

Case Analysis of Whole-Process Audit for University Construction Projects in the New Circumstances

Wenming Lu

Audit Office of Yangtze University, Jingzhou 434000, China.

Abstract: In response to the requirements of the new situation, internal audit in universities has transitioned from supervision to service and from cost audit to whole-process project management audit. This article, through case analysis, examined the necessity of whole-process audit in areas such as investment decision-making, design management procedures, bidding procedures, and project cost. *Keywords:* Construction Projects; Whole-Process Audit; Case Analysis

Introduction

In 2016, the Opinions of the Ministry of Education on Strengthening the Management and Audit of Construction Projects in Directly Affiliated Universities explicitly stated that the business and management activities at various stages of construction projects, including investment approval, survey and design, construction preparation, construction process, and completion acceptance, should be included in the scope of audit. This has institutionally provided guidance for the management of construction projects. Whole-process audit for construction projects has become a new normal under the new situation, and stakeholders should adapt to this change and perceive it correctly.

1. Characteristics of Whole-Process Audit for Construction Projects in the New Circumstances

1.1 Shift from Internal Supervisory Audit to Service Management Audit

The function of internal audit refers to the inherent inbuilt function of internal audit itself and reflects the essence of internal audit^[1]. The functions of internal audit change with the variation of audit objectives and serve to achieve these objectives. This definition indicates that internal audit has a service function. When audit departments excessively prioritize supervisory audits, merely highlighting issues without effectively resolving them, it results in delayed audit processes, disrupting the normal relationship between the auditing and audited parties. Neglecting the purpose of service places internal audit in an awkward position of "desiring supervision but being ineffective, aspiring to serve but falling short." Strengthening the management function of services, enhancing auditors' service awareness, and establishing service-oriented internal project audits will pave the way for the development of construction project management audits in the new context.

1.2 Transition from Engineering Cost Audit to Whole-Process Audit for Construction Projects

The most conventional engineering audit involves post-event audits of construction costs. This audit utilizes rules for calculating construction engineering quantity lists, construction engineering consumption quota and fee standards, engineering cost calculation procedures, and relevant document specifications to audit the construction project costs and produce an engineering cost audit report. This auditing approach relies on post-communication and meeting coordination to address disputes arising from settlements, making it passive and challenging to handle. Auditors can only make judgments based on submitted settlement documents, construction drawings, change orders, and other materials, leading to conflicts among the audit department, construction management, construction units, and project supervisory units.

Whole-process audit for the entire construction project has evolved from a static audit to a dynamic one, covering the entire project construction life cycle. Generally, for larger construction projects with longer durations, project management auditing is employed to promptly correct deviations during project execution. By addressing potential issues at an early stage, the impact on subsequent investments and quality is minimized, optimizing both investment efficiency and social benefits. This dynamic approach proves to be the optimal choice benefiting all stakeholders.

2. Application Analysis of Whole-Process Audit for Construction Projects

2.1 Case Analysis of Investment Decision Audit

Investment decision auditing standards refer to the operation specifications for conducting economic analysis and evaluation of the objectivity, completeness, and scientific nature of decision-making procedures, project approval, and feasibility study reports for construction projects^[2]. The key aspects include: ① Justification of the necessity of investment projects; ② Decision-making procedures; ③ Project approval process; ④ Truthfulness, completeness, and objectivity of the content in feasibility study reports; ⑤ Audit of economic benefit analysis.

Case Analysis: A certain school was originally located in the city center of a province and faced challenges due to its small and congested surroundings, hindering the development of its educational activities. With the approval of the higher education authorities, the school decided to relocate and rebuild, and the government intended to reclaim the original site for commercial development. The school leadership expressed an intention to move to an economic development zone on the outskirts, engaging in multiple rounds of negotiations with the development zone's management committee regarding a specific plot. Without approval from the planning department, the school selected a 500-acre site at the northeast corner of a certain overpass, undertaking preliminary construction preparations, including "Five Connections and One Leveling." As a public institution, the school hired a construction consulting company to prepare a project proposal for the purpose of obtaining approval for project initiation and other relevant procedures. The proposed project site in the project proposal was based solely on the intention agreement between the school and the development zone's management committee.

During the joint review, the audit team discovered that the project's site selection lacked approval procedures. They requested the construction unit of the school to provide an approved site selection opinion from the planning department. However, when the school submitted the site selection application to the planning department, it was discovered that the proposed location, affecting the city's planning layout due to a planned highway entrance ramp, did not receive approval. As a result, an alternative site had to be selected, leading to the construction unit's passive response and an economic loss of approximately 5 million yuan incurred during the preliminary "Five Connections and One Leveling" work.

