Empirical Research on Internal Control Construction System of Accounting Costs in Power Enterprises Based on Big Data Perspective

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Abstract. The research direction of the thesis is the research on the internal control evaluation strategy of power companies from the perspective of big data. Based on the five elements of internal control, the questionnaires are designed. The professional accountants responsible for internal audit control in power companies are investigated as questionnaires. Through the analysis of the survey results, big data processing and data relationship were established. It was found that the five elements of internal control are not highly valued in the accountant audit work of power companies. According to the control environment, risk assessment and control activities, the trend is decreasing, and the audit and other departments of the enterprise The communication between the two is not efficient, the internal supervision is weak, and the quality of financial information has a greater impact on internal control. It is concluded that accountants need to pay attention to the internal audit of power companies, strengthen the awareness of corporate audit risk prevention, improve the construction of auditing systems, and strengthen internal control in auditing activities to improve the quality and efficiency of internal audit control of power companies.

1. Introduction
Under the general situation of accounting reform, internal control has become the main way for power companies to reduce costs, ensure the safety of corporate asset funds, and increase the income of power companies. As a main body of social resources, electric power companies have inadequacies in internal control methods, whether they are based on processing methods, system establishment, or internal supervision. Big data analysis is a new data processing method based on huge data analysis, using data association, establishing data relationships, and mining potential information. In the large number of audit data of power companies, through the analysis of big data, it caters to the needs of the internal audit of power companies. Therefore, the author combines big data to conduct comprehensive evaluation and supervision of power enterprise audits to prevent operational risks and improve the operating efficiency of power companies.

2. Paper research ideas
Firstly, through the literature analysis method, the internal control evaluation content, evaluation methods and indicators of electric power enterprises are determined, and the internal control evaluation basis is found through literature analysis.
Secondly, a questionnaire survey was conducted to conduct a questionnaire survey on CPAs responsible for internal control management from different power companies. The questionnaires were divided into 29 entries, 7 dimensions, using a scoring system, 5-1 points, indicating declining quality; internal control scores. The percentage system is used.

Thirdly, based on the results of the questionnaire survey, using big data analysis, through analyzing the financial quality and internal control evaluation, the decision-making rules of the internal control evaluation of the electric power enterprise accountants are explored.

3. Related theory review

3.1. Internal control evaluation content
The internal control evaluation is divided into two aspects: theory and practice. The evaluation theory is the evaluation of COSO. It is proposed by the anti-false financial report committee, which includes five parts: control environment, risk assessment, control activities, information communication and internal supervision. The practice evaluation includes the internal control process including accounting budget, income and expenditure, procurement cost, fixed assets, infrastructure, and contracts. According to the basic content of COSO, Song Wenchi [1] and others proposed problems based on internal control under five major factors, and proposed their own solutions to the problem. From the practical point of view, Wang Yushu [2] and others from the perspective of internal control process, put forward their own views on the budget and income expenditure, but the lack of research on other factors, there is one-sided.

3.2. Internal control evaluation method
At present, there are few quantitative analysis methods for internal control evaluation, and they all have great subjectivity. They do not stand on the overall situation and make objective comments, which is not conducive to the display of real results. At present, some scholars combine the qualitative and quantitative perspectives to establish corresponding mathematical models to quantify unstructured data, such as principal component analysis and analytic hierarchy process. Li Yonghong [3] used the analytic hierarchy process to weight the factors affecting the quality of internal control, and after designing the questionnaire, summarized and summarized the problems in internal control, and obtained the current conclusion that the cost verification is not strict. Although the conclusion is reached, because of the greater subjectivity of the method, the practical application significance of the evaluation is weakened.

3.3. Internal control evaluation indicators
Through reviewing the relevant literatures on the internal power evaluation strategy of power companies, it is found that the current research basic mountain starts from the evaluation indicators and methods, and builds the evaluation system, whether it is from specific factors or related to the establishment of the entire evaluation system, one is subjective Strong, lack of objective theoretical research; second, basically follow theoretical research, lack of practical practical research. At the same
time, most scholars stand on a relatively macroscopic point of view, analyzing the internal control evaluation of enterprises, and there is little research on the internal control management system of state-owned assets investment of power companies. Therefore, the research of this paper can cater to the current internal control of finance. The upsurge can also fill the gap in the internal control management evaluation of power companies.

