimal.

Table 18 Specific evaluation of the comprehensive effect of the five cooperative subjects

Variables	No effect or small (1～3)		average effect or good (3～4)		Excellent effect (4～5)	
	Number of households	proportion	Number of households	proportion	Number of households	proportion
Government	-	-	436	91.79	39	8.21
Cooperatives	-	-	434	91.37	41	8.63
Enterprises	-	-	455	95.79	20	4.21
Large farmers	-	-	425	89.47	50	10.53
Neighbors	-	-	391	82.32	84	17.68

Data source: calculated by STATA

In terms of cooperation with the government, more than 90% of the research objects have average or sound cooperation effects with cooperatives. Nevertheless, only 8.21% of the research objects have an excellent cooperation effect with cooperatives. The analysis shows that the non-cooperation effect with the government is generally above the medium level. Regarding cooperation with cooperatives, the number of households with modest or reasonable effects is 91.37%. And the number with an excellent effect is only 8.26%, which indicates that cooperatives effectively influence the research objects and whether the influence is fair or reasonable. Regarding cooperation with enterprises, 95.79% of the respondents had a fair or reasonable effect. Nevertheless, only 4.21% had an excellent effect, and almost all had a modest effect. The cooperation effect with the enterprise could be better. The cooperation effect with large farmers is small, accounting for 10.53%. The cooperation effect of large farmers is significantly higher than that of the enterprise. Among the five cooperation effects, 80% of the cooperation effects with neighbors are fair or reasonable, and 20% of the cooperation effects are excellent, which is significantly higher than that of the government, cooperatives, enterprises, and large farmers. The above analysis shows that the cooperation effect with the subjects is

noticeable. But most of the effect is mediocre. The cooperation effect with the neighbor is the best, but the effect is excellent less than 20%. The results show effectiveness, but the effect could be better. And there is still a big gap from the optimal effect.

Analysis of influencing factors of the comprehensive effect

1. Analysis method and variable description

In order to explore the influence of different factors on the cooperation effect and clarify which factors are the main factors affecting the five cooperation effects, I'm going to use equation OLS regression. The equation is constructed as follows:

Variable selection

$$\eta_i = \alpha_0 + \sum_{k=1}^{n} \alpha_\tau X_k + \sum_{i=1}^{m} \alpha_i D_i + \varepsilon_i \quad 3\text{-}1$$

In the 3-1, Q_i stands for the effect of different subjects. $X_1 \dots X_k$ are continuous variables.

Specifically, it includes age, gender, education level, breeding years, household scale, land scale, loan amount, farmers with good relationships, non-relationship with the government, etc. $D_1 \dots D_i$ are dummy variables, including Whether to go out to work, whether to join cooperatives, whether to receive training, whether to receive government subsidies, and whether to obtain technical support. In view of the descriptive statistical analysis of the variables mentioned above, the variables are listed as follows:

Table 19 Variable description

category	Variable	Variable declaration
Effect	The effect of cooperation with government (Q_{11})	Continuous variable, The unit is points, The full mark is five
	The effect of cooperation with cooperatives (Q_2)	Continuous variable, The unit is points, The full mark is five
	The effect of cooperation with enterprises (Q_3)	Continuous variable, The unit is points, The full mark is five
	The effect of cooperation with large farmers (Q_4)	Continuous variable, The unit is points, The full mark is five
	The effect of cooperation with neighbors (Q_4)	Continuous variable, The unit is points, The full mark is five
Personal characteristics	Age (X_1)	Continuous variable, The unit is years
	Gender (X_2)	Dummy variable, 1= male; 0 = female
	Education (X_3)	Continuous variable, The unit is years
	Farming years (X_4)	Continuous variable, The unit is years
	Whether to work outside (X_5)	Dummy variable, 1= yes, 0= no
Family characteristics	Whether to join a cooperatives (X_6)	Dummy variable, 1= yes, 0= no
	Household scale (X_7)	Continuous variable, Number of registered household
	land scale (X_8)	Continuous variable, The unit is mu
	loan amount (X_9)	Continuous variable, The unit is yuan
	Household with good relationships (X_{10})	Continuous variable, The unit is the number of households
	Whether to receive training (X_{11})	Dummy variable, 1= yes, 0= no
	Whether to receive government subsidies (X_{12})	Dummy variable, 1= yes, 0= no
	Whether to obtain technical support (X_{13})	Dummy variable, 1= yes, 0= no
	Cattle income as a percentage of household income (X_{14})	Continuous variable, The unit is %
	Degree of relationship with the government (X_{15})	Continuous variable, The unit is points, The full mark is five

Table 19 (Cont.)

category	Variable	Variable declaration
Degree of relation-ship with different subjects	Degree of relationship with the village committee (X_{16})	Continuous variable, The unit is points, The full mark is five
	Degree of relationship with farmers (X_{17})	Continuous variable, The unit is points, The full mark is five
	Degree of relationship with large farmers (X_{18})	Continuous variable, The unit is points, The full mark is five
	Degree of relationship with the enterprises (X_{19})	Continuous variable, The unit is points, The full mark is five
	Degree of relationship with cooperatives (X_{20})	Continuous variable, The unit is points, The full mark is five

Note: Variables are selected according to relevant theories and literature

2. Analysis of regression results

The variance inflation factor method was used in this study (VIF) for inspection. If the maximum VIF is greater than 10 and the average VIF is greater than 1, multicollinearity exists. The results show that there is no multicollinearity problem in all equations. At the same time, the BP test results are significant, so the null hypothesis of no contemporaneous correlation is rejected. Therefore, Stata13.0 can be used for empirical analysis. In order to clarify the primary factors and significant factors, this study normalized the data. The final OLS regression results were as follows:

