The Balance Mechanism of Project Cost Audit Based on Game Theory

Zhou Hanbin¹, Nie Chunlong*¹
¹University of South China, Hengyang, Hunan, China
¹email: 201820910283@stu.usc.edu.cn
*Corresponding author’s e-mail: 273049195@qq.com

Abstract. As the last step of the project cost review, auditing plays a vital role in the entire project. It can not only make the project cost more accurate, but also bring some economic indicators to the entire construction industry. This article uses the game method to take the auditor as the center analyzes the pros and cons of the auditors and the reviewers during the audit, and proposes a series of balancing mechanisms based on the pros and cons of each party to alleviate the contradictions between the two parties. This article also analyzes the psychology of the game between the auditors and the leadership. It is hoped that various management and control will make the development of the engineering audit industry more stable.

1. Introduction
Project audit refers to the audit of construction projects by cost audit institutions or departments in accordance with the "Audit Law" and other relevant laws and regulations, as well as the standards of industry and enterprises, to check whether there is overspending in the implementation of project estimates and budgets, whether there are hidden funds, and withholding infrastructure Income and investment lump-sum balances, and whether there are any violations of privately dividing infrastructure investment in the name of investment lump-sum balances.[1] The cost audit is generally to review the cost of a single item and unit project. The audit process is basically the same as that of Party B's final account preparation process, that is, the cost engineer sets the quota according to the engineering quantity. Construction project settlement audit refers to that the audit agency conducts a comprehensive review of the authenticity and legality of the project settlement prepared by the contractor based on the project completion data submitted by the contracting party. It is an important means of verifying the project cost and is an important means for the completion of the project. Settlement has practical significance.[2]

The project settlement submitted for review is often greater than the contract signing price, or even the actual construction cost. For the contracting party, there are factors such as improper terminology in the bidding documents, construction contracts and on-site visas, blind visas for the project contact list, design changes without verification, unclear expression of visa results, and insufficient accuracy.[3] For the contractor, the first is that when there is a discrepancy in the understanding of the construction contract and the on-site visa, it unilaterally makes an explanation that is beneficial to the construction party, and there is an understanding error; the second is due to the lack of investigation and reliable first-hand data. Budget quotas, pricing tables, or supplementary quotas contain more unreasonableness, so that the actual expenses incurred are far away from the quota; third, some
contractors have adopted multiple engineering quantities and high sets of quotas in order to unilaterally obtain more revenue. Etc. overestimate and miscalculate.[4] Therefore, to reasonably determine the project cost, we must do a good job in project settlement review, carefully analyze the reasons for deviations in the project settlement preparation and the practical factors affecting project settlement, fundamentally improve the audit strength, strictly control the audit quality, and ensure the audit unit improve the quality of audits, reduce audit risks, and bring the quality awareness of project cost audits to a very important position.[5]

Figure 1. Three-party game relationship

2. Game Analysis of Party A’s Auditor and Party B’s Auditor
Participants of the project audit—Party A’s auditors and Party B’s reviewers. As the last stage of the completion of the project, auditing plays a vital role. There is a relationship between Party A's auditors, Party B’s reviewers and Party A’s leading management Most of the contradictions and conflicts are caused by the relationship of interest. This conflict of interest is essentially a game model. [6] So the author analyzes the game situation in engineering audit from the perspective of game; due to the different positions of audit objects, the calculation methods are quite different, and the calculation results are naturally very different.

2.1. The matching degree of technical ability and project
Auditors’ technical ability and the matching degree of the project have different impacts on the project. Generally, the quality of the audit is mainly determined by the technical ability of both parties. The matching project with strong technical ability has an advantage in the audit process and can use one’s own experience and ability lead the way; but there are also strong technical ability, but because of enough experience and old, not suitable for new projects and new technologies, the development of new technologies is denied by consistent work experience. This requires auditors to a certain extent. Technical ability and project match.

