

Evaluation Model of Audit Talent Training Effect in the Context of Block-Chain

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Abstract: The quality evaluation of auditor training has always been the focus of theoretical and practical circles. This paper takes A-share non-financial insurance listed companies as a research sample to investigate the training effect of leading talents in audit industry. At the same time, this paper studies the role of the position characteristics of CPA and the training direction of leading talents in improving audit quality. At last, it is added to test whether the training of leading talents will lead to the premium of audit fees. The research of this paper finds that the audit quality of the trained leading talents is significantly higher than that before training, and there is a certain degree of audit cost premium. The results of this paper have a certain reference value for the evaluation of audit talent training effect in the block-chain environment.

1. Introduction

Deloitte, Ernst & young, KPMG and PwC, the world's four largest audit firms, recently launched an initiative to join a pilot program of 20 Taiwanese banks to test block chain technology for financial auditing. An audit can be defined as the process of objectively examining an organization's accounts, books, documents and internal processes to determine whether it presents a "true and fair" financial performance and financial position.

Despite the constraints of many standards and practices, external audit is often a heavy process, requiring a professional team to spend a lot of time reviewing a large number of transactions and accounts in the client's books. In this case, block chain technology may play a truly subversive role. Russell Guthrie, CFO of the International Federation of Accountants (IFAC) pointed out that new technologies such as block chain and artificial intelligence are driving global career development, raising industry barriers and driving the demand for new employees' skills and capabilities.

Because block chain has the concept of distributed ledger and the basis of cryptography, it ensures transparency, immutability, security, auditability, high cost efficiency and "forever available". The real-time application of block chain technology in audit verification is related to the external confirmation process. External validation is a key part of all audit processes because it enables the audit team to examine external sources of information provided within the company. However, if the general ledger of such an enterprise is decentralized and public block chain, in this case, the auditor can obtain all the information related to the company's financial transactions without external confirmation procedures, thus saving time and resources. Therefore, in this era, the cultivation of audit talents based on block chain is an urgent problem.

Auditor reputation has always been the focus of theoretical and practical circles. In theory, the concept of auditor reputation can be divided into broad sense and narrow sense. The broad sense of auditor reputation refers to the collective reputation represented by the group of auditors, while the narrow sense of auditor reputation refers to the personal reputation of certified public accountants. Existing studies have paid more attention to the broad auditor reputation at the level of accounting firms, examining the impact of auditor reputation on audit quality, audit fees and audit opinions issued by accounting firms [1-3]. The subdivision level paid more attention to the influence of the subdivision level [4], which has done less research on auditor's personal reputation, while China's CPA signature system makes it possible to study auditor's personal reputation.

According to China's signature certified public accountant system, the audit report must be signed and sealed not only by a certified public accountant who is responsible for the project, but also by the partner or chief accountant who is responsible for the final review of the project. The

CPA, especially the partner or chief accountant, once their names are linked with the audit report, they need to bear the corresponding audit responsibility and audit risk. Therefore, the auditor's personal reputation and personal position characteristics will have an impact on the quality of the audit report.

Up to 2015, the Ministry of Finance started the national accounting leading talent training project in 2005 for 10 years, including 11 batches of training of certified public accountants [5]. The goal of accounting leading talent plan is to cultivate the sense of honor, mission and responsibility of excellent accounting personnel, improve the professional quality and professionalism of accounting personnel, so that they can play a leading role as a model, so as to promote the professional ethics of other accounting personnel, promote the justice and fairness of the industry environment, and then drive the development of the whole audit industry. Therefore, there are differences in the reputation of leading talents before and after training. The training process of leading talents can enhance personal reputation, which provides a good institutional environment for us to study the mechanism of auditor's personal reputation.

