What are the risks of financial management under the digital transformation of enterprises? Evidence from systems engineering

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Abstract: Digitalization is rewriting the track of economic development and becoming a new driving force for economic growth. It is of great significance for enterprises to better complete digital transformation to scientifically and rationally understand the key indicators and their interrelationships in financial management risks. This paper constructs the index system of enterprise financial management risk under the background of digital transformation, uses the interpretative structural model (ISM) to calculate and analyze the adjacency matrix, obtains the hierarchical division of influencing factors, summarizes the internal pointing relationship between the index factors at all levels, and then uses the cross influence matrix multiplication (MICMAC) to calculate the driving-dependence relationship of each factor to judge its attribute category. This paper summarizes a relatively complete and comprehensive financial management risk impact path with the help of ISM-MICMAC method, and provides a scientific and reasonable countermeasure for enterprises that are about to or undergoing digital transformation to better avoid financial management risks.

Keywords: ISM, MICMAC, Digital Transformation, Financial Risk

1. Introduction

With the popularity of digital technologies such as cloud computing, big data, 5G technology, and blockchain, the digital economy has set off an economic revolution worldwide. Every industry is seeking digital transformation. The digital economy has become a new engine of China 's economic growth [1]. According to the " China Digital Economy Development Report (2022) " released by the China Institute of Information and Communications, the added value of China 's digital economy in 2021 will reach 45.5 trillion yuan, a year-on-year nominal growth of 16.2%, accounting for 39.8% of GDP [2]. In addition, the report of the 20th National Congress of the Communist Party of China emphasizes that the digital economy can effectively promote and support China 's supply-side structural reform, realize the domestic circulation, actively promote the deep integration of artificial intelligence, big data, the Internet and the real economy, and help SMEs to resume production and development [3]. However, the disruptive development of digital technology will rapidly change the market and have a huge impact on existing companies. Therefore, the importance and danger of financial management risks are becoming more and more prominent. How to accurately predict and avoid the financial risks of enterprises while grasping the new opportunities of digital transformation is an urgent problem to be solved.

In recent years, a large number of scholars have investigated and analyzed the financial situation of SMEs in China, and improved the financial situation of SMEs and avoided financial risks through various ways. Li Chang-shan used Logistic regression method to construct an enterprise financial risk early warning model to effectively prevent and identify enterprise financial risks [4]. By establishing a financial performance evaluation model, Li-Chang Hsu combines factor analysis method and entropy weight-TOPSIS model to evaluate the financial performance of listed companies, so that investors and managers can make more accurate decisions based on this [5]. Katarina Valaskova uses multiple regression models to process the financial and accounting data of Slovak businesses and analyzes the financial and other relevant risk predictors of businesses under specific economic conditions [6]. With the continuous development of computer technology and artificial intelligence, financial risk research has gradually shifted to deep learning [7], Bayesian network [8], neural network, support vector machine [9] and other machine learning methods to establish financial early warning models, and some scholars have shifted their attention to the risk research and analysis of enterprise digital transformation. By comparing the digital strategic layout of the world 's major economies, Shi Jian-xun proposed

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countermeasures and prospects for the digital transformation of Chinese enterprises [10]. The order parameter-TOPSIS method is used to evaluate the digital transformation ability of manufacturing industry [11], and stimulate the risk awareness in the transformation of enterprises.

To sum up, the previous literature is more qualitative, quantitative and other research methods, focusing on the accuracy optimization of the complete early warning, timely identification and accurate evaluation of the financial risk of the enterprise, and the problems existing in the digital transformation are limited to the description of the phenomenon [12]. Lack of attention to various risks faced by the transformation process, lack of summary of the chain transmission and visual illustration of financial risks, and no path identification and research between financial risk factors. Risks often occur in a chain conduction reaction, and a series of risks and challenges will inevitably arise in the digital transformation of enterprises. If we can speculate and identify the impact path of financial risks, and predict the financial risks in digital transformation, managers of enterprises can avoid predictable financial risks, detect the existing financial potential crisis of enterprises, and reduce unnecessary hidden dangers for enterprises to better complete digital transformation. Based on this, this paper combines ISM and MICMAC methods, applies them to the field of enterprise financial management, and makes an in-depth analysis of the specific differences and mutual supplements after the organic combination of the two methods, so as to identify and study the risk path of enterprise financial management. The article writing ideas are shown in Figure 1：

