Evolution and Innovation of Agricultural Production Organization Governance Mechanism under Large-scale Farmland Circulation: A Study Based on 175 Questionnaire Survey in Daqing City

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Abstract Based on questionnaire surveys and field interviews conducted with various types of agricultural production organizations across five districts and four counties in Daqing City, this study combines relevant theoretical frameworks to systematically examine the evolution, performance, and influencing factors of governance mechanisms within these organizations. Using both quantitative and inductive analytical methods, the paper proposes innovative designs and supporting measures for improving governance mechanisms. The findings reveal that, amid large-scale farmland circulation, the governance mechanisms of agricultural production organizations in Daqing City are evolving from traditional to modern structures. However, challenges remain in areas such as decision-making efficiency, benefit distribution, and supervision mechanisms. In response, this study proposes innovative governance designs focusing on decision-making processes, profit-sharing mechanisms, and risk prevention. Corresponding policy recommendations are also provided to support the sustainable development of agricultural modernization in China.

Key words Large-scale circulation, agricultural production organization, governance mechanism

0 Introduction

In China, the large-scale circulation of agricultural land is profoundly transforming the organizational structure of agricultural production and driving innovation in governance mechanisms. In recent years, the scale of farmland circulation has continued to expand, leading to increasing diversification of agricultural production organizations. Various forms, including farmer cooperatives, family farms, and agricultural enterprises, now coexist. However, under this trend of large-scale land circulation, governance mechanisms within these organizations face multiple challenges, such as low decision-making efficiency, unequal distribution of benefits, and inadequate supervision systems. These issues severely constrain improvements in agricultural productivity and hinder sustainable agricultural development. Therefore, it is imperative to conduct in-depth research on the evolution patterns and innovation pathways of governance mechanisms in agricultural production organizations.

1 Data sources, processing, and analysis

1.1 Data sources The data were obtained from a questionnaire survey focusing on "Large-Scale Agricultural Land Circulation and the Governance Mechanisms of Agricultural Production Organizations". A total of 175 questionnaires were collected using the online platform Questionnaire Star. The survey covered five districts and four counties in Daqing City, and included respondents from three categories: leaders of agricultural production organizations (36.55%), farmers (35.86%), and staff members of agricultural organizations (27.59%). The sample demonstrates broad representativeness.

1.2 Data processing and analysis Data processing was conducted in accordance with the principles of data cleaning, which involved removing redundant information, eliminating duplicate samples, and excluding invalid questionnaires with more than 30% missing values. Mathematical analysis methods were employed to calculate the frequency and percentage of core variables to ensure data representativeness. Cross-tabulation analysis was further applied to validate the logical self-consistency among segmented data with observed variations.

1.2.1 The modes of agricultural production organizations and their governance mechanisms have been systematically identified. According to the distinctive characteristics of organizational structure and production-operations, the current agricultural production organizations in Daqing are primarily composed of family farms (39.49%), specialized farmers' cooperatives (29.23%), and agricultural enterprises (28.72%). The governance mechanisms are characterized by a transition from traditional to modern approaches, with the scale of land circulation positively correlated with the degree of standardization in governance. Significant differences in organizational scale and governance are observed across different types of organizations. Most family farms are family-centric, with decision-making authority highly concentrated in the principal responsible person (41.2%). Only 45.3% have established a clear supervision mechanism. Their strengths include a short decision-making chain and high operational flexibility, while their weaknesses consist of limited risk resilience and a lack of standardization. Specialized farmers' cooperatives emphasize democratic participation among members (30.5%), and supervision primari-

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ly relies on member representatives (68.3%) and boards of supervisors (71.2%). These cooperatives benefit from strong member engagement and democratic governance but face challenges such as high management costs and low decision-making efficiency. In agricultural enterprises, decisions are made collectively by management (38.7%), with 72.5% implementing supervision mechanisms and 58.1% involving third-party institutions in oversight. Their advantages include strong resource integration capabilities and a high degree of standardization, whereas their drawbacks lie in elevated management costs and limited flexibility. Through comparative analysis, it is found that all organization types share common challenges in risk prevention and benefit distribution. Their differences.

1.2.2 The intrinsic relationship between farmland circulation and the governance mechanisms of agricultural production organizations is reflected in scale, duration, and circulation methods. Decentralized circulation is characterized by small scale, short term, and predominantly involves subcontracting and leasing. In contrast, large-scale circulation covers larger areas, longer terms, and shows an increasing proportion of equity-based circulations. According to survey data from Daqing City, the scale of farmland circulation is concentrated below 33.33 ha (38.5%) and between 33.33 – 66.67 ha (36.9%), while circulations exceeding 66.67 ha account for 24.6%. Medium-scale operations have become the mainstream. Subcontracting (67.8%), leasing (66.5%), and exchange (63.7%) are the primary modes of circulation, with equity-based circulations accounting for 48.9%, indicating flexible circulation channels. The circulation period is mainly 1 – 3 years (31.2%) and 4 – 5 years (32.8%), with long-term circulations exceeding 6 years accounting for 36%. While short-term agreements remain prevalent, a trend toward longer-term circulation is emerging.

