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Original Research Article

Mechanism exploration and empirical analysis on capability coupling of Chinese agricultural enterprise between risk management and cost management

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The sustainable development of agricultural enterprises is very important for rural economy. At present, the high cost of agricultural production and operation poses a variety of risks and acts as a deterrent to agricultural enterprises having strong competitiveness. Based on the coupling mechanism analysis of agricultural enterprise risk management and cost management skills, the static and dynamic coupling model were built, and the comprehensive evaluation of enterprise risk management and cost management ability was conducted. Empirical analysis was carried out by sorting data and using the constructed models. The results showed that the coupling degree and coupling coordination degree were uneven. The enterprises who were senior coordination coupled accounted for only 25% the total number of samples while other enterprises' coupling degree and coupling coordination degree were all below the intermediate level. Also it is found that the coupling degree and coupling development degree are positively correlated to agricultural enterprises' operating results. Finally, suggestions for sustainable development of agricultural enterprises are put forward.

Key words: Agricultural enterprise, risk management ability, cost management skill, coupling mechanism, empirical analysis.

INTRODUCTION

The development of agribusiness is an important guarantee for the smooth development of agriculture and rural economy (Sun, 2013) .With economic integration and trade internationalization, agricultural production and management have entered a high-cost and high-risk stage (Wan, 2014). The high cost plus multiple risks make small and medium enterprises particularly difficult to develop. To improve agricultural enterprises' ability of core competencies, the cost management and risk management should be strengthened (Jiang, 2003). It is deemed that the cost management of agricultural enterprises can be improved through the whole employee management, the whole process management and whole orientation management. Liu et al. (2009) conducted a research on the status quo of agricultural enterprises in Changsha City and proposed that the cost consciousness of agricultural enterprises should be strengthened and the strategic cost management mode was introduced timely. For risk management research, Lv and Fan (2008) summarized the main measures of farm risk management in the United States, including participation in crop insurance, accepting disaster relief, price protection, futures markets operation, contract farming and product diversification. He (2008) studied the strategy risk control of listed agricultural company who diversified operation in China and proposed that listed companies must be based on the cultivation of core competitiveness, and pay attention to the integration of diversification. Gooper and Kaplan (1998) built the strategic

management accounting framework by focusing on changes in the competitive position of enterprises to resist strategy risk.

For the study on combination of enterprise' cost management and risk management, Micheal (2004) raised value chain strategic cost analysis for enterprise cost and risk management. The former chairman of American Risk and Insurance Management Society (RIMS), Douglas Barlow put forward the concept of risk cost, which was defined as the expense related to risk. Scott （2001) deemed that the existence of risks would lead to the decrease of enterprises' value. Zhu (2009) studied the strategic risk management based on enterprise minimum target cost control and found that target cost control was an effective measure to reduce and avoid enterprise strategic risk management. Xu (2010) deemed that the cost management was innovative in that it combined risk management. However, there was little literature on combination of agricultural enterprise cost management and risk management from the perspective of coupling. Based on mechanism analysis of capability coupling between agricultural enterprises' risk management and cost management, coupling coordination degree model and coupling development model were constructed and then empirical research was implored to analyze agricultural enterprises' coupling coordinated development of cost and risk management with the data from survey of agricultural enterprises in China.

Theoretical analysis of the coupling mechanism

The concept of coupling is from physics, and its connotations involves a phenomenon caused by two or more than two related systems through mutual influence, and then extended gradually to the fields of communication engineering, software engineering and mechanical engineering among others (Cai, 2011). Although coupling parties are relatively independent, it must have some relevance. Once the coupling happens between parties, the significant effect will produce an enlarged or reduced effect on the original attributes causing the whole system to generate entropy. The coupling process of a system is actually the process during which systems continue to seek the maximum negative entropy. Similarly, the coupling process of enterprise management systems is also the process of business organizational systems achieving maximum negative entropy. As result, couple management is becoming an effective way to promote the healthy development of enterprises and has gradually attracted attention of scholars. Zhang (2003) analyzed the coupling of knowledge management and product development personnel management and built a coupled system to determine the critical coupling domain. In 2006, the coupling mechanism of enterprise knowledge management and product innovation talent management was also discussed by Liu (2006). Hao and Yu (2008) studied the coupling mechanism of enterprise technology capabilities and technology management capabilities from the perspective of improving enterprise technology level, and in 2009 they also studied the interactive coupling of enterprise network capabilities and technological capabilities, the ability of coupling degree evaluation model was built to search for power source of technology development. The conclusion drawn from the literature review was that the enterprise management capabilities coupling played an important role in healthy development of enterprises.

