

# Study on Financial Sharing Center based on factor analysis —— takes Midea Group as an example

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**Abstract:** Financial sharing center is an innovative way of financial management. Enterprises handle the accounting business of multiple different countries and regions in a shared service center. In this way, the financial process and business process are standardized, and the enterprise management structure is optimized, thus enhancing the core competitiveness of the enterprise. At present, most manufacturing enterprises begin to build financial sharing centers to realize the unification of financial information. Taking Midea Group as an example, this paper analyzes the application effect of financial sharing centers to provide suggestions for the construction of financial sharing centers for other manufacturing enterprises in China to promote the development of Chinese manufacturing enterprises.

## 1. Introduction

Since the end of the 20th century, the global economy has accelerated, and countries around the world began to establish mutual assistance and win-win relations. Economic globalization has enabled domestic and foreign enterprises to try to open branches around the world, making the enterprise profits grow significantly, the scale is rapidly expanded, and the economy has been greatly developed. However, because the branches are too scattered, the tax policies between countries and even different places may be different, which also causes problems such as not sharing and not timely transmission of financial information between the branches and the parent company. This leads to a great increase in enterprise operation risk, reduced management efficiency and a substantial increase in management cost. In the long run, it will inhibit the normal operation of enterprises and bring many problems to the enterprise. At the same time, the expansion of the enterprise size will therefore stagnate, greatly hinder the development of the company. In order to solve this problem, promote the financial transformation and upgrading of enterprises, and obtain greater development space, under the dual promotion of theory and practice, the financial sharing center emerged at the historic moment, and won the favor of most enterprises.

In order to seek better development, Chinese enterprises under the influence of globalization also began to establish cross-regional and transnational branches everywhere, in order to achieve a greater scale effect. However, Chinese enterprises are also facing the same financial risks, in order to deal with the possible problems, our Chinese enterprises began to establish financial sharing center, realize the interconnection of financial information, and combined with China's national conditions to upgrade the financial sharing center, to establish suitable for the development of financial sharing center, better service for Chinese enterprises. With the continuous improvement of the financial sharing center, more and more enterprises began to join the practice, optimizing their own internal management, and gaining a certain development. When the enterprise began to establish a financial sharing center, in fact, it began the financial upgrading and transformation, the basis of its implementation is to formulate detailed procedures and standardized and perfect system. However, most enterprises face the problem: how to make the financial sharing center operate stable and long-term operation? Enterprises should reasonably plan measures to regulate their own situation, establish a financial sharing center for the enterprise, so as to improve the financial efficiency and upgrade the enterprise management model.

## 2. Literature review

IMA (Institute of Management Accounting, Management Accounting Association) compared and analyzed 100 Fortune 500 enterprises with financial 500, and concluded that enterprises can reduce their cost by more than 80% and enhance their competitiveness. [1]

Based on the existing basis, after analyzing the shared service cases of many enterprises, Bryan Bergeron proposed that the recurring business into a functional unit, with a complete organization and the corresponding business processing process, while improving the service quality while reduce operating costs, improve operating efficiency and create value for the enterprise. [2]

Ian P. Herbert clarifies the difference between financial sharing and financial centralization, and puts forward that the financial sharing services form a cooperative relationship with the target unit, which has the function of clarifying the rights and responsibilities of the enterprise business unit and improving the business processing process in the daily operation. [3]

Hou Rui and other scholars conducted in-depth research on the existing theoretical basis, and proposed that the financial sharing service center has the role of improving the business processing efficiency and strengthening the fund control ability of enterprises. [4]

Zhang Jianhui analyzed the positive effect of financial sharing services, The financial sharing model is summarized: First, Enterprises can save human resources costs and time costs through the financial sharing mode, To the operating costs of multinational or cross-regional groups; Secondly, Enterprises integrate various resources through the construction of financial sharing center, Realize the unified accounting policies, Improved the comparability and accuracy of the accounting information quality, Standardize the enterprise business processing, Thus, it improves the efficiency of financial management and service quality; Again, Enterprises concentrate the regional financial management responsibilities to the headquarters through financial sharing, Enables senior managers to have timely access to financial information on the structure of their subordinate branches, Easy for unified management of the Group, Facilitating the speed at which senior managers make strategic decisions, Improve financial management efficiency, Improve the financial management ability and wind of the enterprise

Insurance response ability; finally, under the financial sharing mode, the financial management personnel can clarify the division of labor in the financial work and improve the financial decision-making ability of the enterprise. [5]

At present, the research at home and abroad on financial sharing concept research, advantages and construction has been quite fruitful, but from the perspective of quantity and quality, the quantitative research on financial sharing model and enterprise performance is still somewhat lacking.