4. Questionnaire establishment and research method explanation

4.1. Questionnaire establishment
According to the basic theoretical system of the five elements of COSO, the questionnaire started from seven dimensions and a total of 29 entries were established. COSO five-factor control environment (4), risk assessment (2), control activities (4), information communication (3), internal supervision (5); financial quality (10); internal control management (1). Except for the internal control management evaluation score is the percentage system, the other six dimensions are 5-point system, 5 is the best, and 1 is the worst.

4.2. Questionnaire
In order to make the survey results more universal and practical, the questionnaire is for the 15 power companies in our province, 62 is a certified public accountant, who can bear the financial audit work of the power company and has no direct interest relationship with the power company [4]. The financial information of power companies has the characteristics of high integrity and strong professional knowledge and skills. In order to ensure the quality of the questionnaire, an audit team leader and 2 auditors were set up in this paper to follow up the questionnaire. As a result, 56 qualified questionnaires were collected, involving 14 power companies. The effective recovery rate of the questionnaire was 90.32%.

4.3. Research content in the questionnaire
Through the analysis of the five factors and the six levels of financial quality, the big data analysis of the financial enterprise internal control personnel in the internal control evaluation process management decision, found its decision-making rules.

4.4. Research methods
Using the big data processing method, weight the obtained data, set up multiple regression equations, and analyze the internal control evaluation preferences. The internal control score equation expression is as follow.

\[ Y_i = b_{i1}X_{i1} + b_{i2}X_{i2} + b_{i3}X_{i3} + ... + b_{in}X_{in} + b \]

The setting \( Y \), \( X_1 \), \( X_2 \), \( X_3 \), \( X_5 \), \( X_6 \) represents the internal control score, the five elements, and the financial information quality.

5. Results analysis

5.1. Credibility validity test
Credibility is a tool for measuring consistency and stability of results. [0.8,1] indicates that the reliability is high, the result has high consistency and stability, and [0.7, 0.8] indicates that the stability is relatively general. The survey data was tested for credibility using SPSS 15.0. The five factors and the financial quality credibility were 0.88, 0.82, 0.85, 0.81, 0.83, and 0.99. The values of the above six dimensions are all greater than the reliability of 0.8, so the topic design of the questionnaire is reasonable and within acceptable limits. Effectiveness is a tool for measuring the accuracy of the data. The above results show that the validity is 0.87, which is in the range of good validity. The two
illustrate that the questionnaire can basically reflect the internal control evaluation of power companies [5].

5.2. Principal component analysis
According to the statistical data of the questionnaire, using principal component analysis, we can get the correlation between variables, make the variables reflect the potential information value from different dimensions, and transform the structured data and unstructured data by establishing a linear relationship. Data, mining deep meaning. In this questionnaire, the principal component analysis equation is established based on 29 items, and the common factor is proposed. The equation expression is as follow.

\[
Z_i = Y_{i1}X_{i1} + Y_{i2}X_{i2} + Y_{i3}X_{i3} \ldots Y_{in}X_{in} + b
\]  

Substituting data, solving \(Z=60\%\).

5.3. Descriptive statistical analysis
According to the descriptive statistical results of 56 questionnaires obtained by the above 14 power companies, the internal control scores of the six dimensions are quite different among the 6-28 partitions. Through the observation of data, the control environment and the mean value of information communication are close to the median, the evaluation of the control environment and the information communication dimension shows a relatively stable nature. Among the above six indicators, the average value of financial information quality is the highest, and the risk assessment and the minimum value of information communication are the lowest, indicating that the current power companies pay more attention to financial quality and neglect the risk assessment, and the auditors communicate with the information of the financial personnel of the power companies [6]. Bad issues. On the other hand, it is reported that the current financial enterprise financial management system is still not sound, and the risk assessment system is ineffective, and there is no perfect risk management system. In addition, the financial information is released to a lower level, and each department has few opportunities to access the financial system of the power company, resulting in poor communication of information. In addition, the quality standard of financial information is quite different, indicating that the current auditors still have some inconsistencies in the evaluation of financial information of power companies.

