

Development of Audit Risk Model Applied in Public Investment Project Audit: The State Audit in Vietnam

Dang Anh Tuan

Ph.D., Faculty of Accounting and Auditing, Industrial University of Ho Chi Minh City, Vietnam. Email: anhtuancpa@gmail.com, ORCID: <https://orcid.org/0000-0001-8754-2811>, <https://orcid.org/0000-0001-8754-2811>

Affiliations:

- Lecturer at Faculty of Accounting and Auditing, Industrial University of Ho Chi Minh City, Vietnam;
- Auditor, head of the corporate audit department of the State Audit Office of Vietnam.

Nguyen Ngoc Khanh Dung

Ph.D., Faculty of Accounting and Auditing, Industrial University of Ho Chi Minh City, Vietnam. Email: nguyenngockhanhdung@iuh.edu.vn, ORCID: <https://orcid.org/0000-0002-2390-8770>

Affiliations:

- Lecturer at Faculty of Accounting and Auditing, Industrial University of Ho Chi Minh City, Vietnam.

Abstract

The risk-based audit approach (RBA) has proved more efficient than conventional auditing methods. This study investigates how auditors evaluate audit risk to identify significant audit areas in audits of public investment projects. This study collected data for state auditors of Vietnam's specialized and regional state audits through documentary analysis and interviews. The research data comprises 25 audit records from 2018 to 2022 and discussions with 35 state auditors. The results suggest using an audit risk model applicable to audits of finalization reports for completed projects but not compliance or performance audits. However, the audit risk model used in audits of financial statements should be appropriate for designing compliance and performance audit procedures. This finding contributes theoretically to the application of RBA in three ways: (i) the audit method is not merely technical but also dependent on the social context; (ii) the application of RBA to audits of public investment projects

improves audit efficiency and quality; and (iii) the legal risk for auditors is reduced. In practice, the proposed audit risk model can assist auditors in accumulating risk assessment results from previous audits and applying them to future audits of a comparable nature by adjusting the assessed risk ratio.

Keywords: investment project audit, audit materiality, approach, audit risk model, RBA, residual risk, Vietnam.

1. Introduction

An audit is in the public interest and is predicated on professionalism, reputation, and credibility in all nations. Audit results enhance the dependability and usefulness of audited information, thereby decreasing transaction and monitoring costs (Wallace, 1980). Supreme audit institutions (SAIs) emphasize errors, frauds, or corrupt practices to promote greater accountability (Schelker & Eichenberger, 2010; Wallace, 1980) and to aid in operational efficiency improvement (Hay & Cordery, 2018). Hay and Cordery (2018) Audit results contribute to cost savings, budget revenue growth, and increased levels of trust, transparency, and accountability. Users of audit reports likewise anticipate these outcomes. However, there is always an audit expectation disparity between expectations and performance (Liggio, 1974; Porter, 1993). This is primarily because misconduct, corruption, and waste in the public sector are not detected promptly through auditing, particularly in developing nations. To close this gap and enhance audit quality, SAIs are increasingly refining their standards and employing new, more effective auditing methods (Dung & Tuan, 2019). However, new approaches will also present audit professionals with the following challenges: (i) the expectation gap; (ii) ambiguous audit responsibility; (iii) reasonable assurance; (iv) audit quality requirements; (v) the need to use professional judgment; and (vi) standard practice (different methodologies) (Prinsloo, 2008). In this regard, Eilifsen, Knechel, and Wallage (2001) cautioned that "changes in audit approaches need to be evaluated and studied during and after implementation; for example, changes to guidance in standards risk" (p. 204).

The effectiveness of the risk-based audit approach (RBA) in auditing corporate financial statements has prompted SAIs to implement RBA in their audit practices (SAV, 2020b). Auditing of public investment projects is one of the State Audit of Vietnam's (SAV) five primary areas of activity, the others being: (i) audit of local

budget reports; (ii) audit of state-owned enterprises; (iii) audit of credit institutions; and (iv) audit of the national target program. However, the application of RBA in auditing the financial statements of public investment projects (also known as finalization reports of completed projects) is limited. Most auditors evaluate risk based on professional judgment and use substantive audit procedures to obtain audit evidence (audit of details) for large and complex projects. This approach to auditing entails a high auditing risk and inadequate audit quality. SAV issued guidance on risk-based auditing approaches for construction investment projects in 2023 (SAV, 2023). Users of the audit report for a public investment project are also interested in legal compliance and the economy, efficiency, and efficacy of the owner's project management and implementation (Hossain, 2010). In addition to assessing the risk of significant material deviations from the finalization reports of a completed investment project, the auditor must also evaluate the risk of legal compliance and the economy, efficiency, and efficacy of project management.

This study has two objectives: (i) to explore how auditors assess risk in the audit of public investment projects; and (ii) to develop the audit risk model applied in public investment project audits based on financial statement audit methodology. To achieve these research objectives, the following three research questions need to be answered:

1. How are the public investment projects of SAV audited using RBA?
2. What is the material audit applied by auditors in public investment project audits?
3. Can RBA from financial statement audits be applied in investment project audits, including compliance and performance audits?

The research results provide evidence that the application of RBA in the audit of financial statements can be applied to audit investment projects. This finding contributes theoretically to the application of RBA in three ways (i) the audit method is not simply technical but also depends on the social context; (ii) applying the RBA in public investment project audits helps increase audit efficiency and quality and (iii) reduce the legal risk for auditors. In terms of practice, the proposed audit risk model provides the auditor with a tool for consistent application in public investment project audits and practical application in different audits of investment projects.

This research structure includes: The first part introduces the theoretical framework of RBA. The second part presents research methods, data, and data processing methods. The third section presents the study's results and discusses the three research questions – finally, conclusions and policy implications.

2. Theoretical framework

2.1 Auditing methodology

The term "approach" is defined as a "technique or method" (Corsini, 2002) or a "specific strategy used to achieve an objective or goal" (Prinsloo, 2008; VandenBos, 2006). The audit approach is the technique or method used to achieve audit objectives. Checking transactions and balances to confirm the information on financial statements is part of the traditional audit approach, such as (i) a balance sheet-based approach, (ii) a systems-based approach, and (iii) a cycle or process-based approach (Puttick & Van Esch, 2007). In the meantime, the modern audit approach also referred to as RBA, comprises (i) business RBA and (ii) process/strategic RBA (Prinsloo, 2008). RBA denotes that the auditor will conduct more direct testing on items with a higher error probability (Arens et al., 2020), focusing on risk assessment.