## 3. Analysis of the effect of financial sharing service system

### 3.1 company introduction

Midea Group was established in 1968. Its business types include smart home business, HVAC business, robot and industrial automation system business and intelligent supply chain business. At present, Midea Group business has been extended to all over the world, with more than 200 branches, more than 60 overseas branches and 12 strategic business units. With the expansion of group scale and business development, enterprises need to reduce management costs and improve their operation efficiency. Therefore, Midea began to try to establish a financial sharing center. In 2015, Midea Group began to put the cost and general ledger module into the financial sharing center. By the end of 2016, Midea Group had implemented the financial sharing system throughout the group, and continuously improved and optimized the system, greatly improving the operation efficiency of the financial sharing center.

### 3.2 Analyze the process

#### 3.2.1 Select the indicator

Under the case of strictly following the authenticity, effectiveness, scientific, effectiveness, feasibility, systematic and comprehensive evaluation indicators, and combined with its own development characteristics, this paper analyzes the application effect of Midea financial sharing center from the four key aspects of development ability, profitability, solvency and operation ability. Specific indicators are introduced as follows:

Table 1. Application effect indicators of the financial sharing center

summary	index	serial number	Relevance
debt paying ability	current ratio	X1	positive
	Liquidity ratio	X2	positive
	asset-liability ratio	X3	positive
operation capacity	turnover of account receivable	X4	positive
	Inventory turnover	X5	positive
	Total asset turnover	X6	positive
profitability	ROA	X7	positive
	ROE	X8	positive
	EPS	X9	positive
Development ability	Growth rate of total assets	X10	positive
	increase rate of business revenue	X11	positive
	net profit growth rate	X12	positive

#### 3.2.2 Adaptability test

This paper uses SPSS22.0 software to conduct adaptive analysis of financial data. First, see Table 2. Using KMO test and Bartlett spherical test.

Table 2. KMO and Bartlett's Test

Kaiser-Meyer-Olkin	.709
Bartlett	1735.365
df	66
Significance	.000

As shown in Table 2, the KMO value is  $0.709 > 0.6$ , indicating that the data is suitable for factor analysis; while the spherical test results,  $P=0.000 < 0.05$  indicate that there is certain correlation between each variables of this data, meet the standards of factor analysis and conduct subsequent factor analysis.

Table 3. Communalities

	initial value	Extract value
X1	1.000	0.924
X2	1.000	0.922
X3	1.000	0.965
X4	1.000	0.905
X5	1.000	0.916
X6	1.000	0.988
X7	1.000	0.486
X8	1.000	0.805
X9	1.000	0.879
X10	1.000	0.895
X11	1.000	0.947

Extraction method: principal component analysis

Table 3 shows that the common degree of variables is above 0.9, indicating that the extraction of the common factor component can explain the variance of most variables.

Table 4. General variance interpretation

	Initial eigenvalue			Extract the sum of squares		
	total	Variance%	total	Variance%	total	Variance%
1	6.067	55.156	55.156	6.067	55.156	55.156
2	1.984	18.040	73.196	1.984	18.040	73.196
3	1.581	14.373	87.569	1.581	14.373	87.569
4	0.877	7.975	95.544			
5	0.308	2.796	98.340			
6	0.183	1.660	100.000			
7	1.440E-15	1.309E-14	100.000			
8	4.315E-16	3.923E-15	100.000			
9	2.096E-16	1.906E-15	100.000			
10	-1.035E-16	-9.412E-16	100.000			
11	-1.002E-15	-9.111E-15	100.000			

The statistical analysis software SPSS22.0 can perform the factor analysis without the need to standardize the data and directly select the correlation matrix for the analysis, so the common factor can be extracted directly. The original variables are integrated into a few factors, and the common factors are extracted here by the main component method.