The audit team demanded that the school leadership strictly adhere to the construction approval procedures and processes. They held the leadership responsible for the economic losses caused by the preliminary "Five Connections and One Leveling," issuing a public criticism. The individuals directly responsible for project management were to receive administrative demerits.

2.2 Case Analysis of Design Management Audit

Design management audit refers to the audit of the quality and performance of various management activities during the design phase of the project construction process^[2]. The main contents include: ① Whether the qualifications of the design unit are in compliance; ② Whether the qualifications of the design personnel are in compliance; ③ Audit of documents such as construction drawing budget, preliminary design, and construction drawing design; ④ Audit of design fees; ⑤ Analysis and evaluation of the design after project completion.

Case Analysis: A university canteen is located on the southern side of the newly acquired campus land, comprising cafeteria facilities and a student activity center. The total land area is 25,600 square meters, with a total building area of 20,560 square meters. The project had a bill of quantities and bidding control price prepared by a certain bidding agency, with a tender control price of 78 million yuan. A construction cost consulting company was responsible for the whole-process audit and established an audit team.

The audit team, while reviewing the bill of quantities and tender control price, identified discrepancies in the construction drawing design depth, including: ① For the glass railing in the corridor with stainless steel handrails, the design drawing only specified the height, without providing a detailed drawing, nor did it clearly indicate the diameter of the stainless steel pipes or the type and thickness of the glass. ② The entrance of the canteen, an external lobby, had a foundation represented only in a diagram. Although it was noted as a brick foundation, the quantity could not be calculated based on the drawing. ③ The electrical construction drawing specified the specifications of various distribution lines but failed to indicate the method of laying, whether along the bridge or through steel pipes.

The above issues in the construction drawings made it difficult to articulate the project's characteristics clearly in the bill of quantities,

leading to challenges in accurately formulating the tender control price. Concurrently, it brought some hidden troubles for the construction company to make substantial claims during the completion settlement.

According to relevant regulations of Approval for Design Drawing Depth of Civil Building Construction Projects of the Ministry of Housing and Urban-Rural Development of the People's Republic of China, construction drawing design documents should meet the needs of equipment and material procurement, non-standard equipment fabrication, and construction. The design institute responsible for the construction drawings did not fulfill the required design depth during the construction drawing phase. This resulted in inaccuracies in preparing the tender control price, and the construction company faced challenges in carrying out construction based on the incomplete construction drawings.

Subsequently, a detail drawing was provided for the "stainless steel handrail of the corridor's glass balustrade," and a foundation detailed drawing was produced for the "entrance hall foundation." The layout diagram for the cable laid along the cable tray was clarified with the issuance of the tray arrangement drawing. Insufficient design depth in construction drawings can impact construction progress and quality, making it prone to design changes that increase project costs. Therefore, it is evident that an audit of construction drawings can yield significant benefits.

2.3 Audit of Tendering and Bidding Procedures

The audit criteria for tendering and bidding refer to the audit and evaluation of the quality and performance of the bidding and contracting of construction projects in aspects such as design and construction^[2].

The key contents include: ① Audit of tender documents; ② Examination of whether there are artificial phenomena such as price squeeze, price inflation, and bid rigging during the tendering process; ③ Audit of the bidding opening, evaluation, and selection of the winning bidder processes.

Case Analysis: A university building with an 8-story frame structure, a height of 29.8 meters, and a construction area of 13,800 square meters, was funded by special financial funds from the national budget. Through open bidding, a construction company won the bid with a price of 58.8 million (including an estimated value of 4.2 million for the exterior wall stone cladding decoration part, which entered the bidding quotation as a provisional estimate). The project started in March 2015, and the Investment Division of the Financial Department commissioned a construction cost consulting company to conduct a whole-process audit of the construction project and formed an audit team.

After the acceptance of the main structure's topping-out, the construction party intended to subcontract the stone cladding part of the exterior wall decoration directly to a decoration engineering company for construction. The general contractor raised objections to this, and the issue was brought to the attention of the audit team.

After a thorough examination of the bidding documents and the general contract, the audit team found that the stone cladding decoration project was indeed within the scope of the general contract. It was included in the tender quantity bill in the form of provisional estimate for specialized engineering. However, the employer directly subcontracted this project to a third-party specialized decoration company for construction, which violated Article 29 of the Implementation Regulations of the People's Republic of China on Tenders and Bids, stating that "Projects, goods, and services included in the general contracting scope in the form of provisional estimates that are legally required to be tendered and meet the scale standards specified by the state shall be tendered in accordance with the law." The exterior wall stone cladding decoration part with a specialized provisional estimate of 4.2 million yuan must be tendered to determine the subcontractor. The employer accepted the audit team's recommendations and conducted an open tender to determine the contractor for the project. This illustrates the necessity of auditing the bidding procedures in the process.

