

Research on the Driving Mechanism and Performance Improvement of Industrial Chain Integration of Fuping Persimmon

Xiaomei Yuan ^{1, 2, 3}

¹ Ph.D Candidate at Kuala Lumpur University of Science and Technology, Malaysia

² Shaanxi Rural Revitalization Institute, Shaanxi 710100, China

³ Xi'an Innovation College of Yan'an University, Xi'an, Shaanxi 710100, China

Abstract: Industrial chain integration is the core path to enhance the competitiveness of agricultural characteristic industries and boost the revitalization of rural industries. Taking Fuping persimmon industry as the research object, based on the Resource-Based View, Dynamic Capability Theory and Institutional Theory, this paper constructs a theoretical model of "External Environment-Enterprise Resources-Enterprise Capabilities-Integration Performance", and introduces value co-creation as a moderating variable. Through a questionnaire survey, 365 valid samples from various subjects in the persimmon industrial chain were collected, and AMOS 24 software was used for structural equation model fitting and hypothesis testing to explore the driving mechanism and effect path of Fuping persimmon industrial chain integration. The results show that the external environment has a significant positive impact on enterprise resources, enterprise capabilities and industrial chain integration performance; enterprise resources and enterprise capabilities have a positive effect on integration performance respectively, and both play a chain mediating role between the external environment and integration performance; value co-creation positively moderates the relationship between the external environment and industrial chain integration performance. The study also finds that Fuping persimmon industrial chain faces problems such as the lack of a collaborative mechanism, insufficient resource transformation capacity and lagging product innovation. Accordingly, targeted optimization countermeasures are put forward to provide practical reference for the integration and upgrading of agricultural characteristic industrial chains.

Keywords: Fuping persimmon; Industrial chain integration; Driving mechanism; Integration performance; Structural equation model; Value co-creation.

1. Introduction

Rural industrial revitalization is the material foundation of rural revitalization, and agricultural industrial chain integration is the key to improving the quality and efficiency of rural industries. In recent years, the Central Governments No.1 Document has repeatedly proposed to "extend the agricultural industrial chain, upgrade the value chain and build the supply chain", promoting the integrated development of agricultural characteristic industries through the whole industrial chain. Persimmon is a characteristic forest and fruit industry in China, and Fuping County, known as the "Hometown of Persimmons in China", has a long history of persimmon cultivation and a solid industrial foundation. In 2022, the planting area of persimmons in Fuping reached 360,000 mu, the output of fresh persimmons was 280,000 tons, and the industrial output value reached 6.5 billion yuan, becoming a pillar industry for the development of the local rural economy. However, the current Fuping persimmon industry is still faced with such problems as poor connection between various links of the industrial chain, low processing added value and insufficient market competitiveness, and the depth and breadth of industrial chain integration need to be further improved.

Existing researches on agricultural industrial chain integration mostly focus on bulk agricultural products such as grain, fruits and vegetables, and there are relatively few empirical studies on the driving mechanism and performance impact of characteristic forest and fruit industrial chain integration. Some studies have discussed the impact of single

factors such as external environment and enterprise resources on industrial chain integration, but lack a systematic analysis of the interaction and transmission path among various factors. Based on this, this paper takes Fuping persimmon industry as a research case, constructs a multi-dimensional driving mechanism model of industrial chain integration, reveals the action relationship and effect path of each core variable through empirical analysis, identifies the existing problems combined with the actual industrial development, and puts forward optimization countermeasures for industrial chain integration. It is expected to provide theoretical support and practical reference for the integrated development of the whole industrial chain of China's agricultural characteristic industries.

2. Theoretical Basis and Research Hypotheses

2.1. Theoretical Basis

2.1.1. Resource-Based View

The Resource-Based View holds that the heterogeneous resources of enterprises are the core of forming competitive advantages. Unique material, technical and organizational resources can provide a basic guarantee for enterprises to participate in industrial chain integration, and then improve integration performance. For the Fuping persimmon industry, the material resources such as planting bases and processing equipment, technical resources such as cultivation and deep processing technology, and organizational resources such as farmer cooperatives and leading enterprises are all important

foundations for promoting the integration of the persimmon industrial chain.