According to Curtis and Turley (2007), earlier documents exhibit varying perspectives on audit methods. Most of what is commonly known as conventional audit research. Gendron and Bédard (2001) believes that auditing is a technical activity. Much of this literature, particularly the audit evaluation and decision-making (JDM) literature, employs a cognitive psychology-based rational model based on the notion that humans and even societies adhere to predetermined rules (Westerdahl, 2004). The second perspective adds limitations to the first by incorporating a social context in which judgments are not merely the result of employing a set of audit techniques (Kirkham, 1992).

RBA receives great attention in academic research on various fronts (Esmail & Haque, 2022). There are two primary trends in RBA research: (i) investigating the formation and development of RBA and (ii) examining the impact of RBA on the audit process and quality (Bell et al., 1997). According to Dung and Tuan (2019) and Prinsloo (2008), RBA is necessary to develop audits and is instrumental in providing reasonable

assurance to users of the audit report that it complies with professional standards and narrowing the audit expectation gap.

[Castanheira, Lima Rodrigues, and Craig \(2009\)](#) found that risk-based audits are strongly associated with international and publicly traded companies. They observe, however, that company size, industry, and public or private sector are not significant predictors of RBA adoption during the audit planning phase. Other studies have found that company size, regulation, industry, and organizational culture play a significant role in adopting risk-based audits during the auditing process ([Koutoupis & Tsamis, 2009](#)). However, the absence of statistical evidence in previous studies prompted the current study to investigate the application of RBA to audits of public investment projects.

2.2 Risk-based audit approach

Risk-based auditing involves identifying and reporting the likelihood of material financial statement distortions. This strategy enhances the product's value (financial statements) and increases the profitability of auditing. Risk-based auditing, in other terms, satisfies both managers and auditors ([Harrington, 2004](#)). The auditor must comprehend the client's business process/strategy to apply RBA. These risks jeopardize the success of the strategy, the client's response to the risk, and the impact of a material misstatement caused by the risk. [Fogarty, Graham, and Schubert \(2006\)](#) found that RBA is more effective than traditional approaches because it helps the auditor evaluate and enhance the design and implementation of risk-reduction audit procedures.

([Arifianto & Putra, 2019](#)) The RBA provides an efficient and effective audit practice to maintain audit quality in the public sector. Auditors evaluate risk and significance, determine which evidence to collect, and determine whether the collected evidence is sufficient to support a specific audit report. Thus, auditing is a judgment-intensive endeavor ([Evans & Stanovich, 2013](#)).

An auditor must consider risks before conducting an audit, including inherent, control, and detection risks. According to [Spira and Page \(2003\)](#), developments in corporate governance reporting present opportunities for groups seeking to advance their interests to appropriate risk and its management. Consequently, the threat has become fundamental to corporate governance and is associated with internal control.

3. Research Methods

Methodology

The research methodology is based on experiential knowledge. Therefore, it is valid to make certain assumptions and treat them as premises:

Premise 1: Public investment project audits are organized and performed as a type of audit. The purpose is to limit the scope of research to auditors because other agencies and organizations, such as construction quality inspection and workload capacity testing, have also applied some of the methods and techniques in investment project audits.

Premise 2: Auditors are well-versed in auditing and have received training or participated in auditing activities. The purpose of recognition is that: (i) the auditor's perceptions will be translated into specific auditing behaviors; and (ii) the auditor will prioritize implementing auditing skills, knowledge, and experience to a new type or field of auditing.

Research Process

In the public sector, applying RBA begins with identifying the research object. Auditing standards, procedures, and guidelines for public investment projects and financial statement audits are included in the research data. The classification and extraction of research data for categorization and continuous comparative analysis are to identify specific conceptual units. Detailed conceptual elements or concepts associated with field data are used to construct conceptual topics. Lastly, concept dimensions are examined to generalize the types or methodologies for implementing RBA in investigations of public investment projects.

Research Data

To answer the first research question, we analyze documents related to the audit function of SAV's public investment projects, including but not limited to (i) public investment project audit process, guidance on audit approach based on risk assessment, and materiality in the audit of investment project financial statements. and (ii) audit folders and documents from 25 sampled audits conducted between 2018 and 2022. This is the first occasion SAV has adopted RBA for auditing purposes. From 2018 through 2022, the SAV conducted an average of twenty audits of investment initiatives per year. Consequently, we select a sample of 25 audits (the sample rate is

approximately 25%). During 2018-2022, the State Audit of Vietnam conducted, on average, twenty audits of investment projects per year.

Consequently, we select a sample of 25 audits (the sample rate is approximately 25%). Each year, we choose five completed audits of investment projects. Records are collected from the SAV's consulting branch, the General Department.

For the second research question, we conducted interviews with 35 auditors with over ten years of experience auditing public investment projects at SAV to determine the audit content that is most frequently selected for public investment project audits. Auditors participating in the interviews were sampled using a practical method within SAV's human resource management system. This sample aims to identify a state auditor with experience auditing investment initiatives. The material audit scope is determined based on the audit risk model's residual risk assessment results. Auditors will select inherent risk and control risk assessment levels for each public investment project audit based on three levels: Low, Medium, and High. This evaluation is used to determine the material audit contents.

Regarding the third research query, the project's finalization report includes investment expenses, capital sources, receivables, payables, fixed assets, and capital construction in progress. Therefore, the implementation of RBA in audits of financial statements can also be applied to audits of project finalization reports. The purpose of the audit is to evaluate regulatory compliance and the effectiveness and efficacy of investment projects. RBA is unsuitable for auditing financial statements because it only helps determine the scope of audit evidence based on the audit risk model's determination of the level of detection risk. In the meantime, the audit of public investment projects consist of various audit components, including investment costs, contractor selection, design estimation, quality, and project implementation schedule.

Regarding sources, it is crucial to note that document analysis and interviews were conducted with all public sector auditing agencies in Vietnam, allowing for comprehensive data triangulation and comparability. All research team members participated in discussions, documents, and interview analyses.

The steps to apply and develop RBA in public investment projects and financial statement audits are presented in [Table 1](#).