Table 20 Regression results of influencing factors of comprehensive effect

category	Variable	Government		Cooperatives		enterprises		Large farmers		Neighbors	
		Factor	P>t	Factor	P>t	Factor	P>t	Factor	P>t	Factor	P>t
Personal characteristics	Age	-0.08	0.35	-0.05	0.48	0.00	0.97	-0.15*	0.08	-0.18*	0.07
	Gender	0.00	0.93	0.00	0.98	0.00	0.91	-0.02	0.68	0.04	0.33
	Education	-0.01	0.88	-0.02	0.79	-0.01	0.87	-0.06	0.43	-0.06	0.45
	Farming years	-0.01	0.92	0.05	0.51	0.03	0.65	0.11	0.17	0.16*	0.09
Family characteristics	Farming scale	-0.07	0.57	-0.47**	0.02	-0.32***	0.01	0.08	0.62	0.27	0.33
	Whether to work outside	-0.06*	0.08	-0.02	0.50	0.02	0.42	-0.01	0.83	0.01	0.83
	Whether to join Cooperatives	0.26***	0.00	0.74***	0.00	0.24***	0.00	0.29***	0.00	0.10**	0.02
	Household scale	0.08	0.30	0.01	0.88	0.03	0.57	0.20***	0.01	0.22***	0.01
	land scale	-0.08	0.51	-0.18	0.24	-0.22**	0.07	0.30*	0.08	0.02	0.90
	loan amount	-0.02	0.82	-0.06	0.63	0.14	0.18	-0.06	0.58	0.05	0.71
	Household with good relationships	0.05	0.66	0.10	0.29	0.11	0.23	0.13	0.45	0.30*	0.06
	Whether to receive training	-0.06	0.23	-0.11***	0.01	0.05	0.24	0.02	0.63	-0.02	0.78
	Whether to receive government subsidies	0.27***	0.00	0.04	0.29	0.00	0.89	0.25***	0.00	0.31***	0.00
	Whether to obtain technical support	0.04	0.27	-0.08***	0.01	-0.03	0.26	-0.05	0.16	-0.12***	0.00
	Cattle income as a percentage of household income	-0.09	0.50	0.03	0.84	0.03	0.79	0.11	0.38	0.15	0.34

Table 20 (Cont.)

category	Variable	Government		Cooperatives		enterprises		Large farmers		Neighbors	
		Factor	P>t	Factor	P>t	Factor	P>t	Factor	P>t	Factor	P>t
Degree of relationship with different subjects	Degree of relationship with the government	-0.10	0.25	0.19***	0.01	0.19***	0.01	0.26***	0.00	-0.07	0.43
	Degree of relationship with the village committee	0.07	0.23	0.00	0.96	-0.10*	0.08	-0.15**	0.01	-0.02	0.78
	Degree of relationship with farmers	0.16***	0.00	-0.04	0.34	-0.07*	0.07	0.08	0.21	0.34***	0.00
	Degree of relationship with large farmers	0.17***	0.00	-0.10***	0.01	0.06	0.19	0.22***	0.00	0.03	0.50
	Degree of relationship with the enterprises	0.38***	0.00	-0.01	0.91	0.50***	0.00	0.01	0.90	0.25*	0.08
	Degree of relationship with cooperatives	-0.17	0.11	0.15	0.21	-0.37***	0.00	-0.13	0.11	0.24**	0.01
Others	Constant term	3.05***	0.00	3.23 ***	0.00	3.1***2	0.00	3.16***	0.00	3.21***	0.00
	F(21, 453)	17.32		20.11		4.78		15.44		11.75	
	Prob > F	0.00		0.00		0.00		0.00		0.00	
	R-squared	0.35		0.56		0.29		0.35		0.29	
	Root MSE	0.32		0.28		0.26		0.32		0.34	

Data source: collated according to STSTA calculation results, *p<0.1, **p<0.05, *** p<0.01

Object 3 The effective guidelines to increase the effectiveness of small farmers' cooperation in production Guangnan County

There are many factors affecting t the effectiveness of small farmers'cooperation. In the face of different cooperation objects, the influencing factors are different, including:

1) In terms of cooperation with the government, as shown in Table 6, whether to join a cooperative, whether to receive government subsidies, the degree of relationship with neighbors, the degree of relationship with large farmers, and the degree of relationship with the enterprise all have a positive impact on the cooperation effect between farmers and the government at the significance level of 1%.In other words, the above five factors are the main positive factors affecting the cooperation effect between farmers and the government. Among these, the degree of relationship with the enterprise has the most considerable positive impact on the cooperation effect. Whether to go out for work is a negative factor affecting the cooperation effect. There are several reasons for this result:

1.1) The government gives strong support to cooperatives. At present, the government believes that the participation of small farmers in cooperatives is the main way to solve the weak market competitiveness of small farmers. The government provides support to cooperatives in the form of projects or subsidies. The subsidy amount will be converted into shares of the cooperative and distributed equally among the members, who may obtain shares without compensation.

1.2) The government generally believes that the good development of regional industries can promote the development of small farmers. The government also largely relies on enterprises to support small farmers. When providing project support to enterprises, there will be additional conditions, such as requiring enterprises to be responsible for solving problems, such as the purchase of beef cattle guarantee price for small farmers and technical training.

1.3) The government supports farmers' breeding in production and the lives of all farmers, including road improvement, power supply guarantee, food safety, environment improvement, etc. Villagers are delighted with the government,

forming good public opinion, and farmers influence each other on the good evaluation of the government.

1.4) Most rural households go out to work in economically developed areas, which is in great contrast with the relatively backward economic development level of the local areas. So there is a tremendous psychological gap.

2) In terms of cooperation with cooperatives, whether to join cooperatives and the degree of relationship with the government have a positive impact on the cooperation effect of farmers and cooperatives at the significance level of 1%, which are the main positive factors affecting the cooperation effect of farmers and cooperatives. Among them, whether to join the cooperative has the most positive influence on the cooperation effect. Farming scale, whether to receive training, whether to obtain technical support and the relationship with large farmers were the main negative influencing factors. The farming scale had the most significant negative impact on the cooperation effect.

2.1) After joining the cooperative, small farmers can use the scale of the cooperative to strive for more benefits in the market competition, including the selling price of products and the purchase price of agricultural materials, etc. They can also use the government's support to the cooperative to obtain policy dividends.

2.2) Small farmers have a close relationship with the government and can timely obtain information on government policies. And they can apply to the government using cooperatives as a carrier. At the same time, they can also understand and make use of the contents of government projects implemented in cooperatives.

2.3) Receiving training, easy access to technical support, and farmers with good relations with large farmers can partially obtain technical services provided by cooperation. And the marginal benefit of cooperation with cooperatives will decline.

3) In terms of the cooperation effect with the enterprise, whether to join the cooperative, the degree of relationship with the government and the degree of relationship with the enterprise has significant positive effects on the cooperation effect between farmers and the enterprise at the significance level of 1%, which are the main positive factors affecting the cooperation effect. Among them, the degree

of relationship with the enterprise positively impacts the cooperation effect. Farming scale, land scale, and the degree of relationship with cooperatives are the main negative influencing factors. The degree of relationship with cooperatives has the most significant negative impact on the cooperation effect.