Enterprise risk and cost management are subsystems of business management system. They are both relatively independent but relate to each other. The synergy effect will be achieved through various interactions. Enterprise risk management capability is usually explained as the ability to control the probability of the risk and to reduce the risk loss. Cost management capability is a resource-saving capability which essentially is also a dynamic knowledge system formed by continuous innovation and system integrating professional experience of resources use, key sills, special methods and tacit knowledge (Yang, 2012). Both of them are improved by organizational learning and continuous innovation. And they are subject to some factors such as organization, human resources, information resources and culture. Cost management is an effective way of risk management ,and risk management can ensure the smooth implementation of cost management. When the ability of risk management is strengthened, the enterprise cost management can be implemented effectively and then synergistic effects will be produced. The coupling mechanism of risk management capability and cost management capability can be demonstrated as Figures 1 and 2.

Figure 1 shows that when corporate capital, information, goods and technology flow into the free transfer module of enterprise system (where organizational learning, continuous innovation, integration of resources and perfecting internal control happens), cost management capacities and risk management capabilities are produced, and then the procedure moves into the gain module where many ways can be chosen such as improving the quality of personnel, establishing sound management system , integrating information process and so on to enhance risk management capabilities and cost management capabilities. Finally, the process goes into coupling module, and the coupling effects of ability system are formed. It was showed as Figure.2, the formation and enhancement of enterprises' risk management capability and cost management capability are subject to organization, personnel, internal control, information, culture, customers, financial and other resources, so the coupled analysis can be conducted from seven aspects. By optimizing organizational processes, organizational restructuring and integration of resources, the organization's capabilities of risk management and cost management will be improved.

To enhance the risk and cost control awareness of enterprise management members and improve the quality

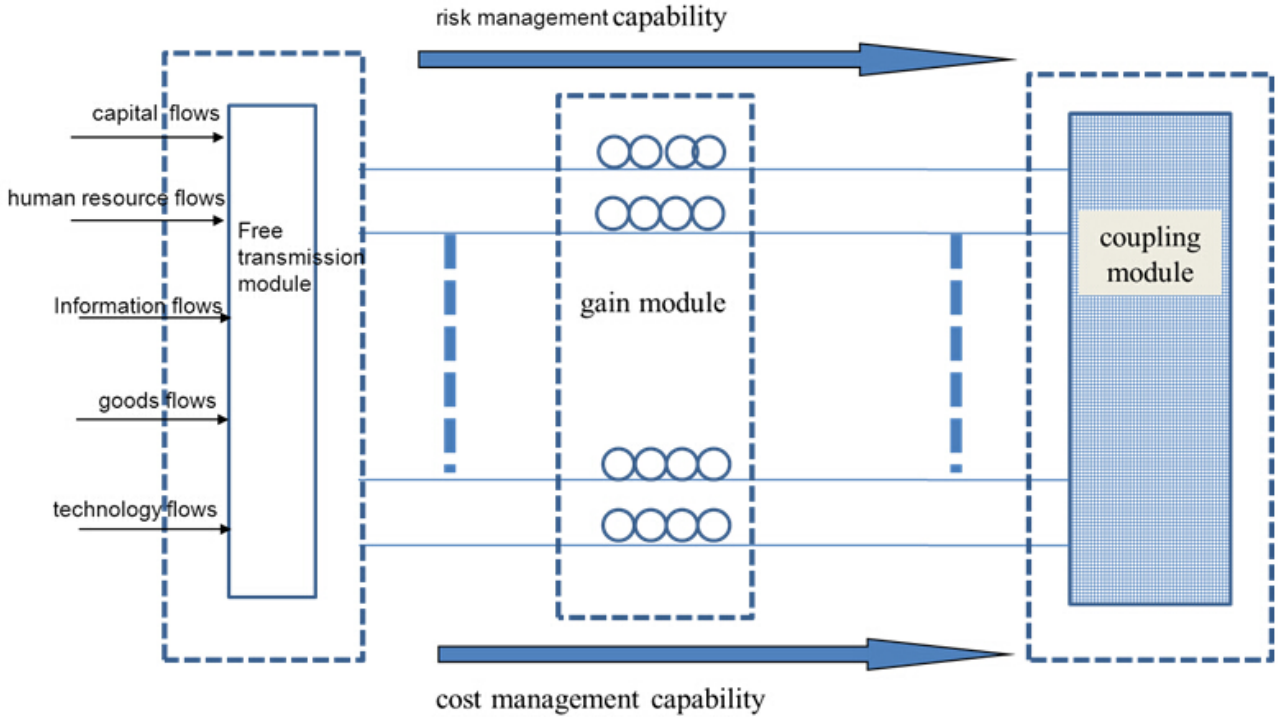

Figure 1: The coupling process diagram of enterprise risk management capabilities and cost management capabilities

