# Evaluation of the Implementation of Risk-Based Internal Audit in the Perspective of ISO 9001 at Perumda Tirtanadi

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**Abstract**

This study aims to evaluate the application of risk-based internal audit in the perspective of ISO 9001 in Perumda Tirtanadi. Risk-based internal audits are seen as a strategic approach that can increase the effectiveness of internal control and support the achievement of organizational quality goals. This study uses a qualitative approach with a case study design. Data was collected through in-depth interviews, documentation studies, and observations of the implementation of internal audits. The results of the study show that Perumda Tirtanadi has begun to apply the principle of risk-based internal audit, especially in determining audit priorities, but its implementation is not fully standardized and integrated with the ISO 9001 quality management system. Internal audits still tend to focus on procedural compliance, while evaluation of the effectiveness of risk control and continuous improvement mechanisms is not optimal. This study recommends strengthening risk assessment methodologies, improving auditor competence, integrating internal audits with ISO 9001 quality indicators, and developing a structured audit recommendation follow-up system.

**Keywords**: Internal Audit, ISO 9001, Risk-Based Audit

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## Introduction

The development of an increasingly complex and dynamic organizational environment is driving a paradigm shift in the internal audit function [1], [2]. Internal audits are no longer positioned solely as compliance check activities (compliance-based auditing), but rather develop into a strategic function that provides added value through a risk-based internal audit approach [3]. This approach emphasizes that the planning and execution of audits should be focused on the areas that have the most significant level of risk to the achievement of organizational objectives [4]. Thus, limited audit resources can be used more effectively and relevant to management and key stakeholders of the organization. In line with these developments, the ISO 9001 quality management system standard has also undergone a significant conceptual shift through the strengthening of the risk-based thinking (RBT) . Since the enactment of ISO 9001:2015, organizations have been required to consider risks and opportunities as an integral part of planning, control, and evaluation processes [5]. However, various studies show that many organizations still have difficulty operating RBT consistently, particularly in linking risk identification with control measures and measurable quality performance indicators. In this context, the internal audit function has the potential to be an evaluative mechanism that bridges the gap between the concept of RBT and the operational practice of the quality management system [6].

The urgency of integration between RBIA and ISO 9001 is becoming increasingly relevant to public sector organizations and Regionally Owned Enterprises (BUMDs), including regional drinking water companies. Perumda Tirtanadi as a public drinking water service provider faces various strategic, operational, and financial risks, such as water loss (Nonrevenue water), revenue instability, procurement risks, and public accountability demands. A number of empirical studies on PDAMs in Indonesia show that internal audit plays an important role in strengthening internal control, but the audit approach used still tends to be administrative and compliance-oriented, so that the potential of RBIA as a performance improvement tool has not been utilized optimally [7]. Furthermore, research in the last five years has identified a number of factors that determine the success of the implementation of RBIA. These factors include the competence of internal auditors in conducting risk assessments, top management's support for the independence and strategic role of internal audits, the adequacy of resources, and the existence of a structured audit recommendation follow-up mechanism. These studies confirm that without the support of these factors, RBIA tends to become a procedural formality and does not have a significant impact on process improvement or organizational performance [8], [9].

From the perspective of professional practice, Institute of Internal Auditors (IIA) through various practice guides and the latest global standards affirm that the RBIA is an ongoing process that must be integrated with organizational governance and risk management systems [3]. Risk-based audit planning demands not only initial risk mapping, but also periodic evaluation of changes in the organization's internal and external contexts [10]. In practice, the successful implementation of the RBIA is highly dependent on the organization's ability to translate the global guidance into internal policies and procedures that are appropriate to local sector and regulatory characteristics. On the other hand, empirical studies related to the implementation of ISO 9001 show that organizations that successfully implement risk-based thinking Effectively is an organization that is able to relate risk to core processes, performance indicators, and process owner responsibilities (Process Owners). Integration of risk into the cycle Plan–Do–Check–The Act (PDCA) has been proven to improve the consistency of quality control and encourage continuous improvement. In the context of drinking water companies, this means that technical, operational, and financial risks must be translated into measurable performance targets and systematically monitored [6].

Technological developments and audit methods also provide new opportunities in strengthening the RBIA. Current literature recommends the use of operational data and simple analytical tools to support the risk assessment process and audit follow-up monitoring [11], [12]. The use of a risk dashboard and recommendation tracking system allows the internal audit

function to provide more timely and evidence-based information to management. This approach is considered relevant for organizations with limited resources, including BUMDs, because it can increase the effectiveness of audits without requiring complex technology investments.

Based on this description, it can be concluded that the evaluation of the implementation of risk-based internal audit in the perspective of ISO 9001 in Perumda Tirtanadi is important academically and practically. This study is expected to be able to provide an empirical picture of the maturity level of the implementation of RBIA, its conformity with the risk-based thinking principles of ISO 9001, and the factors that affect its effectiveness. In addition, the results of the research are expected to provide applicable recommendations for strengthening the internal audit system and quality management, thereby contributing to the sustainable improvement of accountability and quality of public services.

## Research Methodology

This research uses a qualitative approach with a case study method on Perumda Tirtanadi to gain an in-depth understanding of internal audit practices and their integration with ISO 9001. The data source in this study uses two data, namely primary and secondary data. The primary data is an in-depth interview with the head of internal audit, financial manager, operational manager, and several process owners. Direct observation of field audit activities and closing meetings (if possible). Meanwhile, secondary data is internal documents (audit plans, audit programs, internal audit reports, SOPs, quality manuals (if any)), financial reports, professional guidelines, and scientific literature.