3.1) With the government's and cooperatives' support, small farmers will have more speech rights in the game and better safeguard their interests in enterprise cooperation.

3.2) Compared with small-scale farmers, the conflict of interests between large-scale farmers, including the head of the cooperative and the enterprise, causes a more significant loss of interest. Therefore, farmers with close relationships between large-scale farmers and the cooperative have a lower evaluation of the cooperation of the enterprise.

4) In terms of the cooperation effect with large farmers, whether joining cooperatives, land scale, household population, receiving government subsidies, and the degree of relationship with the government has significant positive effects on the cooperation effect with large farmers at the significance level of 1%-10%, which are the main positive influencing factors. Among them, whether to join the cooperative has the most positive influence on the cooperation effect. Age and the degree of relationship with the village committee significantly negatively impact the cooperation effect at the significance level of 5%-10%, which are the main negative influencing factors. The degree of relationship with the village committee has the most considerable negative impact on the cooperation effect.

4.1) Large farmers have the opportunity to join cooperatives to obtain benefits. Meanwhile, farmers with large land scales, large households population, and access to government subsidies are more likely to be large farmers and have a good evaluation of themselves.

4.2) Large farmers can obtain relatively more support and have a significant influence in the countryside, which will affect the authority of the village committee and the elderly in the village.

5) In terms of the cooperation effect with neighbors, age, whether joining cooperatives, the number of farmers with good relations, whether receiving

government subsidies, the degree of relationship with farmers, the degree of relationship with enterprises, and the degree of relationship with cooperatives have significant positive effects on the cooperation effect between farmers and neighbors at the significance level of 1%-10%. These are the main positive factors affecting the cooperation effect. Among them, the degree of relationship with farmers has the most positive influence on cooperation. Age and availability of technical support were the main negative influencing factors, and age had the most significant negative influence on the cooperation effect.

5.1) Farmers with good social relations have positive evaluations of their cooperation with other farmers.

5.2) Relatively closed farmers only exchange a little technology with other farmers. In addition, older farmers are more confident in their breeding techniques, so they rate the cooperation of other farmers less.

Finding

Firstly, beef cattle farming is local farmers' primary income source. But external support channels are limited, and the relationship with neighbors is essential.

Secondly, the analysis results show that the cooperation between small farmers and stakeholders is practical. But its effect is medium to upper level and needs to reach the optimal level.

Thirdly, regarding personal characteristics, age and farming years are the main positive factors affecting large farmers and their neighbors. Farming years are negative factors affecting breeding cooperation.

Fourthly, in terms of family characteristics, whether to join cooperatives is the main positive factor affecting the cooperation of the five subjects. Government subsidies are the main positive factors affecting the government, large farmers and families.

Fifthly, all five cooperative relationships have different degrees of influence on non-cooperative subjects. Among them, the cooperation with large farmers, government, cooperatives, and other large cattle farmers all have a significant

favorable influence, indicating that the scale of farming is an essential factor influencing cooperation.

Since the cooperation of small farmers in Guangnan County has not reached the optimal level, the policy suggestions to improve the cooperation level of farmers are as follows:

Firstly, the government will moderately increase subsidies to farmers. The formulation of subsidy policy should fully consider the interests of farmers with a farming scale of fewer than 6 heads. Then strengthen the publicity of good-neighborly friendships and improve neighbor relations.

Secondly, increasing the number and pertinence of technical training and giving full play to rural technical training can improve farmers' technology and enhance farmers' communication function. Increasing the communication between breeding subjects. Through publicity, small farmers can increase their understanding of the government and the enterprise, improve their appeal ability, get more support from the government and improve the cooperation effect.

Thirdly, the government should regulate the cooperative management and reduce the discriminatory management system for small farmers. In view of the farmers who join the cooperatives, the government should encourage an increase in the appropriate scale of operations. At the same time, the government should promote the drive for cooperative ability, encourage the farmers to actively join cooperatives, and improve farmers after joining the cooperative ability to safeguard their interests and rights.

Fourthly, the government should formulate reasonable policies to regulate and constrain enterprises' behavior and protect small farmers' interests. We will give full play to government support, coordination and management. And the government should support enterprises in leading small farmers to improve the effectiveness of cooperation so as to expand and strengthen the local beef cattle industry.

Fifthly, the government should actively train small farmers to become large farmers, provide support from policies, funds and technologies, encourage large farmers to cooperate, and develop social elites' role in rural areas. Then make, they

can drive small farmers to improve market competitiveness through organizational development and jointly resist market risks.

Sixth, for part-time farmers, the government should provide more technical training and employment information to improve the professional level of farmers. Farmers who go out to work and farm can all get better benefits.

CHAPTER 5

SUMMARY, DISCUSSIONS AND RECOMMENDATIONS

This chapter includes the summary, conclusion, and enlightenment of the study. It summarizes the research methodology and includes the findings. The final section provides implications and suggestions for local governments, policymakers, and small farmers to improve cooperation efficiency and increase income and provides suggestions for future research.

Summary

This study aims to analyze and evaluate the type of cooperation and the effect of different types of cooperation among small farmers in Guangnan County in agricultural production cooperation. This study aims to develop a more reasonable method to improve the effectiveness of cooperation. Small farmers in the market economic activities can get a reasonable reward. At the same time, the weak position of small farmers in market economic activities will be improved. That also can improve the ability of small farmers in rural development.

From the perspective of rural development, the farmer participates in social activities and gets profits from it inevitably with the relationship between different stakeholders. The relationship between both sides is competitive and also a kind of cooperation. Cooperation improves the level of organization and expands the scale so that small farmers participate in market economic activities to reduce the risk. According to the data obtained, the production cooperation of small farmers is essential for developing small farmer families. According to the data obtained, the production cooperation of small farmers is essential for developing small farmer families. At the same time, the government's support for small farmers is powerful, and small farmers have the highest proportion of profits from all cooperation. Qualitative and quantitative research methods were used in this survey. Structured questionnaires and focus group discussion interviews were used to collect data.

Specifically, the study aims to answer the following objectives:

1. Analyze the types of small farmers' cooperation in Guangnan County
2. Analyze the effect of agricultural cooperation among small farmers in Guangnan County.
3. Analyze the factors affecting the agricultural cooperation of small farmers in Guangnan County.
4. Formulate strategies to improve the agricultural cooperation efficiency of small farmers and protect the profit of small farmers.

The research survey methodology was used to answer Objectives 1, 2, and 3. These objectives focus on aspects that describe the characteristics of farmers and the current status of farmers' beef cattle practices.