There is no exact quantitative method for determining the number of factors, but the common method is to confirm the use of the number of factors by two criteria. One is the eigenvalue (Eigen value) criterion, and the other is the gravel graph inspection (Scree test) criterion. The eigenvalue criterion is to select the primary component with an eigenvalue greater than or equal to 1 as the initial factor and to discard the primary component with an eigenvalue less than 1. From the factor extraction

and rotation results of Table 4, we can see that the first three factors with an eigenvalue greater than 1 have the first three items, so the first three components are selected in this paper.

### 3.2.3 Factor identification

Table 5. Composition matrix

	composition		
	Z <sub>1</sub>	Z <sub>2</sub>	Z <sub>3</sub>
1	0.955	-0.097	-0.039
2	0.851	0.043	-0.442
3	0.428	0.882	-0.061
4	0.539	-0.462	0.633
5	0.847	0.446	-0.011
6	0.203	0.333	0.915
7	0.685	-0.084	0.100
8	0.790	-0.359	0.229
9	-0.930	0.006	0.116
10	-0.865	-0.303	0.057
11	-0.662	0.667	0.254

Because the synthesis of the initial factor is too strong, it is difficult to accurately identify the focus of different common factors, so that the load of the factor is made to 0 or 1 as close as possible through the coordinate axis of the rotation factor, which greatly reduces the factor synthesis and fully highlights the real significance and value of the factor, so as to make a reasonable analysis and interpretation of each common factor relationship. The method used in this paper is an orthogonal rotation method with kaiser standardization, which gradually converges after four iterations. The results are shown in the following table:

Table 6. Rotation matrix

	The composition after the rotation		
	Z <sub>1</sub>	Z <sub>2</sub>	Z <sub>3</sub>
1	0.750	0.601	-0.016
2	0.522	0.715	-0.373
3	-0.296	0.917	0.192
4	0.794	-0.087	0.517
5	0.309	<b>0.894</b>	0.147
6	0.054	0.167	<b>0.979</b>
7	0.566	0.392	0.109
8	0.846	0.247	0.166
9	-0.659	-0.663	0.068
10	-0.433	-0.839	-0.068
11	<b>-0.892</b>	-0.053	0.385

From the rotating public factor matrix, the public factor 1 has a large load on the asset-liability ratio, which can be understood as the solvency of the enterprise. Public Factor 2 has a large load on the accounts receivable turnover rate and the total asset turnover rate index, which represents the operating capacity of the enterprise. Public factor 3 has a large load on the growth rate index of total assets, which represents the development capacity of the enterprise.

### 3.2.4 Factor score

The factor score coefficient in Table 7 is estimated using regression.

Table 7. Factor scoring matrix

	Composition		
	Z <sub>1</sub>	Z <sub>2</sub>	Z <sub>3</sub>
1	0.143	0.080	-0.029
2	0.046	0.174	-0.257
3	-0.255	0.364	0.082
4	0.280	-0.188	0.330
5	-0.052	0.253	0.059
6	-0.005	0.011	0.603
7	0.120	0.035	0.056
8	0.237	-0.067	0.099
9	-0.102	-0.120	0.064
10	0.002	-0.215	-0.012
11	-0.283	0.121	0.237

According to the above table, we can write the factor score function:

$$Z_1 = 0.143X_1 + 0.046X_2 - 0.255X_3 + 0.280X_4 - 0.052X_5 - 0.005X_6 + 0.120X_7 + 0.237X_8 - 0.102X_9 + 0.002X_{10} - 0.283X_{11}$$

$$Z_2 = 0.080X_1 + 0.174X_2 + 0.364X_3 - 0.188X_4 + 0.253X_5 + 0.011X_6 + 0.035X_7 - 0.067X_8 - 0.120X_9 - 0.215X_{10} + 0.121X_{11}$$

$$Z_3 = -0.029X_1 - 0.257X_2 + 0.082X_3 + 0.330X_4 + 0.059X_5 + 0.603X_6 + 0.056X_7 + 0.099X_8 + 0.064X_9 - 0.012X_{10} + 0.237X_{11}$$