Table 1. RBA application methodology in public investment project and financial statement audit

Procedure	RBA in financial statement audit	RBA in public investment project audit	Evaluation
Step 1. Preliminary risk assessment	Preliminary assessment of business process/strategy risks	Initial evaluation of public investment project risks	
Risk identification	Business strategy/process risk	Public investment project risks	Consistently applicable
Identify inherent risks and impacts	Estimating inherent risk from the effects of process/strategic risk from the perspective of the financial statements as a whole	Identifying the likelihood of each type of risk and their impact if they occur for each audit objective corresponding to three types of audits – project financial statement audit, compliance audit, and performance audit	Estimating inherent risk through two components, i.e., the probability and consequences of each type of risk for RBA in public investment project audi
Assess inherent risks		Assessing inherent risks based on the risk matrix table	
Step 2. Risk assessment of material misstatement	Assessment of the risks of material misstatement at the assertion level of financial statements	Assessment of the risk of material misstatement for each material audit content related to the audit of the project's financial statements and project implementation management activities	It is necessary to assess the risks involved in complying with the law and the effectiveness and efficiency of the investment project. These two objectives of public investment project audits differ from those of financial statement audits, which are only intended to confirm the reliability of financial information.

Procedure	RBA in financial statement audit	RBA in public investment project audit	Evaluation
Identify inherent risks	Estimating the inherent risk associated with each assertion	Identifying inherent risks corresponding to each material audit content	Consistently applicable
Determine control risk	Estimating control risk by assessing the effectiveness of internal control	Identifying project management control risks by evaluating the effectiveness of the internal control system	Consistently applicable
Calculate the risk of material misstatement	inherent risk x control risk	inherent risk x control risk	
Step 3. Calculate detection risk to determine the minimum level of confidence to be achieved and the extent to which the audit evidence will be collected	The ratio of audit risk to the risk of material misstatement determines the detection risk	Detection risk is applied in the audit of financial statements of investment projects. The difference between overall control and material misstatement risks for each material audit item determines residual risk.	Adding residual risk as a basis for determining the level of assurance that needs to be achieved for compliance and performance audit objectives in public investment project audits

Source. Author's analysis

4. Research Results and Discussion

4.1. Status using RBA in the audit of the public investment projects of SAV

4.1.1. Audit results of public investment projects

SAV is a specialized state financial investigation agency established by the National Assembly, operating autonomously and following the law (SAV, 2005). It was established as a government agency in 1994, and the Law on State Audit was enacted in 2005.

Financial audits, compliance audits, and performance audits are the primary focuses of SAV. It seeks to accomplish the following three goals: (i) confirm the truth and fairness of the completed project settlement report; (ii) assess compliance with the law in investment and construction; and (iii) assess the economics, efficiency, and efficacy of investment projects. In the 28 years since its founding, SAV has demonstrated that the scope, quality, and efficacy of its audits have increased, as evidenced by its financial findings and recommendations exceeding VND 550,000 billion, of which increased revenue and decreased state budget expenditure account for nearly 40% of the total financial requests (SAV, 2020a). SAV also proposed a VND 42,603 billion reduction in public investment expenditure (SAV, 2021). However, these results did not meet the requirements and expectations of the National Assembly, the people's councils, and the leaders of SAV, as SAV could not detect content related to wasteful corruption. The number of implemented recommendations must be increased, as only 73% have been implemented.

4.1.2. Audit process for public investment projects

The results of an analysis of 25 audit records for 2018–2022 indicate that SAV currently audits large-scale public investment projects separately. In contrast, SAV conducts integrated audits with local budget audits or audits of state-owned enterprises' financial statements for small-scale investment projects. In large-scale public investment projects, SAV integrates all three audit categories, i.e., financial statement audit, compliance audit, and operational audit. In contrast, only financial statement and compliance audits are conducted in small-scale public investment projects. There are three categories of audits for public investment projects: pre-audit, parallel, and post-audit, focusing primarily on information confirmation. However, it differs from global auditing practices for investment projects, which entail evaluating the process or quality of public investment projects via exhaustive tests. Audits of content investment projects include financial and technical considerations and a confirmation of the project's financial statements to provide information to the competent authority for approval of the final payment. In addition, they evaluate the compliance with the law of the parties involved in the administration and

implementation of public investment projects, including the quality of construction and project implementation progress. In addition, many large-scale public investment initiatives include audit content about the economy, effectiveness, and efficiency. This is a difficult, high-risk endeavor. SAV employs auditors with financial and technical expertise to audit investment initiatives. However, the four largest auditing firms worldwide do not audit this industry due to quality concerns and legal hazards.

The auditing procedure for public investment projects consists of four steps: (i) audit preparation (creating the annual overall audit plan and the audit plan's audit plan); (ii) conducting the audit; (iii) preparing and issuing the audit report; and (iv) ensuring that the audit conclusions and recommendations are implemented following the guidelines of the global organization of supreme auditing bodies (INTOSAI). In the audit report, there are three primary categories of audit findings: (i) financial misstatements associated with the payment and settlement of the completed volume that is inconsistent with the actual volume of work; (ii) violations of the law on investment and construction; and (iii) limitations in the management of investment project implementation relating to the efficiency and effectiveness of the project.

4.2. Material audit content in public investment project audits

Figure 1 depicts the material audit content corresponding to the six project implementation processes for audits of public investment projects. The initial phase is investment preparation, which entails formulating, evaluating, and approving the investment project and determining the total budget (Establish projects). The second phase is project implementation, which includes the following four processes: (i) formulation, appraisal, and approval of construction design, i.e., cost estimate (construction design); (ii) procurement, contractor selection, and contract signing (contractor selection); (iii) project progress and quality management (project management); and (iv) cost management, including volume and unit price (investment cost). Accepting the completed work and incorporating it into the final settlement of the completed project (completion of completed projects) is the third stage.

Audits of public investment projects are conducted sequentially, beginning with preparing project reports for evaluation before approval. The procedures

mentioned above are mandated to prevent possible errors. The next phase of the project implementation management process also effectively detects errors in previous steps. Figure 1 depicts the information flow used to manage investment capital and determine investment objective, form, and scope. As the basis for estimating construction costs, the construction design work at the costing stage is concretized from the basic design to the project formulation phase. Estimates of construction costs are used to manage and control costs throughout the tendering, contractor selection, and contract signing processes (management in terms of unit price and contract value). Contract management is accomplished by administrating volume, quality, and schedule (volume management of contracts). The acceptance, payment, and settlement procedure for controlling investment costs are implemented for settlement approval.

We identified six significant audit contents corresponding to the six project implementation management processes from the public investment project management process and SAV's investment project audit guidance (Figure 1).