This includes the evaluation, technology, management, organizational structure, and informal structure of farmers in the agricultural (aquaculture) cooperation with different stakeholders; the adoption of rice crop management techniques/practices by farmers; the allocation of farmers' time for farm, non-farm and leisure work; and the level of self-reliance of farmers.

The critical points of these research objectives are: considering the personality characteristics and resource endowments of small beef cattle farmers in Guangnan County, we study the content and form of cooperation between small farmers and other stakeholder groups as well as their mutual relations. , Then the influence and effect of participating in cooperation on small farmers are obtained. In the process of China's agricultural modernization, small farmers, as the most basic production units, are also in a weak position in the agricultural industry chain. Therefore, in participating in the development of modern agricultural market competition, how to achieve efficiency and fairness to protect the interests of small farmers has become a vital issue.

The study was conducted in Guangnan County, Yunnan Province, using stratified random sampling. During the sampling process, the required number of small farmers was selected by stratified random sampling from each selected sample village. There are a total of 18 townships in Guangnan County. First, we excluded the 2 townships that did not raise cattle in Guangnan County and took the remaining 16

as sampling objects. According to the suggestion of local beef cattle experts, we randomly selected 5 towns with a relatively concentrated Number of cattle farmers (Zhulin Town, Zhujie Town, Yangliujing Town, Zhetu Town, and Jiumo Town). Each township randomly selected 6 natural villages, a total of 30 natural villages. For each village random 15-20 households survey, 504 questionnaires were distributed, and 475 valid questionnaires were recovered.

Descriptive statistics were obtained by collecting data through structured questionnaires and interviewing local government officials, business owners, leaders of cooperatives, and ordinary farmers. Regression analysis and SPSS software for social science statistics were used to determine the predictive variables affecting the level of cooperation effect of small farmers.

To ensure the validity of the content, the questionnaire was provided to 10 experts in the field of agriculture, especially in beef cattle production. Experts are also invited to provide comments and suggestions on the project's relevance, accuracy, and appropriateness. According to the opinions and suggestions of experts, necessary amendments were made to the questionnaire to improve the content and details. And experts score the weight of the cooperation effect according to the expertise. Before the formal survey, a pre-survey was conducted on 30 small farmers in the research area to verify the scientificity and operability of the questionnaire. Nevertheless, this part of the pre-survey questionnaire was not part of the sampling. According to our previous research experience, before starting this research, we had thorough communication with local experts, understood the language habits of local farmers, and changed the written language into the local oral language. Ask questions during the survey in a language that the farmer can understand to communicate with the target respondents effectively. In order to communicate better, we hired local people as our drivers and translators and asked my local friends to communicate our purpose and purpose to the local village leaders in advance. For example, under the leadership of the village leader (village director), we introduced our research work to the villagers through rural radio. And we participated in local weddings and other cultural activities under the leadership of the village director to fully understand and communicate with the villagers. At the

same time, due to the influence of the village director, we obtained the support and cooperation of the local villagers when they accepted the questionnaire survey. Before the survey of each farmer, we would fully communicate with the respondents and introduce our identity, the information in the questionnaire, and the time would spend. With the respondents' consent, we conducted the questionnaire survey and interview.

In the questionnaire survey, 504 questionnaires were distributed, and 475 valid questionnaires were recovered, with an effective rate of 94%. This shows that the questions measured in the questionnaire and the methods adopted are reasonable and practical. Before conducting the questionnaire survey, we communicated and explained with the local government and agricultural management department. The government and agricultural administrative departments believe that our research is beneficial to the local rural development and the improvement of farmers' lives, so they are willing to provide support according to the practical needs of our research.

The data obtained were analyzed according to the research objectives. And descriptive statistics were used to describe the variables in the study. Multiple regression analysis was used to determine the predictor variables (independent variables) associated with it. Based on the prediction results, this paper analyzes and studies the effect of cooperation between small farmers and different stakeholders in Guangnan County and the factors that affect the effect of cooperation. In the transition period of Chinese society, the development level of rural areas varies greatly. As a rural area with a low level of development in China, Guangnan County is the epitome of the transformation process from traditional agriculture to modern agriculture in rural China, which is quite different from the development path of most rural areas in China. Through the analysis of questionnaire data, the influencing factors of the cooperation effect of small beef cattle farmers in Guangnan County are conducive to the government's more targeted policy in helping local rural development. The form and content of help are more consistent with the needs of farmers, and the effect is better.

Discussions

Most of the respondents engaged in farming farmers belong to the elderly. The average age of the respondents is 49 years old, and 74% are male, indicating that men still dominate the local beef cattle breeding. 61.89% of the households had less than 5 beef cattle, and 40.60% had an average breeding life of more than 21 years, indicating that the local farming scale was relatively small and farmers had a long history of beef cattle farming.

1. The survey on the characteristics of farmers showed that most of the interviewed small farmers had a relatively short education period, with an average education period of less than 4 years. The majority of those engaged in farming are older adults, which indicates that they generally have a low level of education and can only do some low-skilled manual work in society. At the same time, they do not have much room to choose jobs and do not have a solid ability to adapt to society. Leaving the countryside to move to the city for work opportunities makes finding a suitable career in the city complex.

2. The income source of the small farmer family is mainly obtained by beef cattle breeding. According to the data, the households with more than 50% income from cattle raising accounted for 69.26 of the household income of the respondents—the income from raising cattle accounts for a relatively high proportion of the household income of small farmers. Small farmers pay more attention to the impact of breeding cooperation on income and are only motivated to cooperate with benefits. The cooperation between small farmers and their neighbors gets the most direct benefits, so the satisfaction of small farmers with other farmers is the highest, with an average score of 4.47, close to the entire score of 5. 25.89% of farm families have part-time jobs, which also indicates that some families have low incomes from beef cattle breeding, and they need to engage in other jobs to increase their family income. There is no conflict of interest in the cooperation between the government and small farmers. And the small farmers whom the government supported in the interview were satisfied. However, due to the limited resources of the government, government staff need to consider from the

perspective of resource efficiency. The government mainly allocates beef cattle breeding support resources to favor cooperatives and large-scale farmers. Farmers with less than five heads have limited government support for beef cattle breeding. So small farmers who have yet to have the expected level of government support are not happy about the problem.