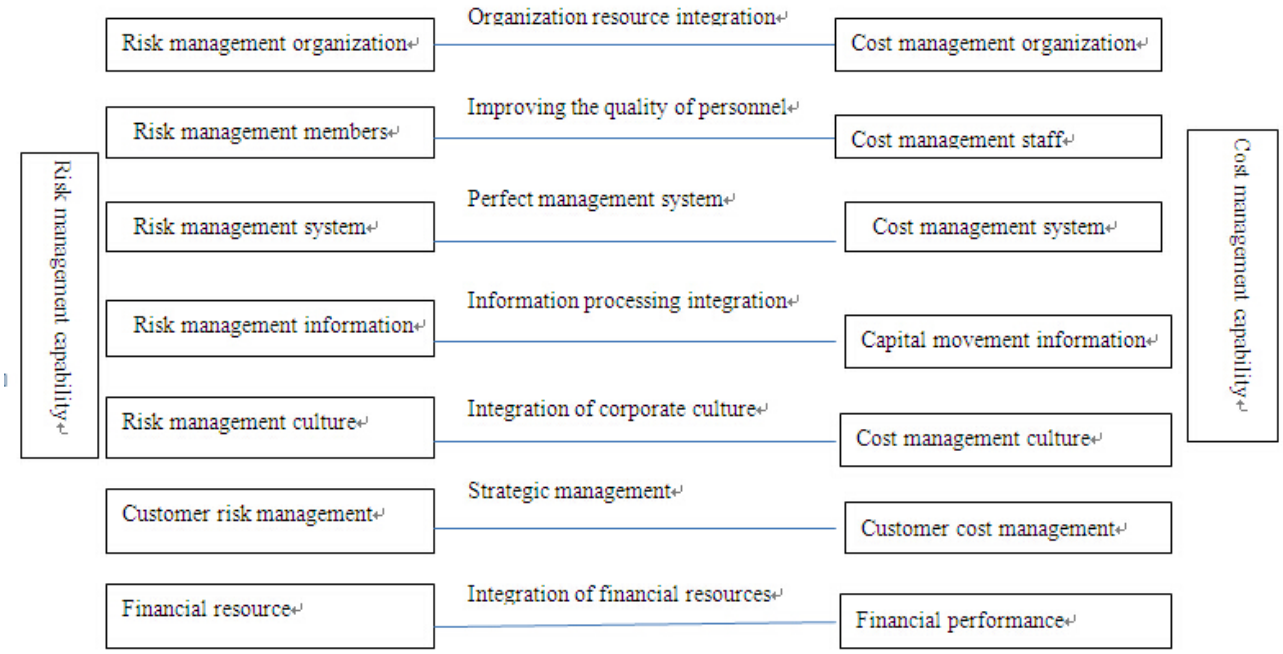

Figure 2: The coupling mechanism of enterprises' risk management capabilities and cost management capabilities

of management personnel, enterprise risk management members should be educated and trained with strategic cost on one hand ,and on the other hand, cost management staff should enter into risk management team and work with them. As we known, risk management and cost management have a strong correlation with internal control system, thus the capability of risk management and cost management can be enhanced by perfecting internal

control system and optimizing internal management. Of course, all management activities cannot do without transmission of information. By integrating the information resource of risk and capital movement, improving the utilization of information resources, enterprise risk management and cost management can be implemented effectively. In addition to the factors above, corporate culture also plays an important role in corporate management. It is necessary for enterprises to create risk management and cost management culture. The ideas of risk management and cost management can be injected into an enterprise through measures such as training, promotion, evaluation so on. For agricultural business, customers are the most important asset as at of customers have significant impacts on the enterprise' development. Enterprises should deal with them from the perspective of strategic management. In the range of strategic alliances, the customers' risk must be avoided and reduced for the goal of maximizing customer value. Strategic value alliance should be built and customer cost controlled to enhance the capabilities of risk management and cost management. Also financial resources are an important factor that cannot be ignored. The integration of financial resources and improvement of capital adequacy ratio enterprises can enhance their ability to withstand risks.

Model construction

Coupling Degree Model

It is well known that capacity coupling is a physics concept, and its capacity factor model is expressed as Formula (1);

$$C_M = \left\{(u_1 \bullet u_2 \ldots u_n)/[\prod(u_i + u_j)]\right\}^{1/m} \quad (1)$$

To build coupling degree model of risk management capability and cost management capability, measuring the coupling degree of the two management capabilities. In this paper, it is supposed that u_1 equals $f(x)$, u_2 equals $g(y)$, and the model of coupling degree is designed as follows:

$$C = 4\left[\frac{f(x)+g(y)}{2} - f(x) \bullet g(y)\right]^{1/2} /[f(x)+g(y)] \quad (2)$$

Where $f(x)$ is comprehensive evaluation index of enterprise' risk management capability, and $g(y)$ is the capability comprehensive evaluation index of enterprise cost management. Both of the variables measure enterprises' management capabilities. Thus the higher the comprehensive evaluation index, the stronger management capacity. It can be stated thus by formula (3):

$$f(x) = \sum_{i=1}^{n} s_i x_i, g(y) = \sum_{i=1}^{n} t_i y_i \quad (3)$$

In this model, i is the number of indexes, s_i is the weight of risk management ability index, and t_i is the weight of cost management ability index. x_i and y_i presents the index value (after normalization) of risk management capability and cost management capability, respectively. Coupling degree is a static indicator of the coupling coordination degree thus the greater the coupling degree index value, the better the coupling coordination.