2.1.2. Dynamic Capability Theory

This theory emphasizes the ability of enterprises to integrate resources and reconstruct capabilities to adapt to market changes in a complex external environment. Enterprise capability is a key bridge connecting resources and performance, which can promote the coordinated operation of various links of the industrial chain. In the persimmon industry, the processing capacity, supply chain coordination capacity and market development capacity of industrial subjects are important dynamic capabilities to realize the efficient integration of the industrial chain.

2.1.3. Institutional Theory

The theory points out that formal institutional arrangements such as policy systems and market rules in the external environment will affect the resource acquisition and behavior decision-making of industrial subjects. A good external environment can create a favorable institutional atmosphere for industrial chain integration. The policy support for the persimmon industry, the improvement of market trading rules and the soundness of industry supervision systems will all affect the integration behavior and performance of Fuping persimmon industrial chain subjects.

2.1.4. Value Co-Creation Theory

The theory holds that industrial chain integration is not the behavior of a single subject, but a process of collaborative participation of multiple subjects such as enterprises, consumers and the government. Value co-creation between consumers and enterprises can strengthen the connection of various links of the industrial chain and improve integration efficiency. In the Fuping persimmon industry, the participation of consumers in product research and development, the collaborative cooperation between the government and enterprises in industrial construction, and the benefit sharing among various industrial subjects all belong to the connotation of value co-creation, which can effectively promote the deep integration of the industrial chain.

2.2. Research Hypotheses

Combined with theoretical analysis and the actual development of Fuping persimmon industry, this paper constructs a basic analysis framework of "External Environment (EE)-Enterprise Resources (ER)-Enterprise Capabilities (EC)-Integration Performance (P)", and introduces Value Co-creation (CE) as a moderating variable, and puts forward the following research hypotheses:

- 1) H1: The external environment has a significant positive impact on the enterprise resources of the main subjects of the Fuping persimmon industrial chain.
- 2) H2: The external environment has a significant positive impact on the enterprise capabilities of the main subjects of the Fuping persimmon industrial chain.
- 3) H3: Enterprise resources have a significant positive impact on the enterprise capabilities of the main subjects of the Fuping persimmon industrial chain.
- 4) H4: Enterprise resources have a significant positive impact on the integration performance of the Fuping persimmon industrial chain.
- 5) H5: Enterprise capabilities have a significant positive

impact on the integration performance of the Fuping persimmon industrial chain.

- 6) H6: The external environment has a significant positive impact on the integration performance of the Fuping persimmon industrial chain.
- 7) H7: Enterprise resources play a mediating role between the external environment and the integration performance of the industrial chain.
- 8) H8: Enterprise capabilities play a chain mediating role between the external environment and the integration performance of the industrial chain.
- 9) H9: Value co-creation positively moderates the relationship between the external environment and the integration performance of the Fuping persimmon industrial chain.

3. Research Design and Data Sources

3.1. Variable Definition

The latent variables of this study include external environment, enterprise resources, enterprise capabilities, industrial chain integration performance and value co-creation. Each latent variable is measured by multiple manifest variables. The measurement items are revised with reference to existing mature scales and combined with the actual situation of Fuping persimmon industry, and a 5-point Likert scale is used for scoring (1 = completely inconsistent, 5 = completely consistent).

- 1) External environment (EE): Measured from three dimensions: policy support, market demand and industry regulation, including 6 measurement items such as "the local government has introduced special support policies for the persimmon industry" and "the market demand for persimmon products is continuously growing".
- 2) Enterprise resources (ER): Measured from three dimensions: material resources, technical resources and organizational resources, including 6 measurement items such as "the enterprise has a stable persimmon planting base/processing workshop" and "the enterprise has professional persimmon cultivation/processing technical personnel".
- 3) Enterprise capabilities (EC): Measured from three dimensions: processing capacity, supply chain coordination capacity and market development capacity, including 6 measurement items such as "the enterprise has advanced persimmon deep processing equipment and technology" and "the enterprise can effectively coordinate the supply and marketing links of the persimmon industrial chain".
- 4) Integration performance (P): Measured from three dimensions: economic performance, industrial synergy performance and social performance, including 6 measurement items such as "the integration of the industrial chain has significantly improved the operating income of the enterprise/farmer" and "the integration of the industrial chain has promoted the employment of local rural labor force".
- 5) Value co-creation (CE): Measured from three dimensions: consumer participation, government-enterprise collaboration and inter-subject benefit sharing, including 5 measurement items such as "the

enterprise fully considers consumer demand in the development of persimmon products" and "the government and enterprises carry out in-depth cooperation in the construction of the persimmon industrial chain".