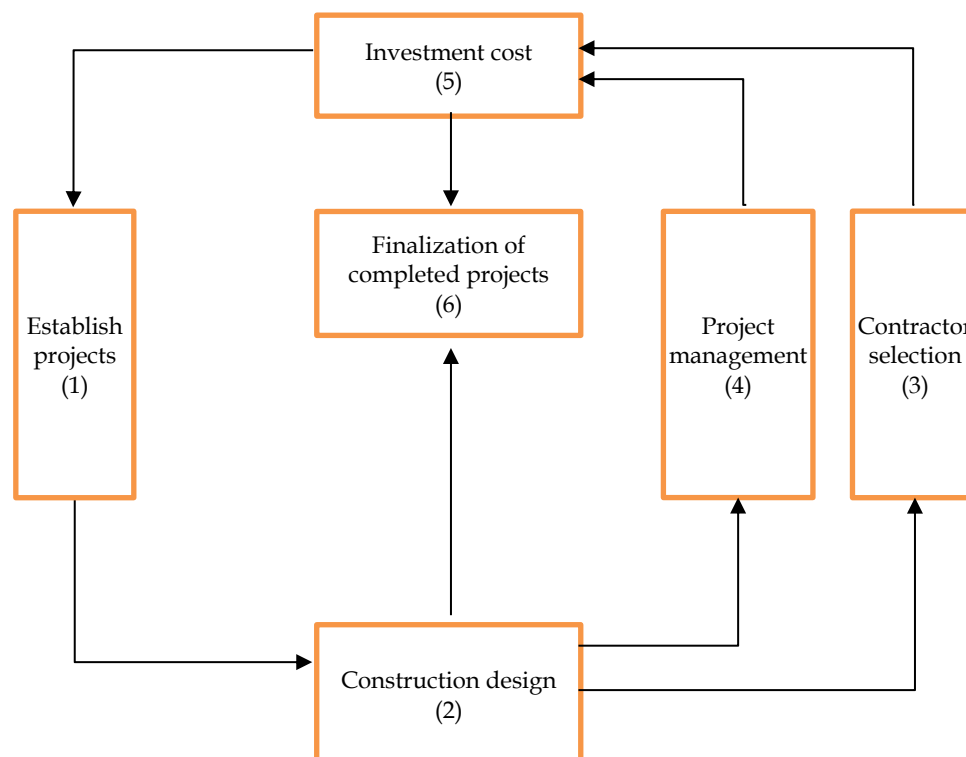


Figure 1. Relationship between public investment project implementation management processes

Source: Author

4.3. Developing an audit risk model for public investment project audits

The audit methodology for financial statements is widely accepted and extensively utilized in auditing practice. Nonetheless, for public investment project audits, there is no standardization among auditors when confirming financial and other information in public investment project reports due to the absence of a risk assessment methodology that would aid in identifying the material audit content in audit activities. Since auditing public investment projects is also a form of auditing, the audit methodology for financial statements can also be applied to auditing public investment projects. Following is a discussion of how RBA from financial statements can be used to audit investment projects.

This procedure was derived from the audit practice of public investment initiatives in Vietnam and the theory of auditing financial statements (Figure 2).

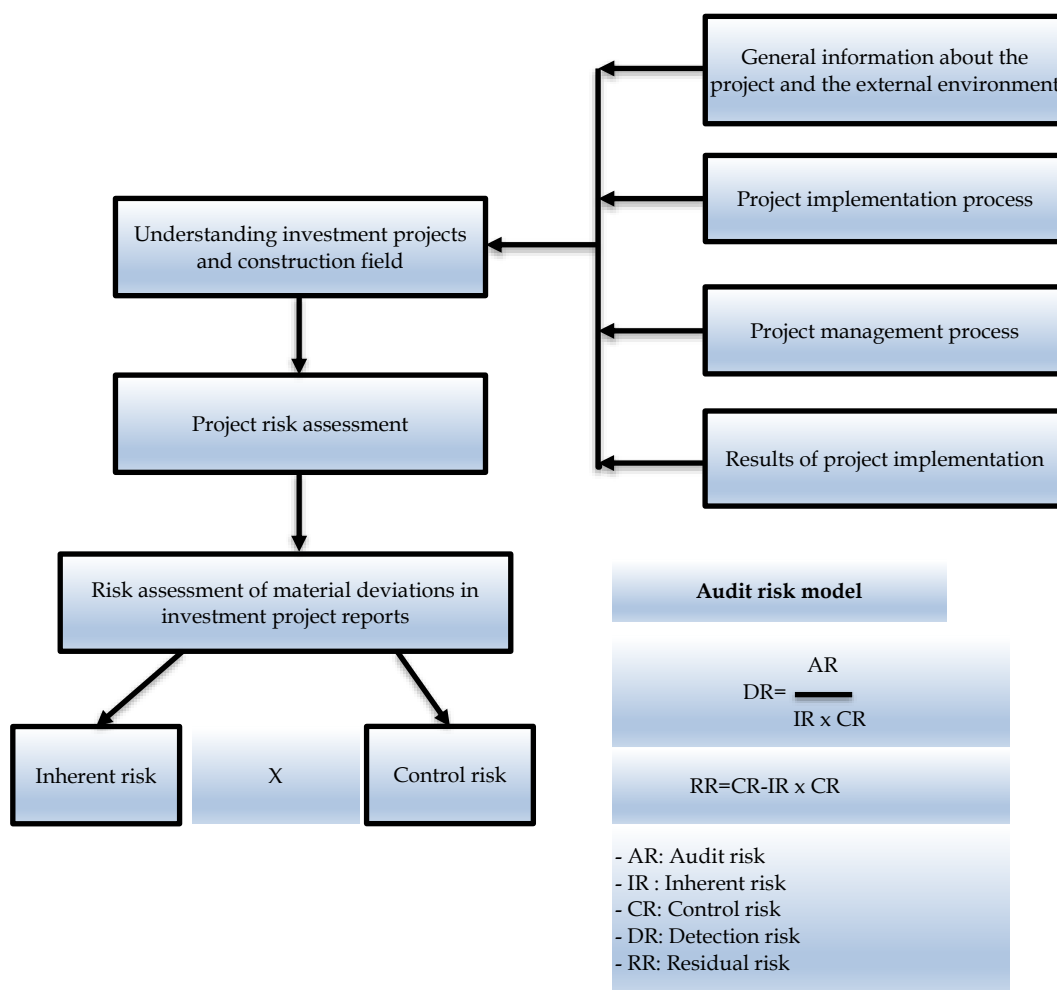


Figure 2. Audit risk model, public investment projects, and the construction sector

Source: Arens et al. (2020)

Audits of public investment projects are conducted to confirm the integrity and accuracy of investment project reports, assess compliance with applicable laws and regulations, and evaluate the economy, efficiency, and efficacy of investment projects. Consequently, the auditor must: (i) comprehend the investment project and the construction industry and (ii) evaluate the risks influencing the investment project's objectives. The latter is contingent on three factors: (i) information investment project dependability; (ii) compliance with laws and regulations; and (iii) achieving economy, efficiency, and effectiveness, which correspond to three categories of audits: financial statement audit, compliance audit, and performance audit.