Coupling development model

Coupled degree is a static indicator which can reflect the coupled coordination state. However, it cannot measure coupling development coordination from a dynamic perspective, and so coupling dynamic development model is developed as follows:

$$D = \sqrt{C \times H} \quad (4)$$

In this model, C represents coupling degree, and H is expressed by the following equation:

$$H = \omega_1 f(x) + \omega_2 g(y) \quad (5)$$

ω_1 is the weight which measures the influence of degree of risk management for the healthy and sustainable development of agricultural enterprises. Similarly ω_2 is the weight of cost management capability. The value of ω_1, ω_2 can be determined by using the analytic hierarchy process (AHP) method. Based on related literature, the value of D can be classified thus;

if $0 < D \le 0.2$, the coupling coordination degree is extremely low level which can be expressed by the letter "L". $0.2 < D \le 0.4$, primary coordination coupling, "P"; $0.4 < D \le 0.6$, intermediate coordination coupling, "M"; $0.6 < D \le 0.8$, senior coordination coupling, "G"; $0.8 < D \le 1$, extremely high coordination coupling, "E".

Empirical analysis

Construction of index system

The content of risk management capabilities and cost management capabilities involves much, and too many indexes can be chosen. For designing and choosing indexes to evaluate enterprises' cost management capability and risk management capability, some principles must be taken into account. Firstly, the index must reflect some kind of ability that is relevant to the management capability of risk and cost. Secondly, the index choosing should be according to objective circumstances and characters of agricultural enterprises. Thirdly, the meaning of indexes must be

Table 1. Major evaluation indexes and its weight values.

Index	Weight value	Index	Weight value
Risk management capability	cash flow ratio x_1 0.0487	Cost management capability	rationality of cost management organization design y_1 0.0343
	liquidity ratio x_2 0.0348		operation conditions of cost management mechanism y_2 0.0653
	the establishment and its running conditions of risk management organization x_3 0.0493		the number of cost management y_3 0.0201
	the personnel numbers of risk management x_4 0.0126		the education background of risk management y_4 0.0091
	the education background of risk management x_5 0.011		smoothness of the information transmission channel y_5 0.0743
	the soundness of the internal control system x_6 0.0682		the timeliness of information transmission and feedback y_6 0.0827
	internal incentive and restraint mechanisms and the soundness of accountability system x_7 0.102		penetration rate of cost management idea y_7 0.0827
	the soundness of dynamic monitoring system and its mechanisms of risk control indicators x_8 0.1149		the timeliness of cost information providing y_8 0.094
	smoothness of the information transmission channel x_9 0.0965		the accuracy of the cost information y_9 0.0865
	running status of information management system x_{10} 0.0717		correlation of cost information y_{10} 0.0865
	soundness of the risk management system x_{11} 0.0892		the effectiveness of cost management process y_{11} *0.1038*
	Culture construction conditions of enterprise risk management x_{12} 0.0505		the soundness of cost management system y_{12} 0.1038
	the timeliness of customer complaints to be resolved x_{13} 0.1263		the understanding level of competitors' cost information y_{13} 0.0743
	Ability to use futures, forward contracts and insurance for risk management x_{14} 0.1263		the degree of cooperation with the upstream downstream organizations in terms of cost management y_{14} 0.0827

accurate, and the data can be comparable, standardized and easy to collect and collate. Fourthly, all the indexes reflecting important characteristics should be chosen.

According to the above principles, major capability evaluation indexes were chosen as listed in Table 1. The weight of indexes are determined by AHP method . "Data were collected through visiting experts, referring to literature participating in seminars and conducting questionnaire surveys". The targets of surveys include agribusiness executives, business people, government officials and university teachers. Results are shown as in Table 1.

By collecting and sorting out relevant data, the weight value of ω_1 and ω_2 in the model $H = \omega_1 f(x) + \omega_2 g(y)$ is determined as 33.33 and 66.67%, respectively.

MATERIALS AND METHODS

Collection and collation of data

Data collection involved 100 agricultural enterprises in 25 provinces of China. 100 copies of questionnaires were distributed and 98 valid questionnaires were returned. After sorting missing data, 76 valid questionnaires were recognized. The descriptive statistics of sample enterprises were shown as Table 2.