3. Small farmers' breeding scale is small; scale benefits are difficult to reflect. Among the respondents, 65.05% have more than 3 workers per capita in the family, and the land area of each household is 5.54 mu, which is slightly higher than most areas in China. However, the scale of the breeding industry is relatively small. The average land area of the household is less than 5 mu, accounting for 67.37% of the total number of respondents. And the scale of beef cattle breeding is less than 5 head, accounting for 61.89% of the total respondents. The small production mode under the free range mode leads to a great waste of human resources. According to the survey, a local farmer can graze about 20 heads per day, and in a well-managed breeding enterprise, a farmer can graze 40-50 heads per day. But the reality is that no matter how many cattle there are in the family, a labor force has to be allocated for grazing.

4. Small farmers' breeding level is unprofessional and lacks modern breeding technology and market awareness. Herbage planting and feeding livestock is an essential means of production in modern animal husbandry. But the survey found that most of the farmers had no habit of growing grass and only fed some corn and wheat bran before selling the beef cattle. Only the local breeding enterprises have partial pasture cultivation. From the respondents' perspective of the cultivation time, the average value is 20.43 years. And 40.60% of them have been breeding for more than 21 years. The longest time is 68 years. 79.79% of the farmers have not received guidance and training on breeding beef cattle. Meanwhile, affected by farming habits, beef cattle breeding is still dominated by traditional technology, and the production efficiency could be higher. In beef cattle sales, farmers also based on their own experience, neighbors, and traders to provide information. In the transaction, If they only base on personal experience to evaluate, it is difficult to obtain a better price.

5. Low level of organization and non-standard management of cooperatives are also essential factors affecting small farmers' cooperation. The disorder of small farmers' production and the order of market demand are contradictions that the market economy can hardly reconcile. It is the trend of modern agriculture development that farmers organize by establishing cooperatives to resist market risks together. However, in the local area, due to the non-standard management of cooperatives, small farmers were prevented from joining cooperatives due to the scale discrimination of cooperatives (75.37% of the respondents). Farmers outside cooperatives have a low opinion of cooperatives because they cannot enjoy the preferential policies given by the state and the services provided by cooperatives. At the same time, farmers with more minor farming scales in the cooperative believe that the benefits in the cooperative are mainly obtained by farmers with larger scales in the cooperative, so they have a low evaluation of the cooperation with the cooperative. The average survey score is 3.08, which is the lowest among all cooperative objects.

6. The cooperation between farmers and interest subjects forms a relatively stable and typical informal organization, but at the same time, there are also conflicts of interest and competition between them. The cooperation of informal organizational structure is relatively stable. However, there is a big gap in social capital among farmers, and the effect of such cooperation is affected by the amount of social capital held by certain farmers. The cooperation between farmers and interest subjects is both cooperation and competition. The cooperation between farmers and interest subjects effectively improves production efficiency and increases farmers' income. However, in the survey, some small farmers believe that enterprises take advantage of market advantages and cooperate with small farmers to reduce prices. Hence, the evaluation of cooperation with enterprises is low, with an average of 3.11. The same problem exists with cooperatives.

Suggestion

The core development of rural areas is the improvement of farmers' living standards. The core problem between farmers and interest subjects is the mode of interest connection. In order to improve the effectiveness of cooperation, it is necessary to establish a stable interest connection mode between small farmers and stakeholders. The interests of all stakeholders are consistent. And they can form a "risk sharing, benefit sharing" relationship. They should use practical cooperation to improve farmers' income and living standards. Here are some suggestions for those who want to change the lives of farmers in Guangnan County, Yunnan Province, China:

The local government

The government can play an important role by formulating rational agricultural policies for small beef cattle farmers in Guangnan County and helping farmers improve their production and living conditions.

1. Local governments play a more critical role in small-farmer cooperation. Among all the subjects of agricultural production in China, farmers have the highest recognition from the government. Farmers regard the government as the strongest supporter of protecting farmers' interests. In the cooperation involving small farmers, the government should give more support to small farmers. This includes making "green box" policies available to the majority of small farmers, increasing the quantity and quality of "yellow box" policies specifically targeted at small farmers, and increasing the ability of small farmers to resist production risks.

2. The government should strengthen the construction of local agricultural infrastructure and the construction of the social system of public welfare agriculture. First of all, the government should strengthen the agricultural production infrastructure, improve the irrigation and water conservancy facilities, build the road from the village and the natural pasture to the village, and encourage small farmers to participate in the village infrastructure management. Then, the government needs to provide a good variety of disease control services, market services, and so on for

small farmers. Finally, the government needs to build public roads from rural to urban areas so that small farmers can more easily access medical, education, market, and other resources in cities. The government also needs to improve the comprehensive quality of small farmers, make them better adapt to the development of agricultural modernization, and promote the organic connection between small farmers and the development of modern agriculture.

3. Strengthen publicity and mobilization. Through the publicity of laws and policies related to farmer cooperation, farmers' familiarity with cooperative policies and laws has improved. By means of training and typical demonstration, the government organizes farmers to learn from the successful cooperation experience of other regions. It increases the knowledge of small farmers on production cooperation. This can also help farmers to understand agricultural cooperation and their rights and obligations in the cooperation, enhance farmers' ecological concept and market risk awareness and train small farmers to adapt to market competition ability so that farmers have a better production cooperation effect.

4. The state Treasury will increase capital investment in rural areas and increase support and subsidies for small farmers. The government will create a good environment for farmers to increase their incomes through financial support for rural development. The government provides financial subsidies to small farmers in renovating cattle houses and purchasing breeding and transportation machinery. It provides free agricultural research, education, market information, and government service support for the promotion system. The government should pay attention to the financial support for agricultural credit and insurance and establish a complete government agricultural support and protection system. In addition, the government should continue to pay attention to investment in developing rural social services, including rural education, health, social security and anti-poverty. This has played a vital role in changing rural backwardness and narrowing the income gap.

5. Standardizing the management of specialized farmer cooperatives. The government should support the development of agricultural cooperation organizations. The government should subsidize appropriate investments in cooperatives that serve farmers and exempt them from taxes on profits, sales, and

property. The government needs to improve the corresponding supervision and constraint mechanism to prevent enterprises or large farmers from manipulating the decision-making of cooperative benefit distribution and protect the interests of small farmers. The government also needs to supervise the operation of cooperatives and whether they are strictly in accordance with the financial management provisions of the Law of the People's Republic of China on Specialized Farmers Cooperatives. The management and operation of cooperatives should fully reflect the reasonable interests of all members, not only the interests of the heads of cooperatives. The government should stop the discriminatory behavior of some cooperatives against the participation of small farmers in cooperatives in strict accordance with the Law of the People's Republic of China on Specialized Farmer Cooperatives. Moreover, they should give corresponding penalties to avoid similar situations.