The auditor evaluates the risks of material misstatement in the financial statements of the project and their impact, if any, on legal compliance or the effectiveness and efficiency of public investment projects based on the determination of the material audit content, as depicted in [Figure 2](#). In financial statement audits, the risk of material misstatement of financial statements comprises inherent and control risks. When determining risks during the audit of public investment projects, the auditor must link these two categories of risks to the audit's desired outcomes. When auditing the financial statements of a public investment project, for instance, the risk of material misstatement in the case of a performance audit is evaluated from the perspective of the investment project's effectiveness and efficiency.

4.3.1. Risk assessment of public investment projects

From the process/strategy RBA, the risk assessment of public investment project audits has been developed. This is the possibility that the project will be constructed but fail to meet investment objectives. The risk of a public investment project can be caused by any factor that affects the investment and construction of the project, including the owner's project implementation management and environmental factors. For instance, high inflation resulting in higher investment costs compromises the ability to balance, allocate, and disburse investment capital, and crises such as the COVID-19 pandemic delay the project's implementation schedule ([Table 2](#)).

Table 2. Types of Risks and risk factors in public investment projects

Type of risk	Risk factor
Political risk	Government affordability; Changing policies and laws; Corruption; Slow approval; Force majeure political incidents
Financial risk	Economic instability; Inability to pay; Lack of guarantee; Funding risk; Inflation; Interest rate; Exchange rate fluctuations
Construction risk	Slow recovery and construction site clearance; Construction costs exceeding total budget; Slow progress; Lack of raw materials and labor; Project location; Weakness of the bid solicitor; Unqualified and inexperienced contractors; Force majeure construction incidents
Operation and maintenance risk	Outstanding operating and maintenance costs; Incompetent operating unit; Low operating productivity is low; Lack of material; Force majeure events
Legal risk	Unobjective project approval process; Interference of state agencies in selection of contractors; Highly controlling state that hinders the project; Changes in fiscal policy; Changes in project scope; Unstable laws and policies with low effectiveness; Violation of contract terms; Risk of force majeure law

Source: Kwak, Chih, and Ibbs (2009)

After identifying the risk type and factors (Table 2), the auditor must consistently describe these risks in the risk identification table. Theoretically, the structure that best describes a form of risk follows a standard equation.

$$\text{Risk description structure} = \text{Problem} + \text{Cause} + \text{Impact}$$

First, the auditor must identify the problem, its primary cause, and the risk's most severe consequence. The risk assessment matrix (Table 2) is frequently used to determine the risk level of public investment initiatives. The most difficult aspect is determining the likelihood (probability) of each type of risk identified by incomplete information. The auditor relies on a specific assumption when estimating the likelihood of an event and documents it in the audit file. Typically, these assumptions are derived from previous audits of similar initiatives based on a cause-and-effect relationship. According to ECA (2013), auditors should evaluate the probability of occurrence and impact of high, medium, and low risks using the Preliminary Risk Assessment Model (Table 3).

Table 3. Matrix for the preliminary assessment of risks of public investment projects

Level of preliminary risk = Probability of occurrence x Impact of event				
		Impact		
		Low	Medium	Hight
Probabi lity of risk	Low	L	M	M
	Medium	L	M	H
	Hight	M	H	H

Source. Kwak et al. (2009)

The auditor must investigate the risk response measures implemented by management for medium (M) and high (H) risks. The objective of the audit is to determine whether the entity's risk management policies, procedures, and controls can assist in avoiding, eliminating, or minimizing risks that could hinder the investment project's objectives. The auditor evaluates the internal control system to establish the control risk level.

4.3.2. Risk assessment of material deviations on investment project reports

Risk assessment of material misstatement is an audit procedure performed by an auditor based on their professional discretion to identify and evaluate risks of material misstatement due to error or violation of law that could impact the goals of public investment projects. Table 4 depicts the level of each risk category in the audit risk model–inherited RBA for financial statement audits.

According to the audit risk models depicted in Figure 2 and Table 4, the auditor must reduce inherent and control risks to reduce audit risk to an acceptable level. Thus, auditors must carefully consider and evaluate factors influencing inherent risks, such as the characteristics of public investment projects and investment fields, the environment, the owner/project management culture, and the auditor's experience. High inherent risk and control risk, in contrast, reduce detection risk.

Table 4. Audit risk assessment matrix

Audit risk = Inherent risk x Control risk x Detection risk				
		Control risk		
		Low	Medium	Hight
Inheren t risk	Low	H	H	L
	Medium	H	M	M
	Hight	M	L	L

Source: Arens et al. (2020)

After concluding the preliminary risk assessment of the public investment project, the auditor should meet with the audit team to discuss the audit's essential scope and content to formulate the audit plan. In general, the objective of the risk assessment of an investment project is to identify critical issues of interest to the audit report's audience. The material issue is determined based on the high or medium residual risk. Residual risk (RR) is the risk that the project performance management system is intended to accommodate but is ineffective in practice due to the inability to prevent or detect material deviations caused by errors, regulatory violations, or the failure to achieve economy, efficiency, and effectiveness of public investment projects.

$$RR = CR - IR \times CR.$$

Audits of public investment projects are, therefore, a combination of three categories of audits: audit of investment project financial statements, compliance, and performance audits. The risk assessment phase of an investment endeavor is critical. The methodology for constructing the risk assessment model is inherited from the RBA process but is applied in the preliminary risk assessment step to select material audit content. Inheriting the RBA process, the auditor will assess the risk of material misstatement for each identified audit material content after determining the audit content and scope. In this phase, the audit risk model is most applicable to the audit of financial statements. We surveyed seasoned public auditors to determine the risk assessment decisions that auditors implement.

4.4. Assess the suitability of the investment project audit risk model in SAV practices

An audit of a public investment project typically has three goals: (i) confirming the accuracy of the project's financial information; (ii) assessing compliance with legal regulations; and (iii) evaluating the investment project's effectiveness and efficiency to determine the owner's responsibilities in the management and implementation of the public investment project. Consequently, auditors frequently include all three objectives mentioned above in an audit. However, the scope will differ based on the nature of the project and the user's level of interest. However, how materiality is

assessed in an audit of an investment project depends on the nature and specific characteristics of each investment project, as well as the auditor's professional judgment. Therefore, selecting audit content is frequently subjective; auditors have identified this as a high inherent risk. To enhance consistency and provide a suitable methodology to assist the auditor in determining material audit content based on RBA, 35 state auditors with experience in RBA were surveyed. The survey aimed to categorize risk levels into three categories: high, medium, and low.