3.2. Questionnaire Design and Distribution

The questionnaire is divided into two parts. The first part is the basic information of the respondents, including the link in the industrial chain, operating scale, years of operation, etc. The second part is the measurement items of each research variable. In the process of questionnaire design, the Delphi method is adopted, and 3 experts in the field of agricultural economy and 5 practitioners of Fuping persimmon industry are invited to revise the items to ensure the rationality and applicability of the scale.

Using the stratified random sampling method, a questionnaire survey was conducted on various subjects of the Fuping persimmon industrial chain from July to September 2024, and the survey objects included growers, processing enterprises, distributors, cooperatives and other subjects. A total of 400 questionnaires were distributed in this survey, and 365 valid questionnaires were recovered, with an effective recovery rate of 91.25%. The sample size meets the analysis requirements of the structural equation model.

3.3. Sample Characteristics

From the perspective of industrial chain links, growers account for 58.63%, processing enterprises 19.45%, distributors 12.60%, and cooperatives and other subjects 9.32%. From the perspective of operating scale, small-scale operating subjects (planting area < 50 mu/annual processing capacity < 500 tons) account for 62.47%, and medium and large-scale operating subjects account for 37.53%. From the perspective of years of operation, those with less than 5 years of operation account for 28.49%, 5-10 years for 41.09%, and more than 10 years for 30.42%. The sample structure basically covers all links of the Fuping persimmon industrial chain and has strong representativeness.

4. Empirical Analysis

4.1. Reliability and Validity Test

4.1.1. Reliability Test

This paper uses Cronbachs α coefficient and composite reliability (CR) to test the scale reliability. The test results show that the Cronbachs α coefficients of all latent variables are between 0.79 and 0.92, and the CR values are between 0.81 and 0.93, all of which are higher than the critical value of 0.7, indicating that the scale has good internal consistency and reliability.

4.1.2. Validity Test

Convergent validity is tested by average variance extracted (AVE). The test results show that the AVE values of all latent variables are between 0.52 and 0.68, higher than the critical value of 0.5, indicating that the scale has good convergent validity. For discriminant validity, the square root of the AVE value of each latent variable is greater than the correlation coefficient between the variable and other latent variables, which meets the discriminant validity requirement. In addition, the common method bias test is conducted by Harman's single factor test, and the cumulative variance explained by the first factor is 28.67%, less than 40%, indicating that there is no serious common method bias in this

study.

4.2. Model Fitting and Hypothesis Testing

4.2.1. Model Fitting

This paper uses AMOS 24 software to construct a structural equation model and conduct model fitting test. The common fitting indexes include absolute fitting indexes, incremental fitting indexes and parsimonious fitting indexes. The test results are shown in Table 1.

Table 1. Model Fit Indicators

Common indicators	Judgment criteria	Statistics	Fitting situation
CMIN/DF	<3	1.306	Good
RMSEA	<0.08	0.029	Good
SRMR	<0.08	0.036	Good
GFI	>0.9	0.933	Good
AGFI	>0.9	0.919	Good
NFI	>0.9	0.932	Good
RFI	>0.9	0.923	Good
IFI	>0.9	0.983	Good
TLI	>0.9	0.981	Good
CFI	>0.9	0.983	Good
PNFI	>0.5	0.830	Good

It can be seen from Table 1 that all fitting indexes of the model meet the reference criteria, among which CMIN/DF is 1.306, RMSEA is 0.029, SRMR is 0.036, and GFI, AGFI, NFI and other incremental fitting indexes are all higher than 0.9, and PNFI is 0.830 higher than 0.5. The results show that the theoretical model has a good fit with the actual data and strong explanatory power.

4.2.2. Path Regression and Hypothesis Testing

On the basis of good model fitting, this paper tests the path coefficients and research hypotheses of the model, and the results are shown in Table 2.