2.2. Understanding and application of quota
Quota is defined according to the average consumption quantity standard required by society from the total production process.[7] In fact, the quota lags behind the actual production, and due to the average and stance, everyone's understanding of the quota will be different. Most of the differences can be resolved through coordination, and a small number of differences need to be discussed together when the dispute is large. solve.

2.3. Knowledge of construction process
This not only tests the auditor’s familiarity with the site, but also tests the auditor’s understanding of the construction process. The principle we need to uphold when auditing is to seek truth from facts, but the basic rule is fairness and justice. If Party B’s management is not in place, rework or The extravagance and waste will naturally be borne by Party B itself and need not be calculated during the trial.

2.4. Timely update of cost audit information and control of material price fluctuations
The field of engineering cost has been developing steadily. The update of quotas, the introduction of
technology, and the upgrading of materials have been promoting the progress of the industry. As a part of the cost industry, we should update and study this information in time, as permitted by the contract practice under circumstances. Engineering projects have the characteristics of long construction period, large number of participants, and large amount of money involved. The longer the construction period, the greater the impact of material price fluctuations on the project.

3. **The game balance mechanism of the auditors on both sides**

Although the project cycle is long, compared with the industry, the talent mobility is large. When recruiting, carefully review the audit staff’s professional competence according to the needs of the project, such as the choice of the project's calculation and pricing software, and the difference in geographic location. And so on, are all related to the business matching ability of inspecting professional talents.

There is only one quota, but the actual situation is ever-changing. This requires us to fully grasp the work content included in the quota, have our own judgments on the approximate sub-items, and conduct trial price analysis when necessary. At the same time, during the review process, there will definitely be some disputes that cannot be resolved through negotiation. These unresolvable dispute issues will be labeled and analyzed, and the leaders will be provided with reference suggestions, and the dispute amount will be quickly adjusted after negotiation.

Any work related to the project is basically inseparable from the construction site. Auditors should go to the construction site regularly to verify the construction progress and construction technology of the site, and adhere to the principle of fairness and actual calculation for each visa. Then the degree of engineering quantity can be calculated, and both parties can save it after signing, so as to ensure the traceability of the process and avoid disputes during the audit.

The times are advancing and the industry is developing. Every cost person has proposed the mastery of quotas and the study of craftsmanship. We must keep up with the trend and improve our business level; engineering projects have a lot of materials and cost, so we should formulate strict In the acceptance procedure, Party B declares the required materials in advance, and Party A and the supervisor jointly participate in the inquiry, designate the manufacturer and brand, and then send it to Party B. Party B will then purchase. This year, due to the impact of the epidemic, the price of materials fluctuates greatly during the epidemic, one price per day, and there are many inconveniences in travel procurement, we can negotiate with Party B on the principle of first purchase of materials, and use materials under the premise of meeting the acceptance criteria. Inspect the materials and inquire again, and determine a verified price based on price fluctuations during the epidemic.

4. **Game analysis between Party A’s auditors and Party A’s leadership**

As a crucial step in the project, auditing is often a position that is valued by the leaders. The auditors need to be fully prepared for the audit, and sufficient analysis should be done after the audit to report to the leader. Expect that there is a certain game relationship.

4.1. **Functional game**

At any time, the more able to work harder is a word that demonstrates personal abilities, and at the same time it will increase the staff’s expectation of income. Increasingly, it will bring negativity to the staff, which requires reasonable measures by the leadership to eliminate staff negativity. Sex, to promote the enthusiasm of staff. At the same time, as an employee, the expectation of salary is increasing day by day. Dissatisfaction with the work and outstanding performance will raise the expectation of salary, which causes the expected salary to be greater than the salary of their own position. There is a game.

4.2. **The impact of unqualified auditors**

Auditing has a great ability to test the professional level of the auditors. Although the audit results do not stipulate how much to audit or increase, as auditors, they will more or less shift the center of the
balance to Party A. It is inevitable that there will be inconsistent opinions during the game of the reviewers of Party B. Failure to review the quotation and too many wrong items and omissions are errors that should not be made by the auditors.