The results of the inherent risk survey reveal three important audit contents that are rated as high risk: (i) confirmation of investment costs; (ii) design estimate; and (iii) project preparation, with high consensus rates of 67%, 81%, and 88%, respectively. The content of the bid process and contract signature had the lowest inherent risk, at 30% (Table 5).

Table 5. Potential risk assessment results for investment projects

Audit material content	Inherent risk			Risk rating		
	Hight	Medium	Low	Hight	Medium	Low
Project planning	18	11	6	18	11	6
Design estimate	26	5	4	26	5	4
Contractor selection and contract signing	6	9	20	6	9	20
Project management (quality and progress)	8	20	7	8	20	7
Investment cost management	10	16	9	10	16	9
Finalization of completed projects	28	4	3	28	4	3

Note. The ratio is determined by the score divided by 35 (the number of auditors participating in the risk assessment)

Source. Author's analysis

For control risk, four audit contents were rated medium risk by auditors: (i) design estimate; (ii) project management; (iii) cost management; and (iv) finalization of completed projects. Two processes were rated low risk: (i) project preparation and (ii) contractor selection. This implies that the owner and stakeholders have the capacity and experience to control project formulation and contractor selection (Table 6).

Table 6. Control risk assessment results for public investment projects

Material content	Control risk			Risk rating		
	Hight	Medium	Low	Hight	Medium	Low
Project planning	8	11	16	8	11	16
Design estimate	8	20	7	8	20	7
Contractor selection and contract signing	11	8	16	11	8	16
Project management (quality and progress)	9	16	10	9	16	10
Investment cost management	9	16	10	9	16	10
Finalization of completed projects	9	18	10	9	18	10

Note. The ratio is determined by the score divided by 35 (the number of auditors participating in the risk assessment)

Source. Author's analysis

We established the risk assessment matrix (Table 7) based on the evaluation results of each risk component. Table 7's Sections A and B have been compiled from Tables 5 and 6. Section C defines "risk of material misstatement" as the combination of inherent and control risks. Assuming that the acceptable audit risk for a public investment project is 5%, the ratio of audit risk to the risk of material misstatement will determine the detection risk. The audit risk model guides the auditor in determining the scope and quantity of audit evidence to gather based on the identification and evaluation of detection risk. The scope and quantity of audit evidence to be gathered are inversely proportional to the assessed level of detection risk (Table 7 of Section E). This RBA process/strategy applies to audits of public investment projects. In addition to the audit, the auditor must evaluate compliance with applicable laws to confirm the investment costs in the finalization report, even if they do not distort the financial statements.

The limitations of project implementation management impact the project's economy, efficacy, and efficiency. For the audit objective of evaluating compliance with the law and the project's effectiveness and efficiency, it is, therefore, necessary to conduct a residual risk assessment. The RBA process/strategy is augmented with the

calculation of residual risk as the premise for collecting audit evidence in public investment project audits.

In contrast to the inverse relationship between detection risk and the quantity of evidence to be gathered, residual risk and the quantity of evidence are positively related. The greater the residual risk, the more evidence the auditor must acquire to demonstrate project management weaknesses by the owner and stakeholders. This approach allows a risk assessment to determine audit evidence, both for the confirmation of the financial statements and in deciding whether the project management has ensured regulatory compliance and whether public investment projects have achieved efficiency and effectiveness. 35 experienced auditors rated the inherent risk of the material audit content for the investment cost settlement process as high (86%), the control risk as medium (51%), and the detection risk as low (11%). Consequently, the scope of the auditor's audit evidence collection is at a high level to ensure the integrity of the audit content, validating the finalization report for the completed project at 89% (Section F, [Table 7](#)).

The risk assessment results assist the auditor in selecting the appropriate audit procedures to detect material misstatements in the finalization report of the project. Nevertheless, this step-by-step risk assessment procedure has not yet provided the auditor with a premise for identifying the limitations of the project management control system that impact legal compliance and the achievement of project objectives. As a result, residual risk (Section G, [Table 7](#)) is the premise for determining the unachieved assurance level. Continuing with the preceding illustration, the residual risk for the audit content confirming the completed project balance sheet is 7% (Line G, [Table 7](#)), indicating that the auditor must conduct additional control tests to obtain audit evidence with a confidence level of at least 7%. The implementation of residual risk determination aims to supplement the limitations of the RBA process for auditing financial statements when applied to auditing public investment projects.

Table 7. Auditor's risk assessment results

	Content	Project planning	Design estimate	Contractor selection	Project management	Investment cost management	Finalization of completed projects
A	Auditor's assessment of material deviations before considering project management controls	Expect a lot of material deviations	Expect a lot of material deviations	Expectations less materially deviate	Expect some material deviations	Expect some material deviations	Expect some material deviations
	Inherent risk score (IR)	24	29	11	18	18	30
	Inherent risk ratio	67%	81%	30%	51%	51%	86%
	Level of inherent risk	High	High	Low	Medium	Medium	High
B	Evaluating the effectiveness of project management controls in preventing or detecting material deviations	High	Medium	Low	Medium	Medium	Medium
	Control risk score (CR)	14	18	15	17	17	18
	Control risk ratio	39%	51%	43%	49%	49%	51%
	Level of control risk	Low	Medium	Low	Medium	Medium	Medium
C	Risk of material misstatement (IRxCR)	26%	42%	13%	25%	25%	44%
D	The acceptable risk level of the auditor (AR)	willing to accept low audit risk	willing to accept low audit risk	willing to accept low audit risk	willing to accept low audit risk	willing to accept low audit risk	willing to accept low audit risk
	Audit risk ratio	5%	5%	5%	5%	5%	5%
	Audit risk	Low	Low	Low	Low	Low	Low

	Content	Project planning	Design estimate	Contractor selection	Project management	Investment cost management	Finalization of completed projects
E	Scope of evidence that the auditor needs to collect for misstatements in financial statements	Medium	High	Low	Medium	Medium	High
	Detection risk ratio (DR=AR/IR CR)	19%	12%	39%	20%	20%	11%
F	Level of detection risk	Medium	Low	High	Medium	Medium	Low
	The minimum level of confidence to be achieved when performing detailed tests applicable to the validation of financial statements of a public investment project (1-DR)	81%	88%	51%	80%	80%	89%
G	The minimum level of confidence is to be achieved when performing tests of controls to assess the effectiveness of the internal control system in ensuring legal compliance and ensuring that the project reaches the defined point and efficiency. determined by residual risk ratio (RR=CR-IRxCR)	13%	10%	30%	24%	24%	7%