It can be seen from Table 2 that all six direct effect hypotheses of H1-H6 are supported ($p < 0.001$). The standardized path coefficient of external environment on enterprise resources is 0.646, indicating that the external environment has a strong positive impact on enterprise resources; the standardized path coefficient of external environment on enterprise capabilities is 0.376, and the standardized path coefficient of enterprise resources on enterprise capabilities is 0.374, indicating that both external environment and enterprise resources have a positive impact on enterprise capabilities; the standardized path coefficients of enterprise resources, enterprise capabilities and external environment on integration performance are 0.302, 0.299 and 0.317 respectively, indicating that the three factors all have a significant positive impact on the integration performance of Fuping persimmon industrial chain.

Table 2. Model Path Regression Results

Path	Hypothesis	Estimate	S.E.	C.R.	P	Std.Estimate	Result
ER ← EE	H1	0.717	0.073	9.813	***	0.646	Supported
EC ← EE	H2	0.397	0.076	5.249	***	0.376	Supported
EC ← ER	H3	0.356	0.067	5.285	***	0.374	Supported
P ← ER	H4	0.301	0.068	4.404	***	0.302	Supported
P ← EC	H5	0.313	0.071	4.429	***	0.299	Supported
P ← EE	H6	0.350	0.077	4.535	***	0.317	Supported

Note: *** means $p < 0.001$

4.2.3. Mediation Effect Test

This paper uses the bootstrap sampling method (sampling 5000 times) to test the mediation effect of enterprise resources and enterprise capabilities, and the results are shown in Table 3.

Table 3. Results of Mediation Effect

Path	Estimate	Lower	Upper	P	Result
EE→P (Direct effect)	0.350	0.180	0.546	0.000	Significant
EE→ER→P (Indirect effect 1)	0.216	0.102	0.387	0.000	Significant
EE→EC→P (Indirect effect 2)	0.124	0.051	0.236	0.000	Significant
EE→ER→EC→P (Indirect effect 3)	0.080	0.035	0.152	0.000	Significant
EE→P (Total effect)	0.770	0.628	0.933	0.000	Significant

It can be seen from Table 3 that the confidence intervals of the three indirect effect paths do not contain 0, indicating that the mediation effects are significant. Enterprise resources play a partial mediating role between the external environment and integration performance (H7 supported), and enterprise capabilities play a chain mediating role together with enterprise resources between the external environment and integration performance (H8 supported). The total effect of the external environment on integration performance is 0.770, which is significantly higher than the direct effect, indicating that the external environment mainly affects integration performance through the mediating transmission of enterprise resources and enterprise capabilities.

4.2.4. Moderating Effect Test

This paper conducts centralized processing on the independent variable (external environment) and the moderating variable (value co-creation), and takes the product of the two as the interaction term to test the moderating effect through regression analysis. The results are shown in Table 4.

It can be seen from Table 4 that the regression coefficient of the interaction term (EE*CE) is 0.178 ($p < 0.01$), indicating that value co-creation has a significant positive moderating effect on the relationship between the external environment and the integration performance of the persimmon industrial

chain (H9 supported). That is to say, the higher the level of value co-creation, the stronger the promotion effect of the external environment on the integration performance of the industrial chain. Further analysis shows that under the condition of high value co-creation, the promotion effect of the external environment on integration performance is significantly higher than that under the condition of low value co-creation.

Table 4. Conditioning analysis results (n=365)

Variable	B	S.E.	t	p
Constant	3.491	0.035	98.605	0.000**
EE	0.530	0.048	10.967	0.000**
CE	0.341	0.046	7.462	0.000**
EE*CE	0.178	0.040	4.396	0.000**
R ²	0.456	----	----	----
Adjust R ²	0.451	----	----	----
F-value	100.757	----	----	0.000**

Note: ** means $p < 0.01$; Dependent variable: P

4.3. Squared Multiple Correlations Analysis

Squared multiple correlations (SMC), also known as communalities in factor analysis, is used to evaluate the explanation degree of latent variables to observed variables. The SMC test results of this study show that the SMC value of enterprise resources is 0.418, indicating that the external environment can explain 41.8% of the variance of enterprise resources; the SMC value of enterprise capabilities is 0.462, indicating that the external environment and enterprise resources can jointly explain 46.2% of the variance of enterprise capabilities; the SMC value of integration performance is 0.634, indicating that the external environment, enterprise resources and enterprise capabilities can jointly explain 63.4% of the variance of integration performance. The results show that the three core variables have a good explanation degree for the integration performance of Fuping persimmon industrial chain, and the measurement model has good quality.