1.2.3 Mutual influence exists between land circulation and the governance mechanisms of agricultural production organizations. On the one hand, large-scale land circulation drives agricultural production organizations toward scaling and specialization, thereby promoting the evolution of governance mechanisms from informal and loosely structured approaches to more standardized and sophisticated systems. On the other hand, sound governance mechanisms help sustain the stability of land circulation and enhance its overall efficiency.

2 Evolution and operation rules of governance mechanism of agricultural production organization

2.1 Evolution characteristics of governance mechanism From the perspective of decision-making modes, although variations exist across different types of agricultural production organizations, an overall trend toward democratization is evident. Daily decision-making is predominantly carried out through collective decisions by management (38.5%), though notable disparities are observed among organizational types. The proportion of decision-making by leaders in family farms stands at 47.9%, significantly higher than that in agricultural enterprises (28.6%) and farmers' cooperatives (31.2%). This indicates a gradual shift from individual-dominated decision-making toward greater collective participation.

From the perspective of supervision mechanisms, 57.4% of the aforementioned organizations have established clear supervisory systems. The main supervisory bodies include boards of supervisors (75.6%), government departments (68.2%), member representatives (65.8%), and third-party institutions (58.5%). The supervision coverage rate in agricultural enterprises (72.5%) is significantly higher than that in family farms (45.3%). Among these, boards of supervisors and relevant government departments play crucial roles in the supervision process.

From the perspective of profit distribution mechanisms, labor contribution (36.4%), land shareholding (34.3%), and capital investment (35.2%) serve as the primary bases for allocation. Family farms emphasize labor (40.2%), cooperatives prioritize land shareholding (39.7%), and enterprises focus more on capital investment (40.3%). This reflects the differentiated characteristics of "factor dependency" among different types of organizations and their distinct focuses in profit distribution.

2.2 General operation rules Through an analysis of the cost-benefit and operational characteristics of different types of organizations, the following patterns have been observed regarding the governance mechanisms of agricultural production organizations: First, there is a scale correlation: larger organizations are more inclined to adopt standardized governance models. Generally speaking, for every additional 66.67 ha of land circulation area, the level of governance standardization increases by 15.2%. This scale effect promotes the transition of governance mechanisms from an "extensive" to a "refined" mode. Second, there is a term correlation: organizations with longer farmland circulation terms tend to have more stable governance mechanisms. Among organizations with circulation terms exceeding six years, 62.3% have established long-term benefit distribution mechanisms, which is significantly higher than that of short-term circulation organizations (38.5%). This highlights the importance of stability and foresight in long-term interest planning and governance design. Third, there is a type correlation: organizations that involve multiple circulation modes tend to have more complex governance structures, as the rights and interests under different circulation models need to be balanced.

3 Performance evaluation of agricultural production organization governance mechanism

3.1 Construction of the indicator system A performance evaluation indicator system has been constructed across four dimensions: production efficiency, economic benefits, social benefits, and sustainable development. The dimension of production efficiency encompasses land output rate and labor productivity; economic benefits include cost profit rate and return on assets; social benefits involve employment generation and farmer income growth; sustainable development covers resource utilization rate

and technological innovation capability.

3.2 Results and analysis From the perspective of production efficiency, after large-scale farmland circulation, 51.8% of organizations experienced a notable increase in labor productivity, with agricultural enterprises (52.8%) performing better than family farms (42.1%). The adoption of technologies such as mechanization and smart agriculture in large-scale operations is the key to this improvement. In terms of economic benefits, 50.3% of organizations reported being "very satisfied" or "satisfied." Family farms (46.2%) lag behind enterprises (58.9%), mainly due to differences in capital strength and market access, leading to uneven economic performance across organizations. Regarding social benefits, 78.5% of organizations contributed to increased farmer incomes after farmland circulation. Cooperatives were the most outstanding in this aspect, with 78.57% showing strong member linkages, highlighting the positive role of agricultural production organizations in promoting rural income growth. In the dimension of sustainable development, the overall evaluation of the governance mechanism's effect on ecological protection is moderate: 55.2% of organizations reported "good" or "excellent" ecological outcomes, with enterprises (62.5%) outperforming others. A high rate of technology adoption (*e.g.*, 65.3% for smart agriculture) serves as a major contributing factor. However, 25.5% still consider the ecological performance unsatisfactory, indicating room for improvement and a need to strengthen ecological governance.