There were nine agricultural businesses whose registered capital were more than 5 million RMB Yuan, the

Table 2. Sample enterprise statistics

Enterprise features	Eigenvalues	Sample quantity	Proportion	Enterprise features	Eigenvalues	Sample quantity	Proportion
Registered capital (RMB 10thousand yuan)	>500	9	11.84	Main business	Planting	12	15.79
	100-500	19	25.00		Breeding	20	26.32
	50-100	35	46.05		Processing industry	19	25.00
	10-50	11	14.47		Service industry	16	21.05
	<10	2	2.63		Integrated operation	9	11.84
Employee number	<50	11	14.47	Enterprise nature	State-owned enterprise	6	7.89
	50-100	24	31.58		Collective enterprise	12	15.79
	100-500	29	38.16		Private enterprise	52	68.42
	500-1000	11	14.47		Joint-stock enterprises	6	7.89
	>1000	1	1.32				

Data source: survey data compiled

number of enterprises whose registered capital were between 1 and 5 million RMB Yuan was the most while businesses less than 5 million accounted for 88.16% of the sample. The enterprises whose employees were less than 500 were 65%. The vast majority were private enterprises, meaning agricultural enterprises in China who are small scale, and private occupy an important position. The number of enterprises was more evenly distributed in different industries with the proportions of breeding industry, processing and service industry all being more than 20%. However, the number of planting enterprises and integrated businesses were slightly less with a value of 15.79%and 11.84%, respectively. The risks of planting enterprises are multiple as they have to face not only natural risk but also market risk, they occupy a certain market which is small. Due to long business front, scattered resources and other factors, integrated enterprises operating multi industries were not much.

Due to non-uniform data units, all data were sorted by dimensionless processing methods; if $x_{ij}^{'} = (x_{ij} - x_{i\min})/(x_{i\max} - x_{i\min})$, then x_{ij} has positive effects; if $x_{ij}^{'} = (x_{i\max} - x_{ij})/(x_{i\min} - x_{i\max})$, then x_{ij} has negative effects, x_{ij} is the index value of risk management capability. In the same way, the data of cost management capability were dimensionless processed.

Empirical results and analysis

Using the coupling model and survey data, the comprehensive evaluation index value of risk management capability and cost management capability were calculated, and then the coupling degree and coupling development degree were obtained (Table 3).

Table 3 shows the coupled coordination degree of risk management capability and cost management ability as very uneven; there were 5 enterprises which are in extremely senior coordination coupling state “E”, senior coordinating coupled “G ” 14 enterprises , intermediate coordination coupling “M” 17 enterprises, the primary coordination coupling“P”23 enterprises, the number of very low-grade coordination coupling enterprises is 17.

Senior coordination coupling enterprises accounted for only 25% of the total number of the sample. The proportion of enterprises whose coupling coordination degrees were intermediate or less was 75%. It is also found that different levels of coupling degree and the management features of agricultural enterprises are also different. To illustrate it, this paper focuses on four major aspects: smoothness of the information transmission channel, the understanding level of competitors’ cost information, the extent of employees understanding corporate risk management and cost management and the degree of cooperation with the upstream downstream organizations in terms of cost management. The number of samples distributed is shown Table 4,Figures 4, 5 and 6.

Figure 3 shows the enterprises whose coupling degree were in primary coupling state *P* and smoothness of risk information communication channels open rate were 50 - 90% accounted for the vast majority of total samples. However, some enterprises have coupling degree L of typically 10 -50%. Figures 4, 5 and 6 show that the staff in the sampled enterprises with higher coupling degree understood clearly the management processes of their own businesses, realizing whole employee management and all-round management for reducing risk and cost. These enterprises can get competitors cost information from a variety of channels to establish the enterprise's cost management benchmark. Also they can cooperate with upstream and downstream enterprises or organizations from strategic perspective to manage risk and cost. The enterprises with intermediate coupling degree and primary coordination coupling degree can seldom learn the competitor companies’ cost information and its employees can rarely understand the risk management process and

Table 3. The coupling degree and coupling development degree of sample enterprises.