5. Discussion of Research Findings

5.1. External Environment as the Core Driving Factor of Industrial Chain Integration

The empirical results show that the external environment has a significant positive impact on enterprise resources, enterprise capabilities and integration performance, which is

consistent with the view of Institutional Theory. Favorable external environmental conditions such as government policy support, growing market demand and sound industry regulation can help the main subjects of the Fuping persimmon industrial chain obtain more material, technical and organizational resources, and promote the improvement of processing, supply chain coordination and other capabilities, thus effectively improving the integration performance of the industrial chain. This finding suggests that the government should prioritize the construction of a favorable institutional environment for the development of the persimmon industry, rather than simply providing direct financial subsidies to enterprises, and promote the integration and development of the industrial chain through policy guidance, market cultivation and industry supervision.

5.2. Enterprise Resources and Capabilities as the Key Transmission Nodes of Industrial Chain Integration

Enterprise resources and enterprise capabilities not only have a direct positive impact on integration performance, but also play an important mediating role between the external environment and integration performance, which verifies the theoretical logic of the Resource-Based View and Dynamic Capability Theory. Enterprise resources are the basic premise for the integration of the persimmon industrial chain. The construction of planting bases, the update of processing equipment and the improvement of technical personnel quality can all lay a solid foundation for the coordinated operation of various links of the industrial chain. Enterprise capabilities are the key to transforming resource advantages into performance advantages. The improvement of processing capacity and supply chain coordination capacity can effectively improve the efficiency of resource utilization and promote the deep integration of the industrial chain. It is worth noting that the mediating effect of enterprise resources and capabilities makes the external environments promotion of integration performance more indirect and hierarchical, which means that the external environmental advantages need to be transformed through the accumulation of enterprise resources and the improvement of capabilities to effectively play a role.

5.3. Value Co-Creation as the Catalyst for Enhancing the Effect of Industrial Chain Integration

Value co-creation has a significant positive moderating effect on the relationship between the external environment and integration performance, which extends the application of Value Co-Creation Theory in the field of agricultural industrial chain integration. In the Fuping persimmon industry, consumer participation in product research and development, government-enterprise collaboration in industrial construction and benefit sharing among industrial subjects can all strengthen the connection between the external environment and industrial chain integration, and amplify the promotion effect of the external environment on integration performance. This finding indicates that industrial chain integration is not a closed behavior of internal subjects, but an open process of multi-subject collaborative participation. Paying attention to the demand of consumers, strengthening the cooperation between government and enterprises, and improving the benefit sharing mechanism among industrial

subjects can effectively improve the integration efficiency and performance of the persimmon industrial chain.

5.4. The Development Dilemma of Fuping Persimmon Industrial Chain Integration

Combined with empirical analysis and field investigation, it is found that Fuping persimmon industry still faces many practical dilemmas in the process of industrial chain integration: First, the lack of industrial collaborative development mechanism, the disconnection between planting, processing and sales links, and the low degree of resource sharing and information exchange among subjects. Second, the mismatch between production and processing and modern technology, the extensive planting mode of most growers, the backward processing equipment of small and medium-sized enterprises, and the low level of digital and intelligent management. Third, the insufficient innovation capacity of processing products, the serious homogenization of persimmon products, the single product type and the lack of high value-added deep processing products. Fourth, the insufficient financial support for the whole industrial chain, the difficulty in financing for farmers and small and medium-sized enterprises, which restricts the scale expansion and technological innovation of the industry. Fifth, the weak brand building and market development capacity, the low brand awareness of Fuping persimmon, the single sales channel and the limited market coverage.