2. The index system establishment

This paper constructs 28 index systems based on financial management risks from four aspects of enterprise manpower, operation, finance and environment, and comprehensively evaluates the financial risks under the background of enterprise digital transformation:

Employee factors: The accurate understanding, positive transformation, business promotion and innovative thinking of financial personnel on the digital transformation of enterprises are the key to the smooth transformation of enterprise digitalization. If the enterprise in the transformation before or in the process of transformation, ignoring the transformation of employee thinking, work ability training, misconduct and other factors, it will cause the financial transformation lags behind the overall development of the enterprise, the financial personnel behind the pace of enterprise transformation, etc., so that the enterprise lacks the vitality of transformation, financial loopholes, resulting in financial crisis.

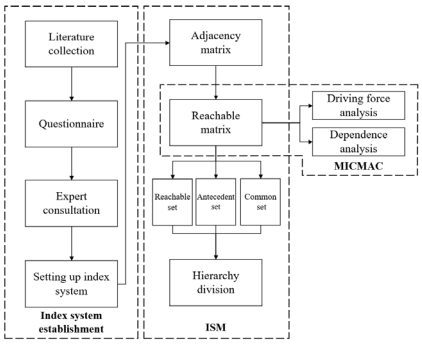

Figure. 1 Method flowchart

Operating factors: The operation level of an enterprise reflects the ability and potential of the company in the process of digital transformation, and is an important indicator factor to measure financial risks. In the process of digital transformation, the original relatively lagging or not in line with the digital management ability, development status and organizational structure of the enterprise may be greatly impacted, resulting in loopholes or deficiencies in the enterprise 's finance, increasing the operating burden, and the power of transformation is exhausted. When the heavy operating conditions of enterprises are difficult to support the transformation of enterprises, a large number of financial problems will arise, which will greatly increase financial risks.

Financial factors: Corporate finance can measure the basic information of the company 's operating conditions, capital turnover, debt repayment ability, etc., and is a direct indicator for evaluating the company 's financial status. Enterprise digital transformation requires a lot of financial support, cash flow and personalized investment planning. If an enterprise has an abnormality in the capital link, it will directly lead to financial problems and cannot better support the enterprise to continue its digital transformation.

Environmental factor: The market is constantly changing and competitive, and the financial situation of enterprises is largely affected by many aspects of the environment. If enterprises fail to grasp the market changes, follow the industry direction, and follow the local policy orientation in the process of digital transformation, it will lead to problems such as reduced innovation ability, low transformation vitality, and large development resistance. It will even fall into the transformation dilemma and face mergers or elimination.

Table.1 Enterprise financial risk indicator factors in the context of digital transformation

First index	Second index	Indicator number
Employee factors	Financial personnel misconduct	S_1
	Lack of financial personnel capacity	S_2
	Lack of digital information tools for employees	S_3
	Managers lack digital transformation thinking	S_4

	Enterprises lack innovative and transformative talents.	S_5
	The digital training of the original personnel is insufficient.	S_6
	Talent incentive mechanism is incomplete	S_7
Operating factors	Financial personnel access to data information asymmetry	S_8
	Financial personnel lack of digital business level	S_9
	The product market share is low	S_{10}
	Lack of core competitiveness of enterprises	S_{11}
	The traditional performance appraisal model is backward	S_{12}
	Smaller enterprise scale	S_{13}
	Lack of effective communication between various departments of the enterprise	S_{14}
	The digital transformation plan of enterprises is not in line with the development of enterprises.	S_{15}
	The development stage of the enterprise is not suitable for digital transformation.	S_{16}
Financial factors	Enterprises lack long-term investment planning.	S_{17}
	Difficulty in capital turnover	S_{18}
	The debt ratio is too high	S_{19}
	Insufficient cash flow	S_{20}
	The audit quality is low	S_{21}
	There are fewer digital financing channels for enterprises.	S_{22}
Environmental factor	The region where the enterprise is located is economically underdeveloped.	S_{23}
	The digital popularization in the area where the enterprise is insufficient.	S_{24}
	The industry digital transformation is difficult	S_{25}
	Business innovation environment and ability is not strong	S_{26}
	Lack of regional economic policy orientation	S_{27}
	The environmental uncertainty factors of the industry are more complex.	S_{28}