Source. Developed from the audit risk model by [Arens et al. \(2020\)](#)

The risk assessment results are shown in [Table 7](#). (i) demonstrate the audit contents for the preparation, evaluation, and approval of design cost estimates, and (ii) verify that the finalization report for the completed project has the lowest detection risk. Therefore, the audit sample collection requirements are the greatest. There are three significant audit contents, and the majority of auditors assess the risk of detection to be medium, corresponding to the selected sample at a medium level: (i) project formulation; (ii) project management; and (iii) cost management. The auditor's risk assessment results correspond with the audit findings stated in the SAV audit reports. The auditor focuses on the design estimation and investment costs in the project finalization report because the design estimation process positively correlates with the investment cost item's accuracy. This means that the quality of the design is not guaranteed, which can result in an inaccurate determination of the value of the project estimate and an inaccurate estimation of the tendering package. On the other hand, a preliminary assessment of these two processes will provide evidence to assist the auditor in determining the scope of the remaining material audit contents, given that the six projects mentioned above management processes are interdependent and interconnected within the project management cycle.

For contractor selection, a contract is executed with the highest assessed detection risk and the lowest evidence collection (smallest sample size). This outcome suggests that investment project auditors evaluate the risk of material misstatement when selecting and contracting work with low inherent risk and control risk. Therefore, the danger of detection is anticipated to be high. Most recent violations in the administration and implementation of public investment projects in Vietnam about bidding, particularly the procurement of medical equipment, drugs, and school equipment, render this result inconsistent across SAV's operational practices. The inconsistency between the investment project auditor's judgment and the practice of audit risk assessment suggests that: (i) Investment project auditors are unable to detect illegal acts due to collusion among project participants; and (ii) the high quality of audits of implemented investment projects cannot be guaranteed due to the lack of appropriate audit procedures that help detect violations of procurement law, such as verification, third-party reconciliation, or procedures to detect tampering. This procurement contracting procedure has the highest

residual risk among the six project management processes. This suggests that the risk of public investment projects for the tendering process and contracting is subjectively dependent on the owner's project implementation management.

Consequently, the risk assessment procedures for identifying material misstatements do not indicate a potential for fraud or "collusion" between the parties. Although the risk of fraud during the tendering process and contract signing is quite common, there is a lack of effective audit procedures to collect sufficient and appropriate audit evidence to identify "collusion" practices. This indicates that the disparity between the auditor's responsibility in investment projects and society's expectations is still narrowing (Dang & Nguyen, 2021).

5. Conclusion and policy implications

The auditing strategy for a public investment project is determined by the project's nature and specific characteristics. The process begins with a risk assessment to determine what is most important; in an audit of an investment project, if risks materialize, they will hinder the achievement of investment objectives. Audits of investment projects, such as audits of financial statements, require a unified theory of risk classification. This study examined the application of the audit risk model in SAV's audits of public investment projects. It proposed an audit risk model inherited from RBA and applied it to audit financial statements.

The first objective of this study is to determine how auditors evaluate risk in the audit of public investment initiatives. We conducted an analysis. Analysis of 25 audit files revealed that SAV has used RBA in audits of public investment projects since 2019, but primarily to corroborate the accuracy of a project's financial data. According to research, state auditors have identified six significant audit contents in audits of public investment projects. However, the selection of audit content is contingent on the auditor's risk assessment results during the audit preparation phase and the user's needs. No single risk assessment method exists for selecting auditable material. The risk assessment results continue to rely heavily on the auditor's professional judgment. This finding provides evidence for both perspectives; the audit method is not merely technical (Westerdahl, 2004) but also dependent on the social context (Kirkham, 1992).

The research aims to create the audit risk model used in audits of public investment projects based on financial statement audit methodology. We interviewed thirty-five state auditors to develop an inherited risk assessment model from the theory of auditing financial statements. The research findings demonstrate that applying RBA in the audit of financial statements can also be applied to audit investment initiatives. We propose that RBA should be used to evaluate legal compliance and that it should be used to identify the limitations of public investment initiatives due to a lack of suitable guidance. The risk assessment results for material audit content differ from the status of law violations on bids for public investment projects during 2018-2022. Determining the level of assurance corresponding to the audit of legal compliance and assessment of the effectiveness and efficiency attained in public investment projects necessitates the addition of a residual risk component to the RBA model.

This finding makes three theoretical contributions to the application of RBA. First, RBA increases audit efficiency more than the conventional audit method. Second, RBA provides auditors with an excellent orientation in auditing practice, enhancing audit quality. Thirdly, according to the proposed audit risk model, auditors can reduce legal risks associated with failing to detect law violations in managing and implementing the owner's project by conducting audits promptly.

The proposed audit risk model provides the auditor with a tool for consistent application in public investment project audits and practical application in various audits of investment projects. In addition, the risk matrix table incorporates quantitative assessment (risk percentage) to help auditors gain experience in risk assessment, which will be useful for future audits of similar projects.

This study has limitations, such as the need for many Vietnamese state auditors to update best practices for conducting audits. In addition, research on auditing methodologies must be expanded to determine if the application of RBA in audits of investment projects is feasible. Before the results of the present study can be generalized, additional research is required to investigate the impact of cultural factors and different contexts on the application of RBA in other supreme auditing institutions around the globe.

Reference

- Arens, A. A., Elder, R. J., E., H. C., & S., B. M. (2020). *Auditing and Assurance Services: An Integrated Approach* (17th ed.). Pearson Education – Prentice Hall.
- Arifianto, H., & Putra, I. S. (2019). Risk-Based Audit as a Strategic Tool for Improving Accountability in PSC System. In *SPE Annual Technical Conference and Exhibition*. OnePetro. <https://doi.org/10.2118/196068-MS>
- Bell, T., Marrs, F., Solomon, I., & Thomas, H. (1997). *Auditing organizations through a strategic-systems lens: The KPMG business measurement process*. KPMG LLP. <http://202.62.11.199/ebook-stie/ebook-akuntansi-manajemen/monograph.PDF>
- Castanheira, N., Lima Rodrigues, L., & Craig, R. (2009). Factors associated with the adoption of risk-based internal auditing. *Managerial Auditing Journal*, 25(1), 79-98. <https://doi.org/10.1108/02686901011007315>
- Corsini, R. J. (2002). *The Dictionary of Psychology* (1st ed.). Routledge. <https://doi.org/10.4324/9781315781501>
- Curtis, E., & Turley, S. (2007). The business risk audit–A longitudinal case study of an audit engagement. *Accounting, Organizations and Society*, 32(4-5), 439-461. <https://doi.org/10.1016/j.aos.2006.09.004>
- Dang, T. A., & Nguyen, D. K. N. (2021). Components constituting the audit expectation gap: The Vietnamese case. *The Journal of Asian Finance, Economics and Business*, 8(1), 363-373. <https://scholar.kyobobook.co.kr/article/detail/4010028308336>
- Dung, N. N. K., & Tuan, D. A. (2019). The study of audit expectation gap: The auditor's responsibilities in a financial statement audit in Vietnam. *Asian Economic and Financial Review*, 9(11), 1227-1254. <https://doi.org/10.18488/journal.aefr.2019.911.1227.1254>
- ECA. (2013). *Guideline on risk assessment in performance audits*. European Court of Auditors. https://www.eca.europa.eu/Lists/ECADocuments/GUIDELINE_RISK_102013/GUIDELINE_RISK_102013_EN.pdf
- Eilifsen, A., Knechel, W. R., & Wallage, P. (2001). Application of the business risk audit model: A field study. *Accounting Horizons*, 15(3), 193-207. <https://doi.org/10.2308/acch.2001.15.3.193>