The government should require cooperatives to form a system of fair prices for agricultural products with small farmers.

First, the acquisition must have a minimum price standard;

Second, to realize the balanced distribution of benefits. For example, proprietary venture capital should be set up within the cooperative to make the interests of farmers converge. And the obtained profits should be applied to the secondary rebate of farmers.

Third, to realize the financial transparency of cooperatives. For the other party participating in the community of interests -- small farmers, the cooperative must be able to timely, clearly, and accurately publicize the operation status of each enterprise to them. Small farmers participating in the cooperation can grasp the actual operation situation of the cooperative and supervise it in real-time to avoid arbitrary behavior.

Policy implications

1. To formulate a development plan for the beef cattle industry in Guangnan County that can protect the interests of small farmers

Developing the beef cattle industry in Guangnan County is a long-term process. Industrial development involves different interest subjects. In the long-term industrial development, the interests of the vulnerable groups in the industry - small farmers should be fully considered to achieve a win-win situation for all subjects.

2. Make clear the distribution of benefits between small farmers and various stakeholders and give play to the influence of agricultural policies. Let small farmers and interests be in the cooperation of an equal position. The agricultural policies should prevent the interests of interest subjects to use the advantage of the market to squeeze the interests of small farmers.

3. Strengthen the management of natural grassland and standardize the natural grazing behavior of various interest subjects. Natural grassland in Guangnan County is the main area for small farmers to graze. The property rights of these natural grasslands belong to the state and the rural communities. This requires the formulation of effective policies and the rational use of grassland grazing to prevent the "Tragedy of the commons" proposed by Garrett Hardin (1968) from occurring locally. To prevent the degradation of natural grassland and the destruction of the ecological environment caused by overgrazing.

4. Make a reasonable support plan according to the characteristics of small farmers in Guangnan County. Small farmers in Guangnan County raise beef cattle to make a living and because of the local culture's love for cattle. Beef cattle raising has not only economic but also social attributes. In addition to production support, cattle promotion should also support cattle-related activities. These include cow sacrifices, cow festivals, bullfights, etc. The government should provide financial, policy, and other resources to support similar activities carried out by communities.

5. Develop policies to guide financial institutions to finance various types of cooperation. The development of rural industries requires more financial support. Through policy support, financial institutions will be encouraged to lower their loan standards for small farmers. Enterprises will be supported to build intensive

production bases to integrate small farmers into the market better. The government will offer particular financial support policies, interest subsidies, and tax deductions to organizations specializing in serving small farmers' partners or social services.

6. Establish a sound beef cattle breeding insurance system to reduce the production risk of small farmers. Small farmers belong to a vulnerable group in the agricultural production system, and their ability to resist risks weakens. Beef cattle breeding has great instability and risks. In order to resist the natural risks and market risks in the breeding process, the government should take the initiative to cooperate with insurance institutions and set up policy-based agricultural insurance. In addition, the compensation amount and insurance premium should be reasonably set according to the market price of beef cattle. The government should also give a certain proportion of insurance premium subsidies to farmers who buy insurance. After purchasing insurance, small farmers can reduce losses when they encounter production and market risks. The government can also encourage enterprises and small farmers to establish venture funds jointly. When small farmers and cooperative enterprises combine, such combination with an exciting relationship may also reduce the losses of small farmers.

For small farmers

It is suggested to improve the quality of small farmers, the degree of organization, and the level of breeding technology.

1. Improve the quality of small farmers.

The quality of the labor force plays a decisive role in rural labor productivity. The improvement in labor quality means that farmers have smaller input and larger output in production. Farmers can participate in the community's management and influence management decisions to safeguard their interests.

1) Strengthen basic education in rural areas. The foundation laid by rural basic education for educatees is not only the basis for educatees to go to school step by step and accept high and intermediate professional education, but also the fundamental quality foundation for educatees to accept various forms of vocational education or technical training, and even engage in various jobs in the future. The improvement of the quality of small farmers means that they have more choices of production behavior in production and have more vital cooperation ability and more bargaining chips in agricultural cooperation with different stakeholders.

2) Strengthen farmer breeding technology training, and improve farmer breeding level. They should give full play to the scientific and technological strength of government agricultural departments, agricultural research institutes, agricultural colleges and universities, agricultural vocational schools, enterprises, and social organizations, and carry out targeted and extensive agricultural technical training. Various forms of training can be adopted according to the characteristics of farmers, including training courses, household visits, field schools, on-site guidance, and other methods suitable for the advanced breeding technology of farmer schools.

3) Encourage young people to return to their villages for agricultural production and improve farmers' overall quality. The rural young labor force has better education quality and physique. With the acceleration of China's urbanization process, most rural young people go to cities to live and work. Those engaged in agricultural production in rural areas are mainly middle-aged and older adults. The average age of small beef cattle farmers in Guangnan County is 50 years old, and the years of education are less than 4 years. The low physical and educational quality has restricted the improvement of beef cattle breeding levels, which could be more conducive to farmers' participation in market competition. We should encourage young people to engage in beef cattle breeding and create better conditions for young people to work and live in rural areas. Those all can attract young farmers to stay and improve the overall labor quality of small farmers.

4) Village elites in rural areas are encouraged to play a leading role. Village social elites have better breeding technology, management ability, social relations, and excellent personality than ordinary farmers. Most of these village elites

hold certain positions in the village. They can use their charm and authority to regulate the cooperation between small farmers and interest subjects to maintain the village's harmony and stability.

5) Village elites lead the development of excellent traditional rural culture in the countryside. By using the emotional identification and identity of the villagers to the village in the rural historical and cultural traditions, Village elites lead to restoring and reshaping the rural culture and enhancing the identification of different interest subjects to the public interests of the village. Farmers can explore the positive factors promoting cooperation from the traditional culture.

6) Encourage childbearing and expand the size of rural families. Although Chinese rural areas are deeply affected by many children and many blessings, the problem of an insufficient labor force is still severe. The aging problem of the Chinese rural labor force is prominent. On the one hand, the rural young labor force has moved to the cities, and China has entered an aging society. On the other hand, the number of births has decreased, and the family size is also the main reason. The Chinese government now encourages farmers to have three children, and we should support the state's policy of encouraging childbearing so that there will be more young people in rural areas.