3. ISM method

In 1973, Warfelt proposed an interpretative structural modeling (ISM) method to describe the hierarchical relationship of influencing factors within the system [13]. The model can deeply excavate the surface, transition and deep influencing factors of complex systems, express the complex hierarchy and pointing relationship of various influencing factors with a more clearly directed graph, and intuitively reveal the hierarchical structure between influencing factors. Help enterprises to determine the key influencing factors at the same time, according to the actual situation of the enterprise to develop a step-by-step risk control program, to provide a strong guarantee for the financial security of enterprises. The specific steps are as follows:

Step 1: Establish the adjacency matrix A. This paper collects literature and invites experts to score whether there is a direct or significant impact between various influencing factors, so as to obtain the adjacency matrix A of the influencing factors of financial management risk under the background of enterprise digital transformation:

$$a_{ij}=\begin{cases}1, & \textit{factor i has a significant impact on factor}\\ 0, & \textit{factor i has no significant impact on factor}\end{cases}$$

Step 2: Calculate the reachable matrix B. I is defined as the unit matrix. Using Boolean algebra operation rules (0 + 0 = 0,0 + 1 = 1,1 + 0 = 1,1 + 1 = 1,0 * 0 = 0,0 * 1 = 0,1 * 0 = 0,1 * 1 = 1), the matrix power operation is performed on the sum of the adjacency matrix A and the unit matrix I until $(A+I)^k=(A+I)^{k+1}$, then there is $B=(A+I)^k$ .According to the rules, the program can be written by Matlab software to calculate and obtain the reachable matrix B. Step 3: The reachable set M_i, antecedent set N_i and common set O_i of risk influencing factors are obtained. According to the reachable matrix B, the set of elements with each row value of 1 in the reachable matrix is the reachable set M_i; the set of elements with a value of 1 in each column of the reachable matrix is the leading set N_i; the intersection of reachable set and antecedent set is called common set O_i:

$$M_i=\{x_i \mid x_i\in X, B_{ij}=1\}$$
$$N_i=\{x_j \mid x_j\in X, B_{ij}=1\}$$
$$O_i=M_i\cap N_i$$

Step 4: According to the calculation and analysis, the factors of each level are obtained and the level is divided. When the reachable set M_i, the antecedent set N_i and the common set N_i satisfy $O_i=M_i$, that is, the element set of the first layer, is the top-level index in the system factor. After the top-level index is obtained, the top-level index is deleted from the reachable matrix L_i to obtain a new matrix. Repeat the above operation process until all elements are deleted, and all the influencing factors of each layer of the system are obtained.

4. MICMAC method

MICMAC is a research method proposed by Duperrin and Godet in 1973 to analyze the logical relationship between factors and the dependency-driven relationship [13]. The sum of the rows and columns of the reachable matrix in the ISM model is recorded as the driving force and dependence, respectively, to better understand the

essential role of factors in the system. The MICMAC method can be divided into four categories: I (autonomous factor), II (dependent factor), III (related factor) and IV (independent factor) according to the driving force and dependence of the elements, so as to clarify the role of each factor in the whole system. The specific steps are as follows:Based on the reachability matrix, MICMAC analysis is performed to calculate the driving force P_i and dependence Q_j:

$$P_i=\sum_{j=1}^{n} L_{ij} \ ; \ \ Q_j=\sum_{i=1}^{n} L_{ij}$$

The driving force P_i represents the driving degree of element i to other factors of the system ; dependence Q_j represents the degree to which factor j changes depending on other factors in the system. The cross-impact matrix multiplication (MICMAC) analyzes the indicators included in the four quadrants distributed in the two-dimensional coordinates through the driving force-dependence relationship of each influencing factor, and then judges the role of influencing factors in the system and explores a reasonable impact path.

5. Empirical analysis

5.1 ISM calculation

Under the background of digital transformation, this paper invites 8 experts and scholars (3 senior managers of digital transformation enterprises, 3 professors of colleges and universities, 2 professional authorities) to score the relationship between the various indicators of enterprise financial management risk. When more than 85 % of the experts think that factor A has an impact on B, they think that factor A has a direct impact on B, otherwise they think that factor A has no direct impact on B. The relationship. Combined with literature review, theoretical analysis and the actual situation of digital transformation enterprises, the results are sorted out, summarized and counted, and finally a 28 × 28 adjacency matrix is formed. The results are shown in Table 2:

