Internal Control of Modern Management Accounting Information System under IT Environment

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Abstract: The rapid development of computer technology and network technology has brought technological innovation to accounting work, and it has also brought unprecedented challenges to the internal control of accounting information systems. Based on the characteristics of accounting information system in the network environment, this paper discusses the risks of accounting internal control in the network environment, and uses fuzzy stratified evaluation method to seek quantitative evaluation methods for enterprise internal control based on network environment, and quantitative analysis. Comparison has a strong guiding significance for practical operations.

1. Introduction

Whether accounting information is true and reliable has become a very important issue in China's current economic life. It directly affects people's trust in accounting information and affects the national economy and people's livelihood. With the rapid development of IT information technology [1-3], the management environment, management philosophy and management content of the unit have changed.

China's accounting information system has moved from the application of a single computer to a local area network, a wide area network, and an IT era. The rapid development of information technology and e-commerce has led to the content and means of internal control of accounting information systems [4-7]. The tremendous changes that have been obvious to all have brought about a transformative impact on accounting work, but at the same time it has increased the difficulty of internal control of accounting information systems, which has led to concerns and doubts about the quality of accounting information.

Internal control [8-11] is the most important financial system arrangement of the unit. It is related to the safety and integrity of the unit's finance and the correctness and reliability of other economic activities. The traditional internal control mechanism and means of accounting information system have been difficult to adapt. In order to effectively ensure the authenticity of accounting work, the network urgently needs to strengthen the internal control of the accounting information system under the IT environment.

Based on the characteristics of accounting information system in the network environment, this paper discusses the risks of accounting internal control in the network environment, and uses fuzzy stratified evaluation method to seek quantitative evaluation methods for enterprise internal control based on network environment, and quantitative analysis. The comparison has a strong guiding significance for practical operations, and finally proposes policy recommendations in a targeted manner.

2. Internal control evaluation system

In the practice of internal control evaluation, the accounting information system should set the index system according to its own management control requirements and current business characteristics, and give it weight. In the process of establishing the indicator system, attention should be paid to the guiding role of indicators, and special attention should be paid to the elements with weak internal control. At the same time, since the indicator system should have simple and clear evaluation functions, the number of indicators involved is not Should be too much, for the

control information that has been generally done well in the accounting information system, may not be included in the indicator system.

In summary, we believe that at the practical level, there is no unified internal control evaluation index system in the accounting information system under the IT environment, which is closely related to the management characteristics, management control needs and status quo.

Design Characteristics of Internal Control of Accounting Information System Based on IT Environment

(1) Assumptions of internal control mechanisms. The first is that the participants are the bounded rational economic man hypothesis, that is, the participants make decisions for the maximization of their own utility, which is the same as the traditional accounting information system type. Deviating from this assumption, the internal control will make a meaningful contribution: Secondly, the observability of the participants' actions should be said that absolute observability does not exist. This assumption is based on the improvement of information asymmetry.

(2) The important content of the design of internal control mechanism is to establish punitive conditions: the mechanism design under the condition of relative and asymmetric information must be established in the network environment with increased information transparency by establishing a correspondence between observable results and signal thresholds. In the accounting information system environment, due to the observable effect, the participants have greater constraints on the choice of actions. Therefore, in the selection of more stringent mechanisms, the participants' "moral hazard" and "reverse choice" issues can be Get a better solution.

Internal control fuzzy hierarchical evaluation model

Since the effectiveness of the internal controllers of the accounting information system is related to the outcomes of the various participants, it is also related to the control activities that are developed to motivate the participants (equivalent to controlling costs, including incentives for participants, design of the system). And improve the costs incurred in monitoring, etc.), so we can assume that the expected utility of the controlling entity representing the interests of the traditional enterprise property rights is $v(\mathrm{x}-\mathrm{s}(\mathrm{x}))$, the utility of the accounting information system participants and the controller's incentive mechanism s(x), and The cost of action is related, assuming that the expected utility function of the accounting information system participants is: $u(\mathrm{s}(\mathrm{x})-\mathrm{c}(\mathrm{x}))$.