2. Research Hypothesis

The training of accounting leading talents is a ten-year training project vigorously promoted by the Ministry of finance, which aims to promote the development and expansion of audit industry. From the micro level, the training purpose of leading talents is to improve the personal ability of certified public accountants, improve professional skills, and create a group of high-level certified public accountants. Therefore, certified public accountants trained by leading accountants can show the training effect in two aspects: professional auditing ability and independence. On the one hand, through several years of study on financial accounting related courses and overseas training, the professional level of certified public accountants can be improved, so that their auditing procedures can be more standardized, their auditing judgment can be more accurate, and the auditing quality can be improved. On the other hand, the training plan for accounting leaders has improved both the leading role of the internal model of the firm and the popularity of the CPA itself, so as to improve its independence and audit quality. Based on this, the cultivation of accounting leading talents can play a role in improving the quality of audit, so this paper puts forward the hypothesis 1.

Hypothesis 1: after the training of leading talents, the audit quality of listed companies is improved.

In 2001, China Securities Regulatory Commission required the audit report to be signed and sealed not only by a certified public accountant in charge of the project, but also by the partner or chief accountant in charge of the final review of the project. In China, the “partner” or “chief accountant” of the firm represents the CPA with higher position, only with different appellations in different firms (the “partner” below includes chief accountant, generally refers to the CPA with higher level in the firm). As a partner of an accounting firm, it is usually the representative of a certified public accountant with excellent ability and outstanding performance. It stands out from the internal selection process of an accounting firm and eventually becomes a partner of the accounting firm. Through the questionnaire survey of senior partners in some accounting firms, the existing research finds that partners have three outstanding abilities compared with other certified public accountants: income generating ability, team cooperation ability and professional and technical level. Income generating ability refers to becoming the carrier of resources and the source of re-creation, that is to say, being able to absorb, transform and create resources, which is the guarantee for the survival of the firm, and also the main feature of the partners, that is, having more popularity and social part-time jobs, can have a broader market. The team cooperation ability and professional technology level is the symbol of audit quality, and the guarantee for the firm to gain market share and occupy market position. Partners have strong professional ability and high independence. In order to avoid the corresponding audit risk and damage to their own reputation, they will pay more attention to audit quality. Therefore, compared with non-partners, the improvement effect of audit quality is more obvious, and then put forward the hypothesis 2 of this paper.

Hypothesis 2: after the training of certified public accountants, compared with non-partners, the trained partners' audit quality improved more significantly.

3. Research Design

3.1 Sample Selection

The Ministry of Finance's training plan for accounting leaders began in 2005 and officially began in 2006. Therefore, the sample of this paper is an A-share listed companies in Shanghai and Shenzhen from 2006 to 2014. It examines whether there is any difference in the audit quality of certified public accountants who have undergone training for accounting leaders before and after training. It further examines the influence of auditor's personal position characteristics and training direction, and examines whether there is a premium in audit fees in the supplementary test. The relevant auditor data and financial data used in the study are all from CSMAR database. The personal position characteristic data of auditors and the training data of accounting leaders are collected manually from the internal data of China Institute of Certified Public Accountants.

In the process of treatment, the financial and insurance industry is excluded, because its asset-liability ratio and operation mode are significantly different from other industries. Excluding ST companies from each year, because these companies have obvious motivation for earnings management in order to avoid delisting. Companies that lack the necessary data for the accrual model need to be eliminated. For example, companies listed in the first year need to be eliminated because incremental information needs to be used in the model.

3.2 Pattern Plan

In this paper, based on Jones model, discretionary accruals are used to represent audit quality. In order to ensure the robustness of the model, referring to Kothari and other practices, the operational accruals adjusted by performance are used to reflect audit quality. The model is as follows:

$$\frac{ACCA_{it}}{A_{i,t-1}} = \alpha_0 + \alpha_1 \frac{I}{A_{i,t-1}} + \alpha_2 \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{i,t-1}} + \alpha_3 \frac{PPE_{it}}{A_{i,t-1}} + \alpha_4 ROA_{it} + \varepsilon_{it} \quad (1)$$

Among them, the variables and measurement indicators are shown in Table 1.