2.4 Case Analysis of Engineering Cost Audit

The audit criteria for engineering cost evaluates the authenticity and legality of the total costs of a construction project ^[2]. It includes the following main aspects: ① Contract price audit ② Audit of bill of quantities and tender control price ③ Audit of engineering visa ④ Contract performance audit.

Case Analysis: In Project A, the original contract amount was 79.12 million yuan, including a provisional sum of 4.6 million yuan and

a professional engineering estimated cost of 1.8 million yuan. Throughout the project, changes and additions led to an increase of 8.98 million yuan^[3]. Notably, design changes, on-site visas, and additional work outside the contract amounted to 12.88 million yuan, representing 17% of the original contract amount of 72.71 million yuan (excluding provisional sums and professional engineering estimated costs). This percentage was relatively high compared to new construction projects. This was not only caused by changes in the project but more so due to inadequate management and insufficient supervision, as well as shortcomings in fulfilling responsibilities by the construction unit and the supervisory unit during the process.

After analyzing, the causes were concluded as: Firstly, the construction unit used drawings for bidding that were not yet reviewed, leading to discrepancies between the actual construction drawings and those used for bidding. This disparity resulted in an increased difference between the actual construction quantity list, thereby impacting the project cost.

Secondly, lax contract execution played a role. Some additional work did not have supplementary agreements signed, making it difficult to effectively control the final settlement price. Moreover, the procedures for quality and price recognition of certain materials were not standardized, and the category of materials subject to quality and price recognition was limited to the estimated materials listed during bidding and new materials arising from changes.

In this case, a dispute arose concerning the stone-like coating on the exterior wall. The construction party argued that the project feature listed in the tender for "exterior wall paint" allowed them to bid on and secure the contract based on exterior wall paint. However, during the construction process, the construction unit clarified that "exterior wall paint" meant "stone-like coating" and specified brands and colors, requiring a reassessment of quality and price. During the settlement audit, the audit institution deemed that the construction drawings clearly indicated the use of stone-like coating on the exterior walls. stone-like coating should be included in the scope of "exterior wall paint." According to the contract interpretation sequence, drawings take precedence over the bill of quantities. Therefore, the pricing for exterior wall paint by the construction unit should be based on the price for stone-like coating, and there was no need for a reassessment. This highlights the beneficial role of cost audits in controlling construction projects.

3. Achievements Obtained from the Whole-Process Audit of Construction Projects

Project management involves numerous departments, especially in universities, including audit, infrastructure, logistics, campus administration, maintenance, and academic departments. Multiple departments form project construction management leading groups to guide project management. Following a matrix management model, each department fulfills its functions without overstepping boundaries, providing suggestions and opinions during the project management process for the supervisory department's reference. Simultaneously, it establishes a sound coordination mechanism between the internal audit department and the university's organizational, human resources, disciplinary inspection, and supervision departments, integrating audit supervision with Party leadership, disciplinary inspection, and accountability.

The internal auditing department, upon identifying internal control deficiencies during construction project management audits, should promptly issue audit opinions to prompt relevant departments to rectify the issues. In cases where clues to disciplinary violations or illegal activities are discovered, timely referral to the discipline inspection and supervision department for verification and investigation is essential. For issues of a typical or widespread nature, audit recommendations should be promptly proposed, submitted to relevant departments for study and resolution.

Departments involved should diligently implement rectification measures in accordance with audit opinions and recommendations. Strict accountability measures should be applied to those who show insufficient improvement, repeat offenses, or cause losses. The results of construction project management audits should be disclosed within a specified scope in accordance with relevant regulations^[4].

Practice has proven that construction project management audits play a crucial role in controlling construction investments reasonably, improving construction project management, and promoting building of an incorruptible government^[5]. In the new normal, the implementation of project management audits has progressed from gradual experimentation to full coverage, yielding significant results. It has effectively curbed projects without proper approval, funding sources, and those exceeding planned budgets. In the new environment, conducting comprehensive audits throughout the entire process of construction projects fundamentally regulates and enhances construction project management.

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About the Author:

Lu Wenming (1986—), female, Han ethnicity, born in Suizhou, Hubei. She is an auditor and a registered cost engineer, currently serving at the Audit Office of Yangtze University. Her research focuses on construction project cost management and on-site management.