4 Analysis of the influencing factors of the governance mechanism of agricultural production organization

4.1 Policy factors The land circulation policy (70.8%) has the most significant impact on reducing transaction costs by standardizing the definition of property rights through contract management. The agricultural subsidy policy (68.2%) enhances the motivation of organizations to participate, with cooperatives benefiting the most. These findings indicate that policy factors play an important role in guiding innovation in the governance mechanisms of agricultural production organizations.

4.2 Technical factors Intelligent agricultural technology (65.3%) and mechanized equipment renewal (64.7%) serve as the core driving factors. Organizations with high technology adoption rates have reduced management costs by 28.5% and improved decision-making accuracy by 35%. Furthermore, enterprises exhibit significantly higher technology investment (66.67%) compared to family farms (35.59%). These results indicate that technological advancement has facilitated the modernization of governance mechanisms, enhanced management efficiency, and supported more scientific decision-making.

4.3 Financial fund factors The limited financing channels (48.7%) and shortage of funds (42.1%) constrain innovation in governance mechanisms. The issue of funding shortage is more prominent among family farms (40.2%) than enterprises (29.2%), resulting in delayed technological upgrades. In contrast, enterprises exhibit greater governance stability due to their stronger financing capacity (63.16%). In general, capital constraints hinder organizational expansion and innovation in governance mechanisms, such as the introduction of advanced management tools and technologies.

4.4 Human resource factors Inadequate management capacity (60.5%) and insufficient staff training (55.4%) represent the primary internal constraints. Cooperatives demonstrate the most urgent demand for training (62.3%), while family farms are encountering challenges in technology application due to an aging labor force (58.2%). These human resource shortcomings hinder the effective functioning of governance mechanisms and diminish the innovation capability and management proficiency of agricultural organizations.

5 Innovative design and safeguard measures of agricultural production organization and governance mechanism

5.1 Innovative design

5.1.1 Decision-making mechanism. It is necessary to establish a three-level decision-making system consisting of the "General Assembly—Board of Directors—Management." Major issues should be decided by vote at the General Assembly, while routine matters should be subject to collective decision-making by the management. In addition, third-party think tanks should be introduced to provide professional advice.

5.1.2 Resource allocation mechanism. It is required to rationally allocate land, capital, technology and other resources to improve the efficiency of resource utilization in accordance with the development strategy of the organization and the needs of various departments.

5.1.3 Production organization mechanism. It is necessary to carry out standardized production, formulate unified production process and quality standards, and strengthen the coordination and control of all production links.

5.1.4 Benefit distribution mechanism. It is recommended to adopt the distribution mode of "basic income + dividend by factor + performance reward". The basic income guarantees the basic life of members, the dividend by factor reflects the contribution of land, capital, labor and other factors, and the performance reward encourages members to improve their performance.

5.1.5 Information communication mechanism. It is recommended to establish an information-based communication platform, timely release of organizational operation information, market dynamics, *etc.*, to protect members' right to know and participate.

5.1.6 Risk prevention mechanism. It is recommended to establish a risk early warning system, identify potential risks such as market risks and natural risks, set up risk reserves, and disperse risks through insurance, futures and other tools.

(To page 13)

essential to deepen collaboration with cross-border E-commerce platforms, drawing on mature domestic operational experience to overcome international market access standards and logistical barriers. This will enable the local strawberry industry to transition from a "regionally distinctive" product to one capable of "global competition," injecting more sustainable momentum into the high-quality development of the local economy.

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(From page 7)

5.2 Safeguarding measures

5.2.1 Policy guarantee. It is necessary to formulate policy documents to support the innovation of governance mechanism of agricultural production organizations, clarify the direction of innovation and support measures, strengthen policy publicity and implementation, and ensure that policy dividends benefit agricultural production organizations.

5.2.2 Fund guarantee. It is necessary to increase government financial subsidies, set up special funds for agricultural development, guide financial institutions to innovate financial products, reduce financing thresholds and costs, and encourage social capital to participate in the development of agricultural production organizations.

5.2.3 Land use guarantee. We should improve the farmland circulation market, standardize the circulation procedures, ensure the land demand of agricultural production organizations, and appropriately expand the scale of agricultural facilities on the premise of conforming to the planning.

5.2.4 Talent guarantee. It is necessary to establish talent introduction and cultivation mechanism, attract agricultural professional and technical personnel and management personnel, strengthen the training of members of the organization, and improve their skills and comprehensive quality.

6 Conclusions

(i) Large-scale farmland circulation has facilitated the evolution of governance mechanisms in agricultural production organizations, leading to a trend toward democratized decision-making and standardized management. However, the pace of this evolution varies across different types of organizations. (ii) The performance of current governance mechanisms in agricultural production organizations is uneven. Some organizations still require improvement in terms of production efficiency and economic outcomes. (iii) Factors such as policy, technology, capital, and human resources significantly influence the effectiveness and innovation of governance mechanisms.

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