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Advanced in Control Engineeringand Information Science

Factor Analysis Based On The COSO Framework And The Goverment Audit Performance Of Control Theory

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Abstract

In this paper, I examined the research methodology of control theory based on the research of scholars at home and abroad, a COSO framework through factor analysis model and the introduction of the audit of the Delphi expert scoring control targets were analyzed that concluded to strengthen the audit process mechanisms, improve the basic quality of personnel and capacity and thus making economics and management Analysis significant to motivate workers to improve the effectiveness of the audit and management systems which will eventually point out the direction for future audit work and opened up new ideas, with a strong theoretical and practical value.
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Keywords: control theory, COSO framework, factor analysis, the Government　Audit Performance.

1. Introduction

Daily audit performance work in the government plays an important role and can effectively improve the management capacity of the audited units to foster social and economic benefits. Therefore, to control audit performance in the daily work of government is particularly vital to control the so-called theory of government audit performance. The audit performance objectives are based on pre-established environmental conditions (policies, laws and regulations) reflecting a certain review. Based on this, many foreign experts and scholars have in-depth study of cybernetics that brings about outstanding results. Such as: Ultimate control of theory[1], VSM application of the model[2], viable system model and etc. Having been widely used in many areas of the audit control theory, the "mmune audit" theory pointed out the audit process in the leading role of the immune. And on this basis, this paper introduces the overall framework of COSO internal control[3] and factor analysis, through the Delphi method for quantitative scoring where experts pointed out the accounting and audit staff to be the center bolt of the audit process for improvement of future assignments.

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2. government Audit Performance Control Theory.

From the government point of view, the control method used for the timeliness control of the audit process includes but not limited to the feedforward control, the real-time control and the feedback control etc.

The Feedforward control also known as advanced control and or predictive control is expected to take appropriate measures in advance to prevent problems from occurring, so that prediction is consistent with the program of activities.

The Real-time control is synchronized with the audit process control which can be found deviations, corrective actions, a significant loss in time to correct problems before.

The Feedback control is the most common control method as the results generated by the system to control the whole process. Two types of feedback control include. A process whereby the information entered is synonymous to that of the feedback information and that is to say, as it enhances the system's control input, the output increase thus referred to a positive feedback. But when abnormality occurs, it weakens the control of the input system and then automatically reduces the output system, and thus called a negative feedback

The diagram below depicts the characteristics of government audit control process drawn from work of the three control methods . As shown in Fig 1.
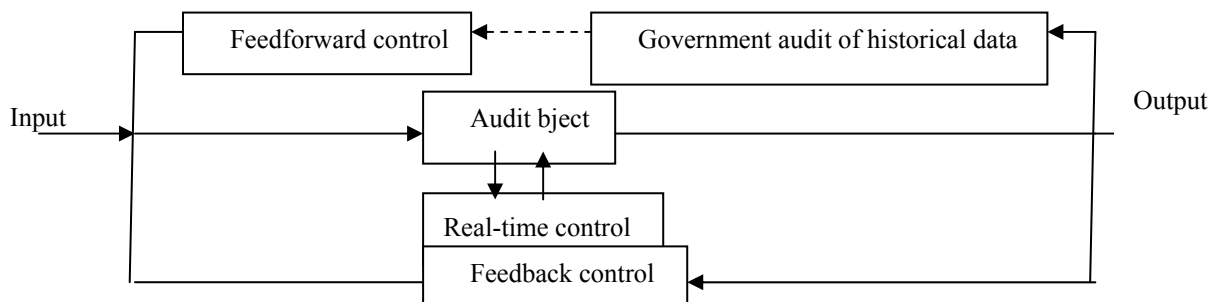

Fig.1 Government Auditing Control Model

Based on this, COSO internal control framework came into being. COSO is an anti-American Commission on Fraudulent Financial Reporting, a specialized organization of the internal control committee that discusses financial report to the causes of fraud and and map out credible solutions to mitigate such threats.

3. overview of the COSO internal control framework and the overall factor analysis

3.1 An overview of COSO overall framework of internal control

COSO's internal control framework is divided into five interrelated components: control environment (Control Environment), risk assessment (Risk Assessment), control activities (Control Activities), Information and Communication (Information and Communication) and monitoring (Monitoring .)

From the research conducted it is very much clear that, COSO's internal control system is characterized by the largest staff in the internal control of different roles and responsibilities defined with particular emphasis in the audit process. Further requests to audit the financial and accounting staff in the audit department for the implementation process of core policies to prevent and detect fraud and corruption through the extraction of valuable economic information.

3.2 An Overview of the overall framework of factor analysis.

Factor analysis is a simplified variable structure technique from multiple variables by extracting a small number of abstract "factors" to explore the observational data variables within the basic data structure and variable dependencies. These abstract variables called "factors " reflects the main message of the original number of variables.

3.2.2 Factor analysis of the basic mathematical model.

Factor analysis of common factors cannot be directly observed but with an objective
Factor analysis: each variable can be expressed as a linear function of common factors and special factors. And, namely:

$$X_i = a_{i1}F_1 + a_{i2}F_2 + \ldots + a_{ij}F_j + \ldots + a_{im}F_m + \varepsilon_i, \quad i = 1,2,\ldots,p$$

Normalized X_i, a_{ij} are X_i and F_j correlation coefficients variables reflecting the X_i relative importance of common factors F_j or dependence, the greater the absolute value, the higher the degree of importance. Typically, we choose the absolute value of the numerical analysis of more than 0.5, which is 0.5 criteria.