Table 1 Audit Quality Measurement Model Index

Variable name	Metrics
ACCA	Total accrued profit is the difference between operating profit and operating cash flow
ΔREV	Difference between main business income and the previous year
ΔREC	Difference between accounts receivable and the previous year
PPE	Original value of fixed assets
ROA	Return on total assets
A	total assets

Through regression by industry and year, residual DA is calculated and its absolute value is used to measure audit quality. The greater the DA, the more serious the earnings management, the worse the audit quality.

Based on the audit quality obtained through the above model, hypothesis 1 of this paper is examined through model. In order to distinguish whether the change of audit quality is caused by the selection of leading talents or the cultivation of leading talents, this paper distinguishes this influence through Treat and TreatPost in the model construction. Treat indicates the difference of audit quality embodied by leading talents themselves, while TreatPost examines the difference before and after the cultivation of leading talents, which is also the core test variable of this paper. Among them, Train is a dummy variable for training leading accountants. When a certified public accountant participates in the training plan for leading accountants, the Train variable is 1,

otherwise it is 0. Post reflects the dummy variable of culture year, which is 1 after culture starts, otherwise it is 0. Therefore, the cross term of TrainPost reflects the differences before and after the training of leading talents, and through further distinguishing other financial characteristics, it respectively inspects the CFO of operating L-generation cash flow, the scale of listed companies, the characteristics of capital structure, the income level ROA, the profit situation Loss, the firm characteristic Big4, and the Growth.

$$DA = \beta_0 + \beta_1 Train + \beta_2 Train * Post + \beta_3 CFO + \beta_4 LnA + \beta_5 Lev + \beta_6 ROA + \beta_7 Big4 + \beta_8 Growth + \beta_9 Loss + \sum \lambda_i Ind_i + \sum \mu_i Year_i + \varepsilon \quad (2)$$

Then, in order to test hypothesis 2 and examine the influence of CPA's personal position characteristics, model (3) adds dummy Partner. The results collected by hand show that the positions of CPAs participating in the training of leading talents include partners, chief accountants, senior managers and department managers. Therefore, this paper selects “partners” and “chief accountants” as the representatives of high-ranking CPAs. When the certified public accountant participating in the training of leading accountants is a partner or chief accountant, this variable takes 1, and if it is a senior manager or department manager, it takes 0. Through the cross variable Train*Post*Partner, the difference of training effect between partner and non-partner is investigated, and other control variables are the same.

$$DA = \beta_0 + \beta_1 Train + \beta_2 Train * Post + \beta_3 Train * Post * Partner + \beta_4 Big4 + \beta_5 CFO + \beta_6 LnA + \beta_7 Lev + \beta_8 ROA + \beta_9 Growth + \beta_{10} Loss + \sum \lambda_i Ind_i + \sum \mu_i Year_i + \varepsilon \quad (3)$$

4. Regression Results

First of all, the basic characteristics of leading talents are described and counted. The training of accounting leading talents in the direction of certified public accountants has been carried out in 11 batches in 10 years. As financial listed companies are excluded from the samples, 4 batches of financial auditing direction are also excluded from the training of leading talents. The remaining 7 batches of training time, training direction and relevant numbers are shown in Table 2. The data show that the training time starts in 2006 and the last batch starts in 2010. In the training direction, 5 batches are reserved talents and 2 batches are chief accountants. In the direction of the chief accountant, all leading talents are high-ranking personnel such as partners or chief accountants. In the training of reserve talents, the proportion of partners is 85.7% at the highest and 39.1% at the lowest.

Table 2 Descriptive Statistics on Training of Accounting Leading Talents

Batch	Time	Training direction	Number of trainees	Number of partners	Percentage of partners
1	2006	Reserve Talents	35	24	68.6%
2	2007	Reserve Talents	23	18	78.3%
3	2008	Reserve Talents	28	24	85.7%
4	2009	Reserve Talents	26	14	53.8%
5	2010	Chief accountant	29	29	100%
6	2011	Chief accountant	24	24	100%
7	2012	Reserve Talents	23	9	39.1%