| variable               | Mean  | Standard deviation | maximum | Minimum value | median |
|------------------------|-------|--------------------|---------|---------------|-------|
| Control environment    | 12.27 | 2.24               | 17.75   | 14.40         | 6.70  |
| Risk assessment        | 5.87  | 1.69               | 9.55    | 7.64          | 2.87  |
| Control activity       | 12.21 | 2.23               | 17.34   | 14.87         | 6.86  |
| Information communication | 9.55 | 2.05               | 13.10   | 9.65          | 4.34  |
| Internal supervision   | 12.05 | 2.29               | 17.24   | 14.79         | 7.77  |
| Financial quality      | 27.91 | 4.69               | 37.22   | 29.04         | 14.12 |

5.4. Correlation analysis
Through the correlation analysis of the variables, it is found that the correlation coefficient is about 0.7, indicating that the five elements are highly correlated with the quality of financial information, there is a linear problem between each variable, and the correlation between control activities and internal supervision is the highest, indicating two In the actual internal control work, the degree of contact has a high degree of mutual influence. See Table 2 for details.
Tab. 2 Correlation analysis of internal control indicators

| variable               | Control environment | Risk assessment | Control activity | Information communication | Internal supervision | Financial quality | Internal control evaluation |
|------------------------|---------------------|-----------------|------------------|---------------------------|---------------------|-------------------|-----------------------------|
| Control environment    |                     | 0.832*          | 0.823*           | 0.812*                    | 0.772*              | 0.827*            | 0.892*                      |
| Risk assessment        | 0.823*              |                 | 0.789*           | 0.772*                    | 0.779*              | 0.801*            | 0.857*                      |
| Control activity       | 0.832*              | 0.789*          |                 | 0.908                     | 0.920*              | 0.850*            | 0.895*                      |
| Information communication | 0.812*            | 0.772*          | 0.908            |                           | 0.830*              | 0.873*            | 0.858*                      |
| Internal supervision   | 0.772*              | 0.779*          | 0.920*           | 0.830*                    |                     | 0.755*            | 0.822*                      |
| Financial quality      | 0.827*              | 0.801*          | 0.850*           | 0.873*                    | 0.755*              |                   | 0.900*                      |
| Internal control evaluation | 0.892*        | 0.857*          | 0.895*           | 0.858*                    | 0.822*              | 0.900*            |                             |

5.5. Regression analysis
Through the regression analysis, the relationship between the dependent variable and the independent variable was obtained, and the following results were obtained by the regression of the internal control evaluation between the six factors. There is no statistical communication between information communication and internal supervision. There is no difference between internal control evaluation and control environment, financial quality, risk assessment, information communication and internal supervision. Internal control evaluation has not played a decisive role.

6. Conclusion
Through the analysis of the above survey results, although the internal control evaluation management accountant has certain knowledge of the COSO evaluation system, in most internal control evaluations, the internal control is generally judged based on the financial quality, and the judgment standard is roughly equal to the financial information quality standard. The method has one-sidedness and even deviation, which affects the objectivity and applicability of internal control evaluation. Staying in the basic account audit, the original document and the financial verification of the audit procedures, can not fully control the audit risk. Therefore, this paper draws the following conclusions.

First, the internal control risk control needs to stand on the whole of the power enterprise to analyse, through the strategic risk and the audit wind direction in all aspects of the determination and consideration, in accordance with the procedures to determine the audit objectives of the audit focus, get the correct results. From the bottom up, the risks in the financial statements are summarized and the audit conclusions are formed. According to the risk prevention-oriented approach, the audit efficiency is improved and the business risks are reduced.

Second, the improvement of the system is to ensure the rigor of the audit process and the objective and scientific guarantee of the audit results. Improve internal control, establish internal control evaluation and management supervision mode, reduce operational risks, and successfully complete the internal control reform of power companies in the context of accounting and accounting reform.
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