In this model, the control subject hopes that through the design of the mechanism, the actions of the participants can be influenced or controlled, so that the actions of the participants meet the expectations of the controller, for example, the participants can increase the effort while mastering the information superiority. , providing real business information and so on. The objectives of the internal control of the accounting information system can be expressed as follows:

$$\max \mathrm{V}(\mathrm{x}) = \mathrm{v}(\mathrm{m}(\mathrm{x},\theta) - \mathrm{s}(\mathrm{x}(\mathrm{a},\theta))\varepsilon(\theta) \tag{1}$$

However, the accounting information system participants are rational economic agents. Therefore, when designing the mechanism, the controller must face the two constraints of the participants: participation constraints and incentive compatibility constraints. The so-called participation constraint, that is, the expected utility of the participants from the control mechanism of the accounting information system controller can not be less than the maximum expected utility that can be obtained when the contract is not accepted. The "maximum expected utility that can be obtained without accepting the control effect" is The other market opportunities he faces are determined by the retention utility, and the individual rational constraints of the participants can be expressed as:

$$(\mathrm{IR})\,\mathrm{u}(\mathrm{s}(\mathrm{x},\theta))\,\mathrm{g}(\theta)\,\mathrm{d}_{\theta} - c(\mathrm{a}) \tag{2}$$

The so-called incentive compatibility constraint refers to the fact that the controller always chooses to maximize the expected performance regardless of the type of control mechanism designed by the controller, in the case that the controller cannot observe the natural state of the participant's action. Action, therefore, if the desired effect of the control mechanism is to be achieved, it can only be achieved through actions that maximize the effectiveness of the participants.

Therefore, the incentive compatibility can be expressed as:

$$(IC)\,u(s(x(a,\theta))\,g(\theta))\,d_\theta - c(a) \tag{3}$$

$$u(s(x(a,\theta))\,g(\theta))\,d_\theta - c(a) \tag{4}$$

Therefore, the above target color number and constraint equation constitute the mechanism design model of the internal control of accounting information system. For the convenience of research, we use another expression for the above function as follows:

$$(IC)\,u(s,x)\,f(x,a)\,d_x - c(a),\,u(s(x)\,f(x,a) - c(a) \tag{5}$$

In the information economics model, for the convenience of explanation and explanation, it is simply assumed that the actions of the participants are lazy and diligent: in internal control, the activities to be influenced and controlled by internal control include broader activities, such as influences. All actions to the efficiency and effectiveness of accounting is information systems. We can assume that there are two choices of actions, z. and H, L represent the actions of the participants that are unfavorable to the accounting information system, and H represents actions that are consistent with the expectations of the accounting information system, such as effort, efficiency, and so on.
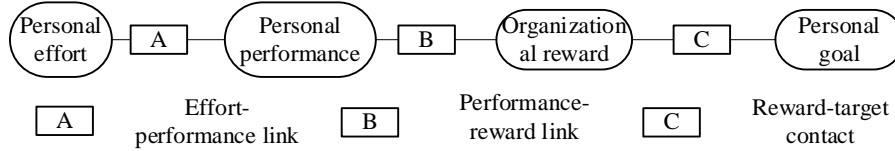

Fig. 1 Accounting system incentive mechanism model

3. Test Results

The "A Accounting Information System Internal Control Question Questionnaire" was issued by middle and senior managers of all systems of an accounting information system. (The senior management personnel include the general manager of the municipal company, the deputy general manager of each business, the chief accountant, etc. Intermediate management personnel include various business departments and comprehensive departments including, for example, finance and property management department, audit department, power marketing department, engineering construction department, production operation department, planning and planning department, bidding department, general management office, etc. The above internal control model is adopted, and then the initial weights are processed and tested by the analytic hierarchy process to generate index weights of each layer, and the weights of each layer are determined to determine the weights of each evaluation factor. The results are shown in the following table.