Based on the constructed adjacency matrix A, the Matlab software is used to write the matrix operation command to obtain the reachable matrix B, and further in-depth calculations are performed to find the set of influencing factors at each level, and then the various influencing levels of the enterprise financial management risk indicators under the background of digital transformation are divided. The surface, transition and underlying influencing factors of the complex influencing structure are obtained. Finally, the hierarchical structure and internal relationship between the influencing factors are revealed in a more organized and clear directed graph form, and the ISM hierarchical structure model is obtained:

Table.2 adjacency matrix

	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8	S_9	S_{10}	S_{11}	S_{12}	S_{13}	S_{14}	S_{15}	S_{16}	S_{17}	S_{18}	S_{19}	S_{20}	S_{21}	S_{22}	S_{23}	S_{24}	S_{25}	S_{26}	S_{27}	S_{28}
S_1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
S_3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_6	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_7	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_{10}	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_{11}	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
S_{12}	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_{13}	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_{14}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
S_{15}	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
S_{16}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
S_{17}	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
S_{18}	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
S_{19}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_{20}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_{21}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S_{22}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
S_{23}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
S_{24}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
S_{25}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
S_{26}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
S_{27}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
S_{28}	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

Table.3 Reachability matrix

	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8	S_9	S_{10}	S_{11}	S_{12}	S_{13}	S_{14}	S_{15}	S_{16}	S_{17}	S_{18}	S_{19}	S_{20}	S_{21}	S_{22}	S_{23}	S_{24}	S_{25}	S_{26}	S_{27}	S_{28}
S_1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
S_2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
S_3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
S_4	1	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
S_5	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
S_6	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
S_7	1	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
S_8	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
S_9	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
S_{10}	1	1	0	0	1	0	0	0	1	1	1	0	1	0	0	1	0	0	1	0	1	0	1	0	0	0	0	0
S_{11}	1	1	0	0	1	0	0	0	1	0	1	0	1	0	0	1	0	0	1	0	1	0	1	0	0	0	0	0
S_{12}	1	1	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
S_{13}	1	1	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
S_{14}	1	1	0	0	1	0	1	0	1	1	1	1	1	1	1	1	0	0	1	0	1	0	1	0	0	0	0	0
S_{15}	1	1	0	0	1	0	1	0	1	1	1	1	1	1	1	1	0	0	1	0	1	0	1	0	0	0	0	0
S_{16}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
S_{17}	1	1	0	0	1	1	0	0	1	0	0	0	1	0	0	1	0	0	1	1	1	1	1	0	0	0	0	0
S_{18}	1	1	0	0	1	1	0	0	1	0	0	0	1	0	0	1	0	0	1	1	1	1	1	0	0	0	0	0
S_{19}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
S_{20}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
S_{21}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
S_{22}	1	1	0	0	1	1	0	0	1	0	0	0	1	0	0	1	0	0	1	1	1	1	1	0	0	0	0	0
S_{23}	1	1	0	0	1	1	0	0	1	0	0	0	1	0	0	1	0	0	1	1	1	1	1	1	0	0	1	0
S_{24}	1	1	0	0	1	1	0	0	1	0	0	0	1	0	0	1	0	0	1	1	1	1	1	1	1	0	1	0
S_{25}	1	1	0	0	1	1	0	0	1	0	0	0	1	0	0	1	0	0	1	1	1	1	1	1	1	0	1	0
S_{26}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
S_{27}	1	1	0	0	1	1	0	0	1	0	0	0	1	0	0	1	0	0	1	1	1	1	1	0	0	0	1	0
S_{28}	1	1	0	0	1	1	0	0	1	1	1	0	1	0	0	1	0	0	1	1	1	1	1	0	0	1	0	0	1

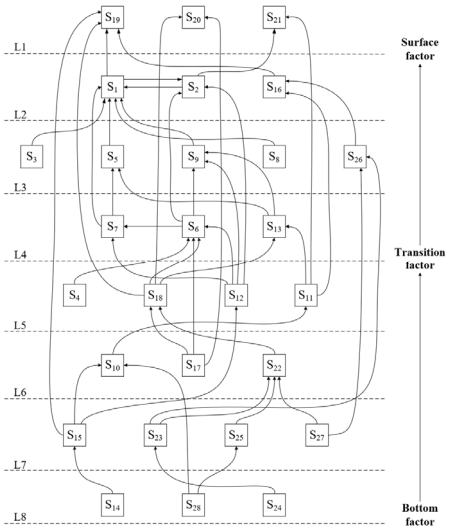

Figure.2 Hierarchy Diagram

5.2 ISM analysis

The surface factors： The surface factors are the first-level indicators in the model, including three factors : high debt ratio（S19）, insufficient cash flow（S20）, and low audit quality（S21）. They are the top-level factors of risk transmission and the most direct cause of financial risks in the context of digital transformation of enterprises. When an enterprise is in financial crisis, if measures are

taken to directly control these risk indicators, rapid and effective control effects can be achieved.