Then, the basic characteristics of the samples are described and counted in groups to investigate the differences between the training of leading talents and other samples. The results show that the listed companies audited by certified public accountants trained by accounting leaders have the following characteristics: The average and standard deviation of audit quality are lower than those of other certified public accountants, which shows that the audit quality is higher and more concentrated after training leading talents. The rate of issuing non-standard opinions is 3.1%, which

is lower than the rate of other certified public accountants' non-standard opinions is 4.5%, indicating that trained certified public accountants are more inclined to issue standard opinions. The audit fees charged are basically the same as those of other certified public accountants; The proportion of loss making listed companies is relatively small; the financial leverage is relatively low; the size of the company is basically the same; the growth is relatively high, and the standard deviation of growth is relatively low, which shows that the relative growth of the listed companies audited by trained certified public accountants is stable, and there is no big fluctuation.

5. Supplementary Inspection

5.1 Endogenous Problem

When hypothesis 1 tests the Treat*Post variable, there may be an endogenous problem between audit quality and the training effect of leading talents, that is, the reason for selecting leading talents may be due to the better audit quality of certified public accountants, accurate audit judgment, and significant improvement in audit quality in recent years. Therefore, this paper examines the audit quality delayed by one phase, eliminates the endogenous influence, and tests the training effect of leading talents. The result still supports the view of this paper.

5.2 Substitution Variables of Audit Quality

In the selection of model indicators, this paper uses the discretionary accruals based on Jones model to measure the audit quality, which is the core test variable of this paper and has a significant impact on the research results of this paper. In the selection of proxy variables for audit quality, the existing research methods also include the adoption of indicators such as audit opinion types and audit fees. The higher the audit fees, the better the audit quality can be considered if the CPA pays more audit investors or has a higher reputation premium under the premise of controlling the size of the company. When the measurement of audit quality is replaced by audit fees, the coefficient of Treat*Post's cross term is significantly positive at the level of 1%, which indicates that the training of leading talents will result in a certain premium of audit fees, i.e. the audit fees of certified public accountants are obviously increased after training, thus proving that the training of leading talents can enhance the personal reputation of certified public accountants and is reflected in the audit fees through the premium.

6. Conclusion

The findings of this study can be summarized as follows: First, the quality of audit of certified public accountants who participate in the training of leading accountants has improved significantly after training, and the audit fees show a premium phenomenon; Second, the partners who participate in the training of leading accountants are not as effective as non-partners in improving the audit quality. Third, the audit quality of the certified public accountants trained in the direction of chief accountants is better than that of the certified public accountants trained in the direction of reserve talents.

Based on the above conclusions, the policy significance of this paper is reflected in the following three points: first, the audit quality of listed companies audited by certified public accountants participating in the training of leading talents has been significantly improved, which shows that the training of leading talents can improve the audit quality by improving the professional ability and independence of certified public accountants, which also provides a new path for the CSRC and the Ministry of Finance to improve the audit quality of accounting firms, which can transition from simple administrative punishment to the combination of rewards and punishments, and urge other firms to learn and progress by setting benchmarks, thus improving the overall audit quality and driving the development of the entire audit industry. Second, the improvement of partners' audit quality is relatively low, which needs to be paid more attention by the regulatory authorities. It is necessary to further clarify the responsibilities of partners, make them pay attention to audit quality, play a leading role as a model, strengthen quality supervision, and avoid their further improvement

of audit quality due to their too many positions of social consultation in order to expand their influence. Third, the different training directions will also affect the training effect. The training of the chief accountant will improve the audit quality more obviously. However, the training of reserve talents is lack of stronger pertinence due to the different positions, and the effect is not as good as that of the chief accountant. This shows that in the training of students, different training plans should be formulated according to the different position characteristics, so that the courses have stronger pertinence, and can better play the role of improving the audit quality. This is of referential significance to the AICPA and the Ministry of Finance in adjusting the training policy. After that, AICPA and the Ministry of Finance can make appropriate adjustments to the training plan for leading talents, arrange more targeted courses according to the position characteristics of the trainees, better exert the training effect for leading talents, and further promote the development of the entire CPA industry.

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Research on the Training of Audit Professionals Based on the block chain Environment.

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