Table 1 Decomposition of budget indicators for accounting information systems

Index	Index1(u)	Weights	Index2(u)	Weights
Budget management	Budgetary planning(u1)	0.45	Scientific(c1)	0.26
			Comprehensive scope(c2)	0.38
			Degree of flexibility(c3)	0.12
			Job containment ability(c4)	0.24
	Budget breakdown(u2)	0.15	Decomposition rationality(c5)	0.34
			Program normative(c6)	0.26
			Business coverage(c7)	0.18
			Post separation(c8)	0.22
	Budget adjustment(u3)	0.4	Adjusting control(c9)	0.25
			Adjustment rationality(c10)	0.25
			Budgetary difference(c11)	0.16
			Accounting consistency(c12)	0.34

The specific investigation, description, statistics, testing and assessment process are omitted, with the following results:

$$R_1 = \begin{bmatrix} 0.5, 0.3, 0.2, 0 \\ 0.3, 0.4, 0.1, 0 \\ 0.4, 0.4, 0.2, 0.1 \\ 0.4, 0.2, 0.3, 0.1 \end{bmatrix} \begin{bmatrix} c1 \\ c2 \\ c3 \\ c4 \end{bmatrix} \tag{6}$$

$$R_2 = \begin{bmatrix} 0.3, 0.5, 0.1, 0.2 \\ 0.4, 0.5, 0.1, 0 \\ 0.5, 0.4, 0.1, 0.1 \\ 0.6, 0.1, 0.2, 0.1 \end{bmatrix} \begin{bmatrix} c5 \\ c6 \\ c7 \\ c8 \end{bmatrix} \tag{7}$$

$$R_3 = \begin{bmatrix} 0.2, 0.4, 0.2, 0.2 \\ 0.4, 0.4, 0.2, 0 \\ 0.3, 0.4, 0.1, 0.2 \\ 0.6, 0.1, 0.2, 0.1 \end{bmatrix} \begin{bmatrix} c9 \\ c10 \\ c11 \\ c12 \end{bmatrix} \tag{8}$$

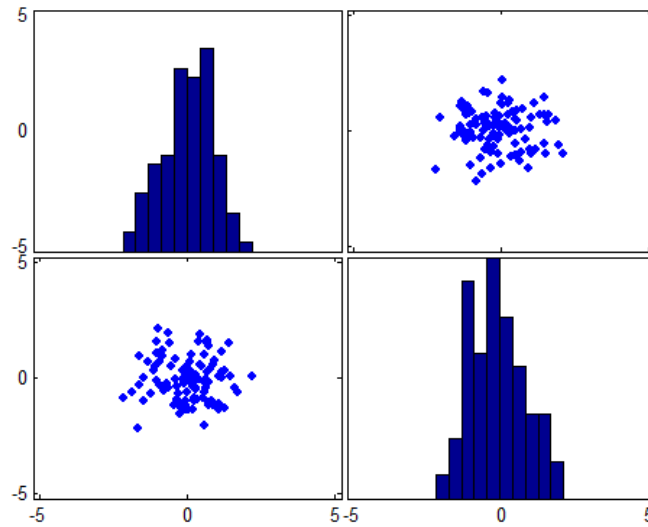The simulation verification diagram is:

Fig. 2 Internal control effect diagram of accounting information system

The results show that the accounting information system has undergone fuzzy comprehensive evaluation in terms of "budget control", and "very good" accounts for the largest proportion (34. 5596). That is, its overall rating is "very good." In recent years, the company has made more efforts in budget control and adopted a variety of specific management methods to fully implement budget control, which is in full compliance with the actual situation of the accounting information system.

The above calculation process and results show that the internal control evaluation index system can be determined hierarchically, determine the weight of each evaluation factor, rationally design the evaluation set, and convert the qualitative evaluation into quantitative evaluation results, so that the calculation result can be calculated according to the calculation result. For the weak links, the accounting information system is under the control of the right medicine, and the design of the indicators will achieve the expected evaluation goals.

4. Conclusion

The internal control evaluation can play the role of guiding the accounting information system to

improve control and effectively allocate social and economic resources. The IT system's internal control evaluation index system is closely related to the management and management characteristics, management control mechanism and status quo. At this time, the internal control evaluation of the accounting information system should be carried out separately from the control environment, risk assessment and control activities. Based on the characteristics of accounting information system in the network environment, this paper discusses the risks of accounting internal control in the network environment, and uses fuzzy stratified evaluation method to seek quantitative evaluation methods for enterprise internal control based on network environment, and quantitative analysis. Comparison has a strong guiding significance for practical operations.

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