NO.	f(x)	g(x)	C	D	S	NO.	f(x)	g(x)	C	D	S
1	0.8873	0.7476	0.1710	0.5868	M	39	0.7841	0.6704	0.1563	0.4397	M
2	0.8687	0.8897	0.0238	0.7260	G	40	0.8006	0.7971	0.0043	0.5702	M
3	0.8062	0.6107	0.2760	0.3970	P	41	0.8531	0.8335	0.0232	0.6516	G
4	0.7166	0.5483	0.2661	0.3000	P	42	0.8407	0.7669	0.0919	0.5724	M
5	0.8272	0.9725	0.0685	0.5675	M	43	0.5314	0.8442	0.4548	0.3659	P
6	0.6812	0.6849	0.0053	0.3858	P	44	0.5783	0.6047	0.0446	0.2698	P
7	0.5212	0.6673	0.2458	0.2694	P	45	0.7643	0.8142	0.0632	0.5551	M
8	0.8454	0.6328	0.2877	0.4395	M	46	0.6294	0.6163	0.0211	0.3056	P
9	0.8893	0.9552	0.0715	0.8196	E	47	0.9067	0.9228	0.0176	0.8013	E
10	0.5347	0.7447	0.3282	0.3183	P	48	0.4171	0.5492	0.2735	0.1598	L
11	0.7472	0.7774	0.0396	0.5086	M	49	0.7597	0.6968	0.0863	0.4476	M
12	0.6103	0.5793	0.0522	0.2713	P	50	0.3158	0.505	0.4609	0.1004	L
13	0.8487	0.6687	0.2372	0.4776	M	51	0.6267	0.5287	0.1697	0.2465	P
14	0.8394	0.8552	0.0186	0.6617	G	52	0.7673	0.6733	0.1306	0.4319	M
15	0.6834	0.4724	0.3651	0.2299	P	53	0.7089	0.5584	0.2374	0.3044	P
16	0.8852	0.8139	0.0839	0.6582	G	54	0.902	0.98	0.0829	0.8619	E
17	0.8159	0.7592	0.0720	0.5457	M	55	0.834	0.7228	0.1429	0.5228	M
18	0.7641	0.6442	0.1702	0.4042	M	56	0.3513	0.3801	0.0787	0.0812	L
19	0.8605	0.9354	0.0835	0.7666	G	57	0.1921	0.2336	0.1950	0.0208	L
20	0.8649	0.8092	0.0665	0.6360	G	58	0.7582	0.5244	0.3647	0.2983	P
21	0.6365	0.4591	0.3238	0.2049	P	59	0.2896	0.5016	0.5360	0.0885	L
22	0.8544	0.715	0.1777	0.5288	M	60	0.4325	0.5988	0.3225	0.1859	L
23	0.8056	0.6836	0.1639	0.4656	M	61	0.4455	0.5818	0.2653	0.1864	L
24	0.5893	0.3996	0.3837	0.1543	L	62	0.4061	0.6205	0.4176	0.1786	L
25	0.3821	0.5075	0.2819	0.1297	L	63	0.6046	0.6559	0.0814	0.3164	P
26	0.7998	0.4743	0.5110	0.2707	P	64	0.4777	0.5144	0.0739	0.1739	L
27	0.8602	0.9015	0.0470	0.7303	G	65	0.5264	0.4368	0.1861	0.1557	L
28	0.9053	0.9222	0.0185	0.7993	G	66	0.3631	0.6096	0.5068	0.1504	L
29	0.5521	0.6421	0.1507	0.2758	P	67	0.4039	0.5478	0.3023	0.1529	L
30	0.9596	0.98	0.0210	0.9277	E	68	0.4833	0.7002	0.3665	0.2591	P
31	0.8346	0.8126	0.0267	0.6140	G	69	0.7541	0.6072	0.2159	0.3666	P
32	0.8863	0.9493	0.0686	0.8097	E	70	0.3102	0.4846	0.4388	0.0934	L
33	0.7819	0.8725	0.1095	0.6242	G	71	0.3816	0.4093	0.0701	0.0987	L
34	0.6349	0.6372	0.0037	0.3227	P	72	0.4595	0.6891	0.3998	0.2379	P
35	0.9209	0.7327	0.2277	0.5939	M	73	0.6802	0.6776	0.0039	0.3797	P
36	0.836	0.8552	0.0227	0.6585	G	74	0.8332	0.8701	0.0433	0.6711	G
37	0.681	0.6853	0.0063	0.3859	P	75	0.8332	0.8216	0.0141	0.6219	G
38	0.3594	0.6072	0.5126	0.1477	L	76	0.8732	0.8485	0.0287	0.6856	G

No., number of sample enterprises, f(x) and g(x) represented the comprehensive evaluation index of risk management capability and cost management capability, C was coupling degree, D was defined as coup

cost management process. There were only five businesses establishing whole employee management system and all-round management mechanism among the sampled enterprises with low-level coupling coordination degree. The vast majority of their staff had no awareness of risk management and cost management.

To explore the relationship between the coupling degree and business performance, an empirical study was conducted by using SPSS 19.0 software. The net assets profit rate represents performance indicator and the results are shown in Tables 5 and 6.

Tables 5 and 6 show that the net assets profit rate of agricultural enterprises has a positive correlation with the coupling degree, and is also positively correlated to coupling

Table 4. The distribution of sample enterprises with key management features.

Management feature	Value of features	Coupling state				
		E	G	M	P	L
Smoothness of the information transmission channel	>90	1	4	3	3	0
	50-90	4	6	10	11	5
	10-50		4	4	9	12
	Subtotal	5	14	17	23	17
The Extent of employees understanding corporate risk management and cost management	High	5	13	9	9	5
	Low		1	8	14	12
	Subtotal	5	14	17	23	17
The Understanding level of competitors' cost information	High	5	13	8	8	11
	Low		1	9	13	6
	Subtotal	5	14	17	23	17
The degree of cooperation with the upstream downstream organizations	High	5	14	15	18	5
	Low			2	5	12
	Subtotal	5	14	17	23	17