- Esmail, Z. M., & Haque, S. I. (2022). The Influence of the Business Risk-Based Auditing Application on the Audit Process: An Empirical Investigation in the Yemeni Context. *Journal of Business Strategy Finance and Management*, 4(2), 214. <https://doi.org/10.12944/JBSFM.04.02.04>
- Evans, J. S. B., & Stanovich, K. E. (2013). Dual-process theories of higher cognition: Advancing the debate. *Perspectives on psychological science*, 8(3), 223-241. <https://doi.org/10.1177/1745691612460685>
- Fogarty, J. A., Graham, L., & Schubert, D. R. (2006). Assessing and responding to risks in a financial statement audit. *Journal of Accountancy*, 202(1), 43-46. <https://www.proquest.com/openview/cebccf402f03c56d093becd646d187ab>
- Gendron, Y., & Bédard, J. (2001). Academic auditing research: an exploratory investigation into its usefulness. *Critical Perspectives on Accounting*, 12(3), 339-368. <https://doi.org/10.1006/cpac.2000.0429>
- Harrington, C. (2004). Internal Audit's New Role. *Journal of Accountancy*, 198(3), 65-70. <https://www.proquest.com/openview/ebe8c4c10adcb4b62b416a5a542a3273>
- Hay, D., & Corderly, C. (2018). The value of public sector audit: Literature and history. *Journal of Accounting Literature*, 40(1), 1-15. <https://doi.org/10.1016/j.acclit.2017.11.001>
- Hossain, S. (2010). From Project Audit to Performance Audit: Evolution of Performance Auditing in Australia. *IUP Journal of Accounting Research & Audit Practices*, 9(3), 20-46. <https://ssrn.com/abstract=1625133>
- Kirkham, L. M. (1992). Putting auditing practices in context: deciphering the message in auditor responses to selected environmental cues. *Critical Perspectives on Accounting*, 3(3), 291-314. [https://doi.org/10.1016/1045-2354\(92\)90006-D](https://doi.org/10.1016/1045-2354(92)90006-D)
- Koutoupis, A. G., & Tsamis, A. (2009). Risk based internal auditing within Greek banks: a case study approach. *Journal of Management & Governance*, 13, 101-130. <https://doi.org/10.1007/s10997-008-9072-7>
- Kwak, Y. H., Chih, Y., & Ibbs, C. W. (2009). Towards a comprehensive understanding of public private partnerships for infrastructure development. *California management review*, 51(2), 51-78. <https://doi.org/10.2307/41166480>
- Liggio, C. D. (1974). Expectation gap-accountants legal Waterloo. *Journal of contemporary business*, 3(3), 27-44.

- Porter, B. (1993). An Empirical Study of the Audit Expectation-Performance Gap. *Accounting and Business Research*, 24(93), 49-68. <https://doi.org/10.1080/00014788.1993.9729463>
- Prinsloo, J. (2008). *The development and evaluation of risk-based audit approaches*. (Doctoral Dissertation). University of the Free State. <http://hdl.handle.net/11660/1929>
- Puttick, G., & Van Esch, S. (2007). *The principles and practice of auditing*. Juta and Company Ltd.
- SAV. (2005). *Decision No. 37/2005/QH11 dated 14 June 2005. State audit law*. National Assembly of the Socialist Republic of Vietnam. <https://vanbanphapluat.co/law-no-37-2005-qh11-of-june-14-2005-state-audit-law>
- SAV. (2020a). *Promulgated under Resolution No. 999/2020/UBTVQH14 dated 16 September 2020. Development Strategy of the SAV in the period of 2021-2030*. The State Audit Office of Viet Nam. <https://www.sav.gov.vn/en/Pages/strategy.aspx>
- SAV. (2020b). *Report on detecting and dealing with corruption through audit - Achievements, lessons learned, theoretical issues drawn and practical problems posed*. The State Audit Office of Viet Nam.
- SAV. (2021). *Decision No. 47/QĐ-KTNN dated 14 January 2021. Guidance on auditing construction investment projects of the State Audit*. The State Audit Office of Viet Nam. <https://www.sav.gov.vn/Pages/vb.aspx?Item2=-1>
- SAV. (2023). *Decision No. 63/QĐ-KTNN dated 10 February 2023. Guidance on an audit approach based on risk assessment and materiality in the audit of investment project finalization statements*. The State Audit Office of Viet Nam. <https://www.sav.gov.vn/Pages/vb.aspx?Item2=5346>
- Schelker, M., & Eichenberger, R. (2010). Auditors and fiscal policy: Empirical evidence on a little big institution. *Journal of Comparative Economics*, 38(4), 357-380. <https://doi.org/10.1016/j.jce.2010.09.002>
- Spira, L. F., & Page, M. (2003). Risk management: The reinvention of internal control and the changing role of internal audit. *Accounting, Auditing & Accountability Journal*, 16(4), 640-661. <https://doi.org/10.1108/09513570310492335>
- VandenBos, G. R. (2006). *APA Dictionary of Psychology*. American Psychological Association. <https://psycnet.apa.org/record/2006-11044-000>

- Wallace, W. (1980). Instructor's Manual: The Economic Role of the Audit in Free and Regulated Markets. *Open Education Resources (OER)*, 1. <https://scholarworks.wm.edu/oer/1>
- Westerdahl, S. (2004). Structure" or "judgement"? A field study in auditing. In *Audit in Action workshop, Centre for analysis of risk and regulation, London School of Economics*.