6. Theoretical Contributions and Practical Implications

6.1. Theoretical Contributions

- 1) This paper constructs a multi-dimensional driving mechanism model of agricultural characteristic industrial chain integration of "External Environment-Enterprise Resources-Enterprise Capabilities-Integration Performance", and reveals the direct and indirect action paths of each core variable on industrial chain integration performance, which enriches the theoretical research framework of agricultural industrial chain integration.
- 2) The study verifies the chain mediating role of enterprise resources and enterprise capabilities between the external environment and integration performance, and finds that the external environment mainly affects industrial chain integration through the transmission of resources and capabilities, which refines the application of Resource-Based View and Dynamic Capability Theory in the field of agricultural characteristic industries.
- 3) This paper introduces value co-creation as a moderating variable, and confirms its positive moderating effect on the relationship between the external environment and integration performance, which extends the research perspective of Value Co-Creation Theory in agricultural industrial chain integration and provides a new theoretical explanation for the improvement of industrial chain integration performance.
- 4) The study takes Fuping persimmon industry as a case, and carries out empirical research on the driving mechanism of characteristic forest and fruit industrial chain integration, which makes up for the deficiency of existing researches focusing on bulk agricultural

products and enriches the empirical research results of agricultural characteristic industrial chain integration.

6.2. Practical Implications

6.2.1. Improve the Industrial Collaborative Development Mechanism and Realize the Synergetic Development of All Links

First, establish a persimmon industry alliance led by leading enterprises and participated by farmers, cooperatives, processing enterprises and distributors, to realize resource sharing, information exchange and market channel synergy among various subjects. Second, improve the contract cooperation mechanism between planting and processing links, formulate unified persimmon planting standards and raw material purchase standards, and reduce the disconnection between production and processing. Third, strengthen the cooperation between processing and sales links, carry out joint market research and product positioning, and develop persimmon products in line with market demand.

6.2.2. Introduce Modern Technology and Management Methods and Improve the Modernization Level of the Industry

First, promote the modernization of persimmon planting, popularize advanced cultivation technologies such as precision fertilization and intelligent irrigation, and improve the quality and yield of fresh persimmons. Second, upgrade the persimmon processing equipment, support processing enterprises to introduce deep processing equipment such as persimmon vinegar and persimmon wine, and improve the processing efficiency and added value of products. Third, build a digital management platform for the persimmon industrial chain, realize the information sharing of planting, processing, sales and other links, and improve the digital and intelligent level of industrial management.

6.2.3. Strengthen Product Innovation and Brand Building and Enhance Market Competitiveness

First, increase R & D investment in persimmon products, carry out in-depth research and development of deep processing products such as persimmon health products, persimmon cultural and creative products, and realize the differentiation and diversification of products. Second, strengthen the brand building of Fuping persimmon, unify the brand image and packaging design, and improve the brand awareness and reputation through media promotion and industrial exhibition. Third, expand the sales channels of persimmon products, combine offline physical stores and online e-commerce platforms, and develop emerging sales models such as live broadcast with goods and community group purchase.

6.2.4. Strengthen Financial Support for the Whole Industrial Chain and Solve the Financing Difficulties of Industrial Subjects

First, the government should introduce special financial support policies for the persimmon industry, set up industrial development funds, and provide interest subsidies and loan guarantees for farmers and small and medium-sized enterprises. Second, guide financial institutions to launch special agricultural financial products such as persimmon industry loans, and simplify the loan approval process and reduce the loan threshold. Third, explore the financing mode of industrial chain finance, take leading enterprises as the core, and drive the financing of small and medium-sized enterprises and farmers in the upstream and downstream of the industrial

chain.

6.2.5. Improve the Value Co-Creation Mechanism and Realize the Collaborative Participation of Multi-Subjects

First, pay attention to consumer demand, establish a consumer participation mechanism for product research and development, and develop persimmon products in line with consumer preferences through online surveys and offline feedback. Second, strengthen government-enterprise collaboration, the government provides policy support and infrastructure construction, and enterprises are responsible for industrial operation and market development, forming a joint force for industrial development. Third, improve the benefit sharing mechanism among industrial subjects, ensure that farmers and small and medium-sized enterprises can share the benefits of industrial chain integration, and improve their enthusiasm for participation.

7. Conclusion and Research Prospects

7.1. Research Conclusion

This paper takes Fuping persimmon industry as the research object, constructs a theoretical model of industrial chain integration driving mechanism with value co-creation as the moderating variable, and conducts empirical analysis through 365 valid samples. The main conclusions are as follows:

- 1) The external environment has a significant positive impact on enterprise resources, enterprise capabilities and the integration performance of Fuping persimmon industrial chain, and is the core driving factor for the integration and development of the persimmon industrial chain.
- 2) Enterprise resources and enterprise capabilities have a significant positive impact on the integration performance of the industrial chain, and both play a chain mediating role between the external environment and integration performance, which is the key transmission node for the external environment to affect industrial chain integration.
- 3) Value co-creation positively moderates the relationship between the external environment and the integration performance of the industrial chain. The higher the level of value co-creation, the stronger the promotion effect of the external environment on integration performance.
- 4) Fuping persimmon industry faces many practical dilemmas in the process of industrial chain integration, such as the lack of collaborative mechanism, insufficient resource transformation capacity, lagging product innovation, insufficient financial support and weak brand building.