Data sources: survey material compiled

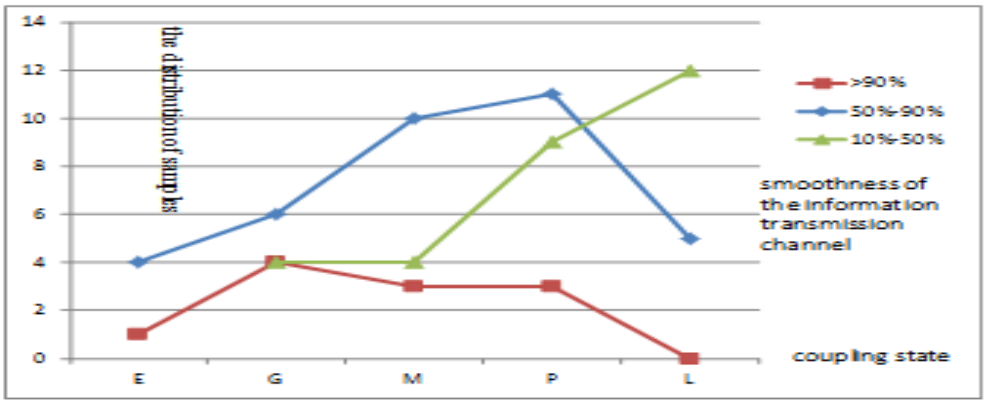

Figure 3: The scatter plot of sample enterprises with different levels of information transmission.

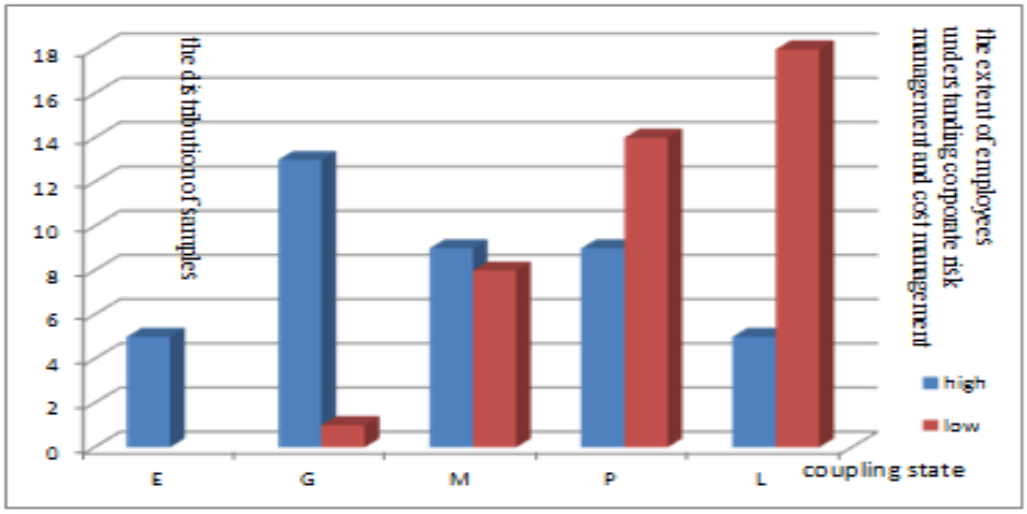

Figure 4: Sample distribution of agricultural enterprises with different levels of the whole employee management.

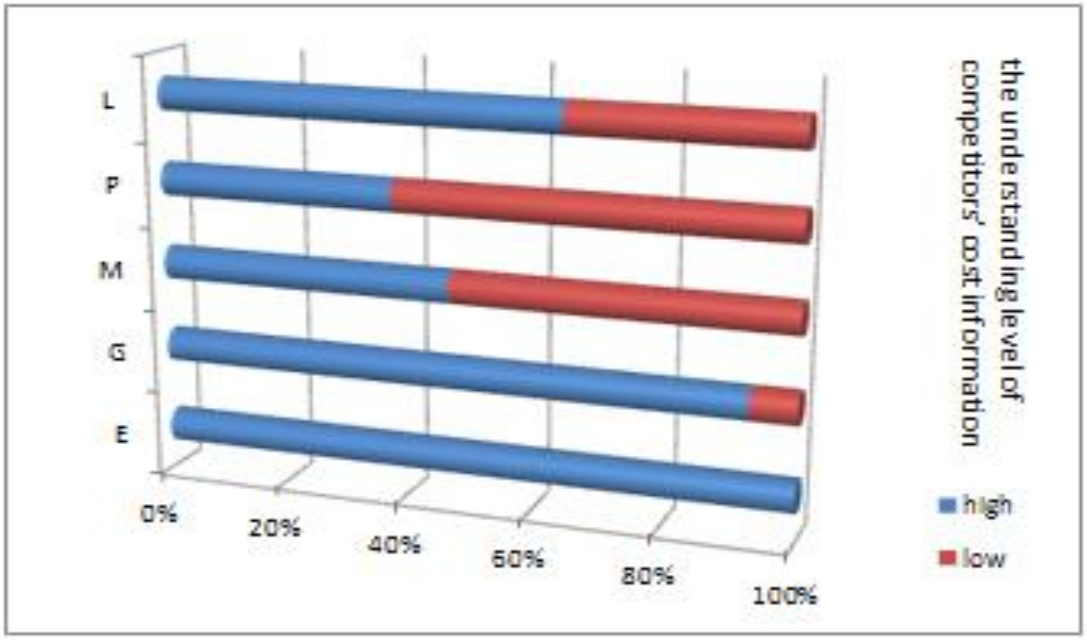

Figure 5: Sample distribution of agricultural enterprises with different levels of mastering competitor cost information