3.2.2.2 Statistical significance of Common variable degree h_i^2

Factor loading matrixes for the set A, we call the square of the first row elements and, That

$$h_i^2 = \sum_{j=1}^m a_{ij}^2 \quad i = 1,2,\ldots,p$$ as Common variable X_i degrees. We can see from the factor model:

$$D(X_i) = h_i^2 + \varepsilon_i^2$$ Here, the variance of X_i variables consists of two parts: the first part of h_i^2 joint degrees, which describes all the common factors on the X_i variables contribution of the total variance, reflecting the common factors of influence on the X_i variables.

3.2.2.3 The statistical significance of Common factor variance

For factor loading matrix set A, say column j, and the square elements, namely: $\theta_j^2 = \sum_{i=1}^p a_{ij}^2$
$j = 1,2,\ldots,m$ are Factors on the contribution of the public, it means that the same common factor F_j of X_i each variable to provide the sum of the θ_j^2 variance, which is a F_j measure of the relative importance of each factor as a public scale.

4. Factor Analysis Audit of the Technical school

Tai'an City, Shandong Province, located in the central geographical location of a better economic and human environment. In recent years, the rapid economic development in the Peoples Republic of China has brought about a steady development in the audit departments. However, due to the somewhat different jurisdiction of the district's audit department policies and programs for different audit efficiency,

it is therefore vital to note that the integrated use of the Delphi expert scoring and factor analysis in numerous internal control audit departments to study the conditions, and that results were consistent with the overall framework of the COSO internal control and then strengthens the audit process in real-time control. To some extent, the audit departments at all levels of responsibility on the audit departments to provide a quantitative method.

In the course of this study, we focused on the internal control audit process, developed a 7-related indicators: policy-making situation, the audit program development, feedback level, auditing accuracy, the efficiency of the audit, plans to issue the situation, the overall Co-ordination of the situation. Because these indicators cannot come to respond to the data, so we utilize the Delphi expert scoring system to carry out the analysis. Place 10 experts and 7 indicators as against which to rate the results as shown in table 1:

Table 1: Audit Control Experts 7 Index score

	Policy	Planning	Feedback Level	Accuracy	Audit efficiency	Plans to issue	Overall control
1	65	75	75	73	80	85	82
2	63	74	76	72	79	82	78
3	66	72	72	70	76	80	76
4	60	70	73	73	83	85	78
5	62	73	73	74	80	79	81
6	64	72	75	75	82	85	79
7	70	68	77	76	83	85	81
8	66	69	71	74	80	80	79
9	65	74	72	73	80	85	81
10	64	68	75	74	83	80	78

With the SPSS software solution, you can get the expert scoring index system of factor analysis results. As follows Principal Component Information: As shown:

The first three principal components eigenvalue greater than 1, and the cumulative variance contribution rate of 79.274% of the total variance of the three potential factors may explain. As shown in table 2.

Table 2 :Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.913	41.618	41.618	2.913	41.618	41.618	2.206	31.512	31.512
2	1.549	22.132	63.750	1.549	22.132	63.750	1.541	22.020	53.532
3	1.087	15.524	79.274	1.087	15.524	79.274	1.450	20.718	74.251
4	.803	11.470	90.744	.803	11.470	90.744	1.155	16.493	90.744
5	.548	7.822	98.565						
6	.088	1.261	99.826						
7	.012	.174	100.000						

Extraction Method. Principal Component Analysis.

The factor loading matrix and get through the 4 th largest orthogonal rotation transformation matrix, we get the seven indicators in four factors of the factor loading, as shown in Table 3:

Table 3: Rotated Component Matrixa

	Component			
	1	2	3	4
Policy	.098	.102	.114	.971
Planning	-.848	.163	.386	-.261
Feedback	.236	.847	-.054	.209
Accuracy	.808	.220	.464	.145
efficiency	.870	.379	.173	-.235
Plans to issue	.036	.749	.376	-.093
Co-ordination	.102	.183	.948	.120

The results showed: in factor 1 the indicators dominated are: audit planning, audit accuracy and the audit efficiency; in factor 2, the dominant indicators are: the degree feedback and the audit plan issued. Therefore, we can consider: Factor 1 to reflect the audit process of the specific operation while as factor 2 reflects the audit plan and finally factor 3 reflects the overall co-ordination.

Thus, by the factor analysis of the index system, we can verify the consistent results with the overall framework of COSO internal controls: in the audit process, audit the financial and accounting personnel and the core implementation of the auditing processes as responsibilities for auditing departments to prevent and detect fraud as it helps in strengthening the primary real-time control and feedback control that will be resulted to improve the quality of its work and ethical standards as an important consideration fundamentally foster control, and audit results. It carried out the audit work for the future and further promotes the development of greater roles.

5. Conclusion

The audit and management capabilities significantly increase the effectiveness of the auditing process The process of economic development in the region plays a significant role in the improvement of the audit work. It is therefore important for government institutions, business supervision agencies to provide guidance and prevents problems from occurring. Areas for economic development and its construction have become increasingly paramount to strengthen the of internal audit control. In this context, the paper carried out the responsibility to examine the Tai'an City's internal control problems.

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