The integration and development of Fuping persimmon industrial chain is a systematic project driven by the external environment, supported by enterprise resources, guaranteed by enterprise capabilities and catalyzed by value co-creation. Only by coordinating the improvement of various factors and solving the practical dilemmas of industrial development can we effectively improve the integration performance of the industrial chain and promote the high-quality development of the persimmon industry.

7.2. Research Prospects

This paper has carried out in-depth research on the driving

mechanism of Fuping persimmon industrial chain integration, but there are still some deficiencies that need to be further improved in the follow-up research: First, the research sample is only limited to Fuping County, and the research results may have certain regional limitations. The follow-up research can expand the research scope to other persimmon producing areas in China, and carry out comparative research to improve the generalizability of the research results. Second, this paper only studies the static driving mechanism of industrial chain integration, and the follow-up research can carry out longitudinal tracking research to explore the dynamic evolution law of industrial chain integration driving mechanism with the change of time and industrial development stage. Third, this paper takes value co-creation as a whole variable to study its moderating effect, and the follow-up research can subdivide value co-creation into different dimensions such as consumer participation and government-enterprise collaboration to explore the different moderating effects of each dimension. Fourth, the follow-up research can introduce more contextual variables such as industrial development stage and market competition degree to construct a more complex theoretical model and further enrich the research on the driving mechanism of agricultural industrial chain integration.

References

- [1] Barney J. Firm resources and sustained competitive advantage[J]. *Journal of Management*, 1991,17(1):99-120.
- [2] Teece D J. Dynamic capabilities and strategic management[J]. *Strategic Management Journal*, 2014,35(3):339-357.
- [3] North D C. Institutions, institutional change and economic performance[M]. Cambridge: Cambridge University Press, 1990.
- [4] Vargo S L, Lusch R F. Service-dominant logic: continuing the evolution[J]. *Journal of the Academy of Marketing Science*, 2017,45(1):4-20.
- [5] Prahalad C K, Ramaswamy V. Co-creation experiences: the next practice in value creation[J]. *Journal of Interactive Marketing*, 2004,18(3):5-14.
- [6] Flynn B B, Huo B, Zhao X. The impact of supply chain integration on performance: a contingency and configurational approach[J]. *Journal of Operations Management*, 2010,28(1):58-71.
- [7] Kaplinsky R, Morris M. A handbook for value chain research[M]. Brighton: Institute of Development Studies, 2001.
- [8] Williamson O E. The economic institutions of capitalism[M]. New York: Free Press, 1985.
- [9] Abate G T, Bernard T, de Brauw A, et al. The impact of agricultural cooperatives on market performance[J]. *World Development*, 2022,127:104752.
- [10] An Y, Wu B, Cheng L, et al. Chinese persimmon industry development and outlook[J]. *HortTechnology*, 2019,29(2):123-131.
- [11] Zhang Y, Chen X. Research on the integration of agricultural industrial chain under the background of rural revitalization[J]. *Chinese Rural Economy*, 2022(8):68-82.
- [12] Reardon T, Barrett C B, Berdegue J A, et al. Agri-food value chain revolutions in low- and middle-income countries[J]. *Journal of Economic Literature*, 2021,59(2):531-594.
- [13] Liu J, Zhang L, Wang Y. Research on the development of characteristic agricultural industrial chain based on the integration of the primary, secondary and tertiary industries[J]. *Agricultural Economics*, 2025(1):36-42.
- [14] Benitez G B, Benitez Nara E O. Competitiveness of Food Industry in the Era of Digital Transformation towards Agriculture 4.0[J]. *Sustainability*, 2022,14(18):11779.
- [15] Barrett C B, Bachke M E, Bellemare M F, et al. Smallholder participation in contract farming: Comparative evidence from five countries[J]. *World Development*, 2012,40(4):715-730.