The bottom factors： The lack of effective communication between various departments of the enterprise（S14）, the complexity of the environmental uncertainty factors in the industry（S28）, and the lack of digital popularization in the area where the enterprise is located are the bottom factors（S24）. There is no mutual influence between the three, but it has a profound effect on other risk factors. Taking corresponding optimization measures for these factors will not receive obvious and rapid feedback, but it can fundamentally reduce the occurrence of financial risks. It is the most fundamental key factor to promote the financial risks of enterprises under the background of digital transformation, and it is of great significance in the risk transmission index system.

The transition factors：The transition factors are located in the second to seventh layers of the model, including the misconduct of financial personnel （S1）, the insufficient ability of financial personnel（S2）, the stage of development of the enterprise is not suitable for digital transformation （S16）, the lack of digital information tools （S3）, the lack of innovative and transformative talents （S5）, the lack of digital business level of financial personnel （S9）, the asymmetry of financial personnel 's access to data information （S8）, the weak business innovation environment and ability （S26）, the imperfect talent incentive mechanism （S7）, the lack of digital training for the original personnel （S6）, the small scale of the enterprise （S13）, the lack of digital transformation thinking of managers （S4）, the difficulty of capital turnover （S18）, the traditional backward performance appraisal model （S12）, the lack of core competitiveness of enterprises （S11）, enterprises lack core competitiveness （S10）, enterprises lack long-term investment planning （S17）, enterprises have fewer digital financing channels （S22）, enterprises ' digital transformation plan is not in line with enterprise development （S15）, enterprises are located in underdeveloped regions （S23）, difficulties in digital transformation of their industries （S25）, insufficient regional economic policy orientation （S27）, lack of effective communication between various departments of enterprises （S14）, complex environmental uncertainty factors in the industry , and insufficient digital popularization in the region where enterprises are located （S24）.

Although these factors cannot directly lead to financial risks in enterprises, there are extremely complex risk impact chains, which will indirectly lead to a vulnerability crisis in the financial system of enterprises. Among them, S6, S7 and S13 are located in the fourth layer. The influence of the connecting link and other factors are affected. They are the central nodes of the whole hierarchical structure. The relationship between them and other factors is relatively complex. It is a key link to control the financial risk of enterprises and should be paid more attention. At the same time, S4, S18, S12, and S11 are located in the fifth layer, which is at a deeper level in the hierarchical structure. They have complex cross-layer influence relationships with multiple factors and are important key factors to avoid corporate financial risks in the context of digital transformation.

5.3 MICMAC calculation

Based on the previous analysis of the ISM model, the MICMAC analysis method can further clarify the role of various factors in the system and the relationship between factors. Using the reachable matrix B constructed above, the sum of the rows of the reachable matrix B is the driving force P_i, and the sum of the columns is the dependence Q_j. The driving force and dependence values are obtained as shown in Table 7. According to the values of driving force and dependence, the Cartesian coordinate system is established, and the coordinates will be divided into four regions: I (autonomous factor), II (dependent factor), III (related factor) and IV (independent factor). The driving force-dependence relationship diagram is obtained.

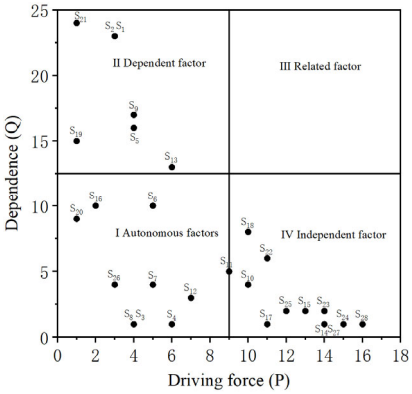

Figure.3 Driving force—Dependency graph

5.4 MICMAC analysis

Autonomous factors (quadrant I): There are 9 indicators that belong to the autonomous factors : employees ' lack of digital information tools （S3）, managers ' lack of digital transformation thinking （S4）, imperfect talent incentive mechanism （S7）, financial personnel 's access to data information asymmetry （S8）, backward performance appraisal model （S12）, weak business innovation environment and ability （S26）, insufficient cash flow （S20）, enterprises ' development stage is not suitable for digital transformation （S16）, and enterprises ' lack of digital training for original personnel （S6）. The driving force and dependence of the I-quadrant factors are low, and they are mostly in the middle level in the ISM hierarchical structure model, which is affected by the deep factors and the shallow factors.