2. Organized

1) Encourage mutual assistance between small farmers and farmers. Mutual assistance among farmers is a stable informal organization formed by cooperation among farmers. Such cooperative organizations have solved the difficulties encountered in most small farmers' agricultural production. In relatively closed rural areas, this kind of cooperation is the best choice in agricultural production. And this cooperation solves the difficulties of small farmers' family management at a low cost. This cooperation is based on emotion. Fei Xiaotong (1948) believed that communication among peasants in a village was a social activity between acquaintances, which was closed, emotional, and stable. This kind of agricultural cooperation has strong emotion but weak utility, promoting production and becoming the bond and path of farmers' emotional communication.

2) Encourage small farmers to participate actively in specialized agricultural cooperative economic organizations. Standardized agricultural economic cooperation organizations can serve as the organization carrier of small farmers, and their ability and influence greatly exceed the individual development of small farmers. They can negotiate and trade on behalf of small farmers and protect the interests of small farmers. They are also the best choice to promote the development of the agricultural economy. Small farmers need to have the right to choose whether to join the cooperation or not freely. In Guangnan County, the qualification criteria for the number of beef cattle breeding cooperatives should be canceled to protect the right of small farmers to join the cooperatives.

3) Encourage small farmers to participate in community activities actively. First, it should improve the breadth and depth of small farmers' participation in the community. Small farmers participate in the management and supervision. And they also make decisions for villagers. Small farmers freely express their opinions and suggestions on the basis of participation so as to increase the influence of small farmers in the community. Second, through participation, small farmers can realize positive interaction and strengthen their public consciousness and spirit. This can reduce conflicts of values and behavior in agricultural cooperation. Thirdly, by participating in community activities, small farmers can better understand the intention of national policies and the rules of community operation. They also can learn to use their power to safeguard their interests through participation.

4) Respect the role and position of small farmers in cooperative organizations. Democracy and fairness should be adhered to in dealing with various issues in small farmers' cooperation. The dominant position and rights of small farmers should be guaranteed. This is the experience of successful farmer cooperation movements in various countries. In practice, small farmers should make reasonable use of national policies and laws to safeguard the status of farmers. For example, according to the Law of the People's Republic of China on Farmers' Specialized Cooperatives, members have equal status, and democratic management is practiced. The property formed by a cooperative receiving direct financial subsidies

from the state and donations from others should be quantified to its members on average.

5) Support small farmers, enterprises, and cooperatives in forming a new relationship of benefit distribution. The government supports small farmers to participate in the business activities of interest subjects in the form of shares through land, beef cattle, labor or government financial subsidies to poor farmers. And finally, obtain a reasonable share of income.

6) Strengthen the integration of aquaculture and secondary and tertiary industries and improve the breeding benefits of small farmers. Guangnan County is a tourist area, and small farmers must combine beef cattle breeding with beef processing, tourism and other industries. For example, small farmers lead tourists to visit the grassland, let them interact with the calves, taste fresh beef, watch bullfights, etc., so that the primary industry with low output can be combined with beef processing and grassland tourism.

3. Improve the technical level

1) Actively carry out technical training for small farmers. Small farmers receiving training in breeding technology can improve their breeding level and give them better decision-making ability in cooperation with other stakeholders.

2) Encourage farmers to learn from each other. Farmers' long-term production and living experience summarized in the local practice has excellent adaptability to solve local practical problems. Farmers can learn from each other to reduce risks and improve profits.

3) Reform some breeding techniques. The beef cattle breeding mode in Guangnan County is mainly free range in mountain and grassland, which has existed for hundreds of years and has its rationality. With the development of beef cattle breeding technology, the disadvantages of high breeding costs and long breeding cycles are also very prominent. Feed improvement and combining free-range and captive breeding technology can improve breeding efficiency.

4) Maintain local beef cattle breeds. The beef cattle breed in Guangnan County is a local long-term traditional breed. 75% of the farmers in the questionnaire have been raising beef cattle for more than 10 years. This traditional breed is suitable

for mountain stocking mode, has little environmental impact, and has a long breeding history. This mode is more ecological and harmless than the large-scale feeding mode.

5) Actively promote advanced technology. Modern farming techniques can be combined with farmers' traditional stocking patterns. This can make the farming of small farmers more efficient, and the products they raise are more excellent and more competitive.

Suggestions for future research

The essence of analyzing the effect of agricultural cooperation of small farmers in Guangnan County is to analyze how small farmers adapt to the development of modern agriculture in the process of agricultural modernization. The trend of modern agriculture development presents two most basic apparent characteristics. The first is scale, and the second is high technology. The family-based production model of small farmers in China must fully match modern agriculture's development direction. Moreover, this family-oriented mode is unlikely to be eliminated in the short term and will exist for a long time. Agricultural cooperation can enable small farmers to catch the fast train of modern agricultural development. However, the core problem of agricultural cooperation is to solve the problem of small farmers' integration into modern agriculture. Therefore, the following research focuses on solving the problem of small farmers' effective integration into modern agriculture after cooperation with different stakeholders.

1. Research the exciting game in the cooperation of small farmers. Interests drive the behaviors of different stakeholders. In the cooperation, how to ensure the interests of small farmers while making their interests reasonable through gameplay and achieve a win-win situation for the stakeholders?

2. Research the socialization service of the industrial chain in small farmers' cooperation. In the process of agricultural modernization, small farmers should integrate with other industries through the expansion of their own chain. For example, cooperate with related industries to develop a specialization, obtain quality

services before and after production through cooperative activities, increase the scientific and technological level of beef cattle breeding, and increase profits.

3. Research the impact of small farmers' cooperation on the ecological environment. The research contents include:

1) The impact of small farmers' cooperation on the ecological environment

2) The impacts of small farmers' cooperative beef cattle breeding on biodiversity

3) The impact of small farmers' cooperation on the conservation of traditional beef cattle breeds and local ecology

4) The impact of production cooperation between small farmers of beef cattle breeding on the natural grassland environment

4. Research on the impact of small farmers' cooperation on the social environment

1) The impact of small farmers' cooperation on the harmony of community interpersonal relations

2) The impact of small farmers' cooperation on the local beef cattle industry chain

3) The impact of small farmers' cooperative breeding on the beef supply

4) The impact of small farmers' cooperation on local employment

5. The way for the government to promote the practical cooperation of small farmers under the background of modern agriculture

An appropriate framework for further research

The existing researchers pay more attention to developing farmers' specialized cooperatives in agricultural cooperation. The practice in Yunnan, China, has proved that the institutional advantages of specialized farmer cooperatives still need to be fully reflected after small farmers join them. Especially in Guangnan County, where the level of economic and social development lags, the level of agricultural development is in the primary stage of transformation from traditional agriculture to

modern agriculture, and the comprehensive quality of farmers is low. The institutional advantages of farmers' professional cooperation need to be better reflected in practice. The cooperation between small farmers and other stakeholders should focus on the direction that small farmers benefit from. Therefore, the next step of the research will focus on the distribution of benefits based on the cooperation effect. Figure 6 is an appropriate research framework for further research. The revised research framework shows the essential factors affecting small farmers' cooperation effectiveness.