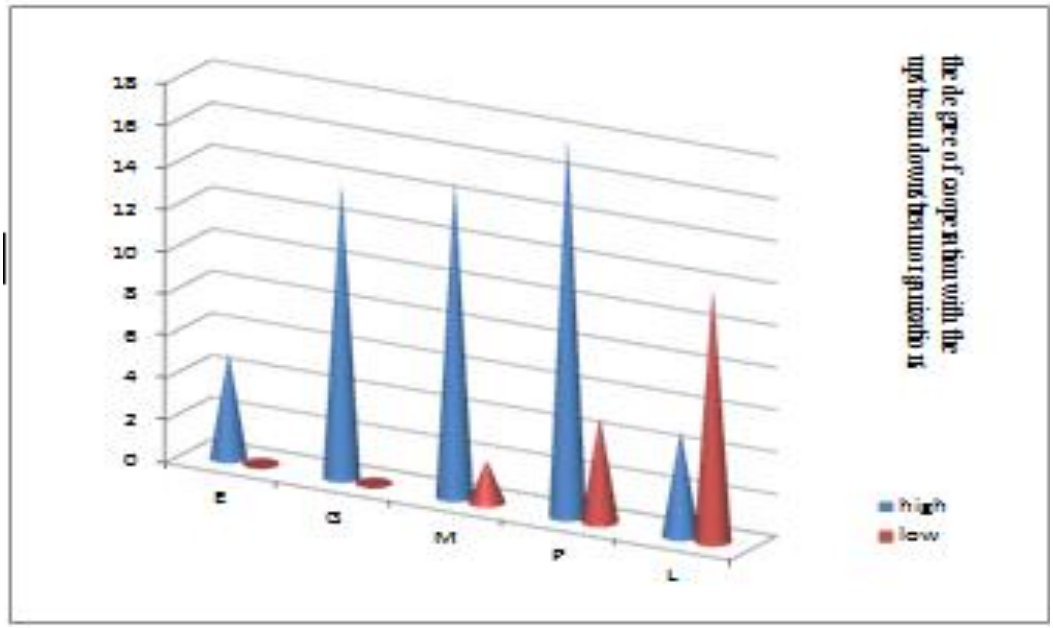

Figure 6: Sample distribution of agricultural enterprises with different levels of strategic alliance management.

development degree. The correlation level is significant at 0.01 (two tailed test). It is also found that there is a weak positive correlation between net assets profit rate and registered capital. That is to say that the higher the coupling degree of an enterprise, the better its performance which means some measures should be taken to strengthen the coupling of agricultural risk management capability and cost management capability.

CONCLUSIONS AND RECOMMENDATIONS

Based on theoretical and empirical analyses, it is found that the coupled coordination degree of Chinese agricultural enterprises between risk management capability and cost management ability is very uneven, majority of which is not high. Agricultural business performance is significantly positively related with the coupling degree and coupling

Table 5. Correlation analysis

Variable	Statistic	Coupling degree	Coupling development degree	Registered capital	No. of employees
Net assets profit rate	Pearson correlation	0.787**	0.807**	0.131	0.213
	Statistically significant level (two-sided)	0.000	0.000	0.260	0.064
	N	76	76	76	76

**Significantly correlated at the 0.01 level (2-tailed).
*Significant correlation at the 0.05 level (2-tailed).

Table 6. Non-parametric correlation coefficient analysis

Variable	Statistic	Coupling degree	Coupling development degree	Registered Capital	No. of employees
Net assets profit rate Kendall tau_b test	Correlation coefficient	0.755**	0.847**	0.097	0.164
	Sig. (Bilateral)	0.000	0.000	0.274	0.063
	N	76	76	76	76
Net assets profit rate Spearman rho test	Correlation coefficient	0.882**	0.916**	0.133	0.211
	Sig. (Bilateral)	0.000	0.000	0.251	0.068
	N	76	76	76	76

**. Significant correlation at the confidence level 0.01 (2-tailed).

development degree. Therefore, in order to promote the sustainable development of agricultural enterprises, the organic combination of risk management and cost management ability should be strengthened to improve the coupling degree and coupling coordination degree. Some suggestions to aid in achieving this target include; establishing sound internal control system, perfecting internal incentive, constructing restraint mechanisms and risk control indicators with a dynamic monitoring system, smoothing communication channels, implementation of staff management and whole process management, providing timely cost information, reliability and correlation. The value chain management should be applied to risk management from the perspective of strategic management to enhance the management capability of risk and cost.

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