#### 4. Results analysis

The analysis yielded the final comprehensive score and ranked, shown in Table 8 From the final ranking, Midea Group gradually used financial sharing in 2015, and was widely used throughout the group in 2016. Since 2015, Midea Group's comprehensive score ranking has gradually increased, and the ranking has grown rapidly after 2016. This shows that the implementation of the financial sharing center plays a positive role for Midea Group.

Table 8. Midea Group scored and combined factors from 2014-2019

Year	Z <sub>1</sub>	Z <sub>2</sub>	Z <sub>3</sub>	Comprehensive score	Rank
2014	-1.10395	-1.474939	0.074799	-0.793125	10
2015	0.343975	0.628027	-2.438724	-0.047696	6
2016	0.140567	-0.160637	0.511573	0.074598	5
2017	2.311198	-1.270235	0.075972	0.423897	3
2018	-0.410520	1.121980	0.970350	0.339228	4
2019	0.667250	1.350329	0.418324	0.702593	1
2020	0.203399	0.807343	0.889744	0.443993	2

#### 5. Conclusions

At present, China is in the era of information technology and data explosion and the rapid development of global economy, and more and more Chinese companies begin to carry out financial management transformation and establish financial sharing centers, so as to achieve the purpose of adapting to the accelerated pace of The Times and seeking their own development. Financial sharing center can efficiently integrate scattered financial information, deliver complete financial reports for enterprises, improve the operation efficiency, reduce enterprise management costs, connect various branches, realize the sharing of financial information, and provide long-term guarantee for the development of the enterprise. Financial sharing center is a new financial management mode that

conforms to the development of The Times. Chinese enterprises need to constantly absorb new knowledge, combine theory with practice, and promote the improvement of their own financial sharing mode.

Taking the construction of Midea financial sharing center as an example, factor analysis analyzes 11 financial indicators from 2014-2020 from solvency, profitability, operation ability and 2020, studied the business performance changes before and after the establishment of financial sharing center, and gained experience and inspiration. The following conclusions are drawn by summary combing:

(1) Combined with China's national conditions and the needs of enterprises' own development, it is very necessary for Chinese manufacturing enterprises to establish a financial sharing center.

(2) The establishment of a financial sharing center may not bring significant profit income or management ability improvement to the enterprise in the short term, but it has long-term development advantages and can gradually grow. Through continuous improvement and consolidation, the requirements of promoting the financial upgrading of the enterprise and the management ability can be greatly improved.

## References

- [1] Janssen M, Rothwell, Herbert, Seal W. Shared service centers and professional employability [J]. *Journal of Vocational Behavior*, 2011, 79:241-252.
- [2] Ian P. Herbera, Will B. Seal W. Shared Service as a new organizational form: Some implications for management accounting [J]. *The British Accounting Review*, 2012(44).
- [3] Li Chunyu, Zhu Xianjun. Financial Shared Service Center Model Analysis and Research [J]. *Operating Manager*, 2009 (24): 81.
- [4] Hou Rui, Zhao Shifeng, Zhu Fengtao. The Practice of Financial Sharing Services in China Telecom [J]. *Finance and Accounting (Financial Edition)*, 2010 (5): 45-47.
- [5] Zhang Jianhui. Thoughts on Enterprise Group Financial Sharing Centers [J]. *Modern Business*, 2013 (15): 254-255.
- [6] Wang Wenxin. Discussion on the Application of Financial Shared Service Model in China Group Enterprises [J]. *Contemporary Accounting*, 2016 (5) 52-53.
- [7] Golden Lotus, Wang Hua. The Application Effect Study of the Financial Shared Services Center [J]. *Friends of Accounting*, 2016 (5): 21-24.
- [8] Gong Zhilan. Analysis on the Application of Financial Sharing Service Center in Chinese Enterprises [J]. *Mall modernization*, 2018 (22): 162-163.