Dependent factors (quadrant II):There are seven indicators that are dependent factors: small scale of enterprises （S13）, lack of innovative and transformative talents （S5）, high debt ratio （S19）, misconduct of financial personnel （S1）, lack of digital business level of financial personnel （S9）, insufficient ability of financial personnel （S2）, and low audit quality （S21）.The avoidance of quadrant II factors often depends on the solution of other factors, with lower driving force and higher dependence. For example, the digital business level of financial personnel can be improved through employee training in enterprises, and the lack of financial personnel 's ability can be improved through digital lectures, improvement of incentive and assessment mechanisms, etc.

Related factors (quadrant III):There is no such influencing factor in the MICMAC model of financial management risk influencing factors in the process of digital transformation. Related factors have high driving force and high dependence. Without considering the subjective influence of expert evaluation data, the actual financial risk factors are often mutually contained, and there will be no single influencing factors. There are no related factors in this paper, indicating that the influencing factors identified in this paper are through the complex correlation between multiple factors, and will not cause financial risks to enterprises because of the role of a single factor, which will eventually lead to the failure of digital transformation of enterprises.

Independent factors (quadrant IV): There are 12 indicators that are independent factors : lack of effective communication between various departments of the enterprise （S14）, insufficient regional economic policy orientation （S27）, lack of long-term investment planning （S17）, insufficient digital popularization in the region where the enterprise is located （S24）, complex environmental uncertainty factors in the industry （S28）, insufficient integration of enterprise digital transformation plan with enterprise development （S15）, difficulty in digital transformation of the industry （S25）, underdeveloped economy in the region where the enterprise is located （S23）, lack of core competitiveness of the enterprise （S10）, difficulty in capital turnover （S18）, less digital financing channels for enterprises （S22）, and lack of core competitiveness of enterprises（S11）. The factors in the fourth quadrant usually have higher driving force and lower dependence. They belong to the deeper influencing factors in the ISM hierarchical structure model and have a greater impact on the financial management risk of enterprises. Timely avoidance of independent factors in financial risk indicators will have a positive effect on the solution of other factors. Therefore, it is a key factor for enterprises to better avoid financial management risks and successfully complete digital transformation.

6. Policy advice given

（1）Make full use of supportive policies of central and local governments. Since the 18 th National Congress of the Communist Party of China, the Central Committee of the Communist Party of China and the State Council have introduced policy support for almost all aspects and links of the digital economy around digital industrialization and industrial digitization. Therefore, enterprises should make good use of the various support policies of the central and local governments, make rational use of the industrial guidance funds of governments at all levels, and make full use of the talent introduction policies of local governments.

（2）Facing the general trend of digital transformation, senior managers should change the thinking of traditional enterprise development, formulate and implement the digital transformation strategy as soon as possible, and grasp the key opportunities of digital transformation and development. Enterprises should develop competitive new business while steadily strengthening core business. To formulate an advanced and feasible digital strategy and its implementation plan suitable for the current situation of the enterprise.

（3）Enterprises should attach importance to the empowerment and incentive of internal members, so as to promote organizational change and form a competition mechanism within the enterprise. Encourage high-capacity employees and encourage or even eliminate low-competency employees, tap talents who can quickly respond to risk changes, and the process of incentives cannot be limited to traditional material rewards, but also pay attention to the spiritual rewards of employees.

7. Conclusions

The digital economy has become an important part of the national economy and an important incision for the rapid development of China 's economy. Financial management issues play an increasingly important role in the development of enterprises. Better prediction and avoidance of financial problems that may occur in the process of digital transformation, and prediction of the impact path of risks can enable enterprise managers to make more scientific and long-term management decisions. Based on the ISM-MICMAC method, this paper conducts data calculation and analysis, summarizes a relatively complete and comprehensive financial management risk impact path, and provides a scientific and reasonable financial risk avoidance idea for enterprises that are about to or are undergoing digital transformation.

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