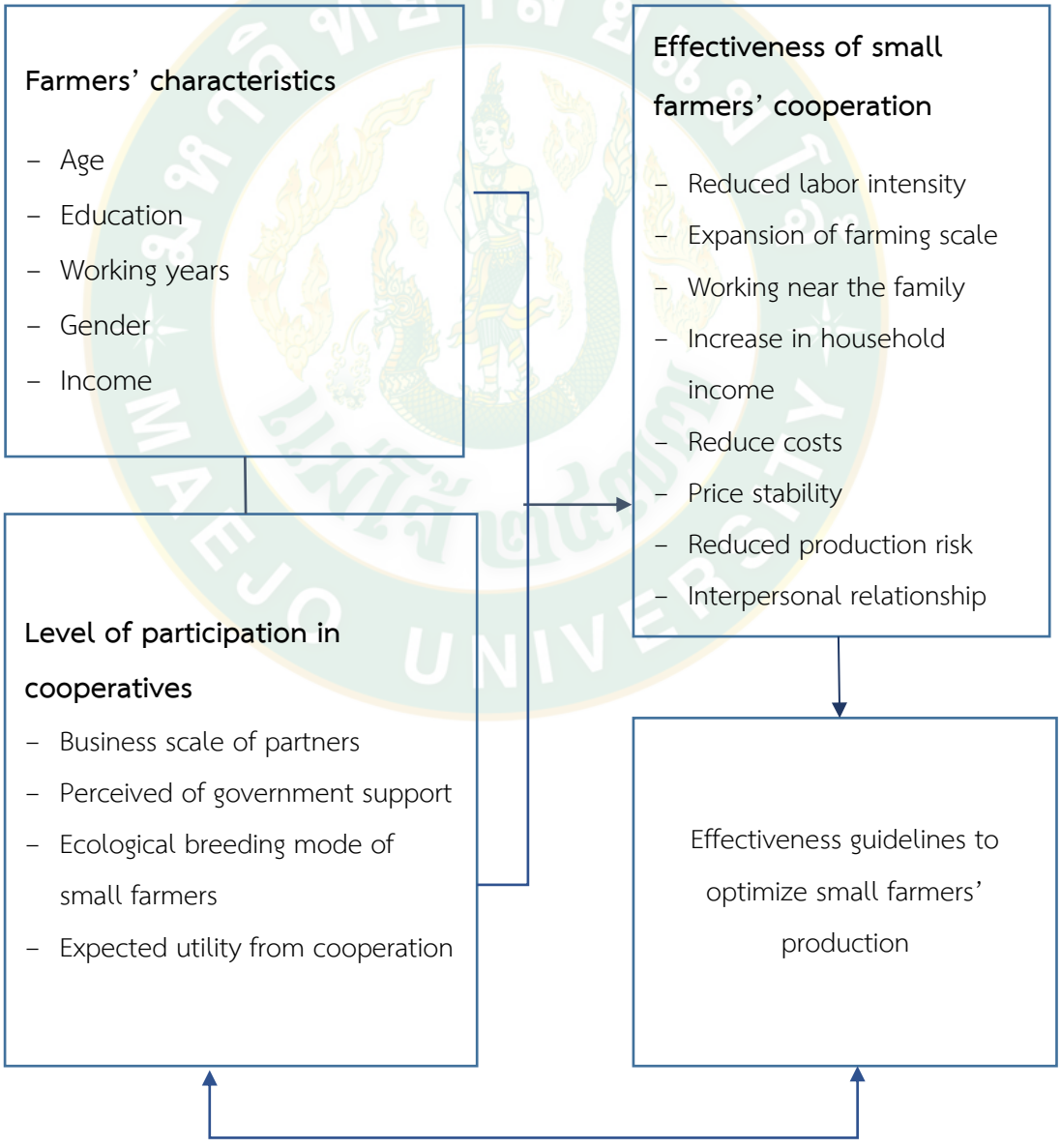

Figure 6 Schematic Diagram of the Appropriate Framework for Further Study

The ecological farming practices of small farmers also have an impact on cooperation. China has paid more and more attention to the safety and quality of agricultural products and has strict requirements for testing feed and veterinary drugs in beef cattle breeding. Beef needs to be strictly tested before entering the market. Beef cattle with a high level of ecological breeding can obtain a better purchase price. The existing beef cattle stocking mode is a typical ecological breeding mode, but the disadvantages of the low production efficiency of this mode are also prominent.

The production benefit of small farmers and cooperative subjects is also an essential factor affecting the income of small farmers. Suppose the cooperative subject has the opportunity to obtain a relatively high income in the cooperation. In that case, the cooperative subject is willing to share relatively reasonable interests with small farmers to achieve a win-win situation. To achieve this, partners must make improvements, such as better processing, more influential brands, better sales channels, networks, and a relatively stable customer base. Strong enterprises can carry out ecological certification on the whole process of beef cattle production, including green product certification, organic product certification, and GAP (Good Agricultural Practices) certification. They can make use of their own sales channels and have better competitiveness in the market through brand influence so that the certified beef cattle products can be sold at a better price in the market, which can bring more profits to small farmers.

The way of organization between small farmers and cooperative objects also significantly influences the effect of small farmers' cooperation. The cooperation between small farmers and interest subjects can be carried out in the form of share cooperation, order cooperation, and small farmers' participation in year-end dividends of enterprises or cooperatives. These also have an impact on the effectiveness of cooperation.

The government's protection of the interests of small farmers is also an essential factor affecting the effect of small farmers' cooperation. Small farmers are in a weak position in cooperation with interest subjects, and it is difficult to guarantee reasonable interests. The government can use macro-control means,

policy, finance, and other tools to establish an environment conducive to the protection of small farmers' interests to achieve the protection of small farmers. This reflects social fairness and justice and can improve the effectiveness of small farmers' cooperation and protect the legitimate interests of small farmers in market economic activities.

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