4.3. The auditor's audit objectives are completed and exceeded
The principle of auditing is fairness and justice. However, due to the different positions of the two parties, the balance of fairness and justice will be somewhat shifted. As an auditor, in addition to seeking truth from facts, it is necessary to protect Party A's interests to a certain extent. Take the initiative in the audit, reduce the quotation on the basis of reducing the differences as much as possible, and know how to take the big one and put the small one down.

4.4. The auditor did not understand the failure of the scene
Audits often occur after the completion of construction. Therefore, during the review process between Party A's auditors and Party B's reviewers, it may happen that Party A's auditors do not understand the site and cannot verify in time. This will result in disagreements with Party B's reviewers' handling results. It can verify Party B's submission materials in time.

4.5. Auditors' violation of professional ethics
Before the audit, the personnel of Party A avoided the most important issues during the review process due to some reasons, and ventilated with the personnel sent by Party B for review, resulting in an inflated cost.

5. The internal audit constraint mechanism of the cost department
Reasonable job assignment is a test for managers. Linking more capable people with performance rewards can not only improve work efficiency, but also eliminate staff fatigue. At the same time, as a manager, you should formulate a scientific and reasonable incentive system based on the actual situation to motivate employees. I have visited many companies and found that when employees receive incentives, their work efficiency is about 150% negative. If you want to be in the right game with employees, you must control your own powers. At the same time, the established system should not be unreasonable, which is prohibitive. Only with rewards and punishments can better management departments and even companies perform audit tasks. Appropriate rewards or promotion can be given to those who have completed excellent or even over-fulfillment, and those who are low in business level or unfamiliar with the scene can be punished appropriately.

The basic moral quality of auditors is loyalty, but as a barrier to control the interests of both parties, we will inevitably encounter a dilemma. At this time, we must strengthen our moral beliefs and treat everything that happens in an attitude of seeking truth from facts. We should deal with false offers. Subtract, the underreported quotation should be added.

6. Conclusions
This article mainly analyzes problems from the perspective of auditors. As an important procedure that affects project settlement, auditing shoulders important responsibilities. In terms of our audit model in the Mainland, the review process needs to be improved. As Party B's reviewer, Due to stance reasons, some projects will be inflated and falsely reported in order to protect the interests of the boss. In the face of some ambiguous quotas, they will be biased towards more parties, which makes the cost of submitting for review high, while Party A's auditors are the opposite; The principle is fairness and openness. Auditors should put aside the prejudices of their professional stance, and adhere to the principle of seeking truth from facts. When the total amount of control error is not large, they should seek common ground while reserving differences, and control large amounts and adjust small amounts.

The game between auditors and management is also enough to explain the importance of the audit link. As the final link of project completion and settlement, auditors face many tests. They have to test
their business ability and professional quality. The management must Handle the relationship, allocate the appropriate work and amount of staff, and formulate a scientific and reasonable system that can motivate the staff’s work efficiency and bring benefits to the company; the cost industry is currently in a stage of development and is facing a series of reforms. We Should follow the trend to promote the development of the industry.

References
[1] Tan Wenchao. (2015) Overview of government performance auditing in my country. Administrative assets and finance. pp.78–79.
[2] Jiang Junyu. (2016) Summary of Government Performance Auditing——A Summary of Chinese Government Performance Auditing. Western leather. pp.112.
[3] Hou Zhangkui. (2020) Talking about the relationship between the preparation and review of construction project cost pre-settlement and construction cost management, Urban Construction Theory Research. pp. 41.
[4] Li Zhaolong, jin Li,dan Wang. (2020) Analysis and Research on University's Internal Audit Behavior Based on Game Theory,Journal of Henan Normal University. pp. 37-42.
[5] Yan Chong. (2014) Talking about the key points and methods of project settlement audit, Modern economic information. pp. 252.
[6] Feng Youlian. (2014) IBehavioral Analysis of Audit Team and Audited Unit from the Perspective of Game Theory, China internal audit. pp. 51-53.
[7] Yue Lang. (2019) Experience in auditing project cos, Financial managementt. pp. 94.