The data collection techniques in this study are (1) semi-structured interviews, which are guidelines focused on risk identification procedures, risk assessment methodologies, audit planning, implementation, reporting, and follow-up; (2) document studies, namely crosschecking between the audit plan and audit realization, evidence of handling recommendations, and quality documents; (3) participatory observation in the audit process; and (4) triangulation of sources to increase the validity of findings. The analysis was carried out by thematic procedures, data reduction (coding), narrative presentation, and drawing conclusions through triangulation. Internal validity is strengthened through source member checking (provisional confirmation of results to key informants). Research ethics follow the principles of informed consent and anonymization of sensitive data.

## Results

The results of the study show that Perumda Tirtanadi has an internal audit function that runs formally and structured in the organization. The internal audit unit routinely prepares annual audit plans and carries out audit activities on strategic work units. Based on the analysis of the audit plan document and the results of interviews with internal auditors, it is known that the determination of audit objects has begun to consider risk aspects, especially operational risks and financial risks that have the potential to have a direct impact on the company's performance. This indicates that the basic principles of risk-based internal auditing have begun to be adopted, although they have not been fully implemented in a systematic and standardized manner. The risk identification process at Perumda Tirtanadi is generally carried out through internal discussions between auditors and work unit management, taking into account previous audit experience, previous audit findings, and operational issues that often arise. The most commonly identified risks include the risk of water loss (non-revenue water), the risk of managing customer revenue, the risk of procurement of goods and services, and the risk of compliance with internal procedures. However, the results of the study found that the risk identification and assessment process has not been supported by standardized documented risk assessment methodologies, such as uniform impact and probability criteria. As a result, the level of risk between work units is often assessed subjectively and depends on the perception of the auditor or the management of the relevant unit.

From a risk-based internal audit perspective, this condition shows that the implementation of RBIA in Perumda Tirtanadi is still in the early to medium stage. Internal audits have used risk as a consideration in determining audit priorities, but have not fully integrated measurable and consistent risk assessments into the entire audit cycle. These findings are in line with the results of previous research which stated that many public sector organizations are already familiar with the concept of RBIA, but face challenges in methodological aspects and consistency of implementation, especially at the planning stage of risk-based audits.

Viewed from the perspective of ISO 9001, especially the principles of risk-based thinking, the results of the study show that the integration between internal audit and quality management systems has not been optimal. Several standard operating procedures have been available and used as the basis for audit audits, but the linkages between process risks, quality performance indicators, and audit plans have not been systematically established. Internal audits tend to assess compliance with existing procedures, but have not consistently evaluated the effectiveness of risk control in the context of achieving organizational quality goals. Thus, internal audit has not fully functioned as an evaluation tool for the application of risk-based thinking as mandated in ISO 9001.

The results of the interviews also revealed that the follow-up mechanism for audit findings is still a major challenge. Although audit reports have been prepared and submitted to management, not all audit recommendations are followed up in a timely manner and monitored systematically. Some work units do not have a clear target time for completing improvement recommendations, and there are no specific performance indicators to measure the effectiveness of these follow-ups. This condition has an impact on the limited contribution of internal audit in encouraging continuous improvement and real improvement of organizational performance. In terms of supporting factors, the study found that there is a commitment of middle management to the implementation of internal audits, especially in supporting auditors' access to the necessary data and documents. In addition, the availability of relatively adequate operational and financial data is an important capital in the development of risk-based internal audits. However, the limited number of auditors and the uneven competence of auditors in conducting in-depth risk analysis are inhibiting factors in the comprehensive implementation of the RPIA. Internal auditors still need capacity building, particularly in terms of quantitative risk assessment, data analysis, and understanding of audit integration with quality management systems.

Overall, the results show that the implementation of risk-based internal audits in the perspective of ISO 9001 at Perumda Tirtanadi has been running at the initial implementation level, with the main focus still on compliance control and risk identification in general. To achieve a higher level of maturity, it is necessary to strengthen a standardized risk assessment methodology, closer integration between internal audits and ISO 9001 quality management systems, as well as a structured and measurable audit follow-up system [5]. These findings reinforce the results of previous research that stated that the effectiveness of risk-based internal audits is highly dependent on management support, auditor competence, and the organization's ability to translate audit findings into ongoing corrective actions [10], [13].

## Conclusion

This study concludes that the implementation of risk-based internal audit at Perumda Tirtanadi has been running formally, but is still at the initial to medium maturity level. Internal audits have considered risks in determining audit priorities, but have not been supported by standardized and consistent risk assessment methodologies. From the perspective of ISO 9001, the integration of internal audit with the principles of risk-based thinking is not optimal. Internal audits are still more oriented towards procedural compliance than evaluating the effectiveness of risk control in supporting the achievement of quality goals and continuous improvement. The effectiveness of risk-based internal audits is influenced by auditor competence, management support, and audit recommendation follow-up mechanisms.

Weaknesses in the follow-up aspect cause audit findings to not fully contribute to improving organizational performance and accountability.

It is recommended that Perumda Tirtanadi develop a standardized risk assessment methodology as the basis for risk-based internal audit planning. The integration between internal audit and ISO 9001 quality management systems needs to be strengthened by linking audit findings to quality performance indicators and continuous improvement cycles. Improving the competence of internal auditors through risk-based audit training and understanding of ISO 9001 standards is an urgent need to strengthen the strategic role of internal audit. In addition, it is necessary to develop a structured and measurable audit recommendation follow-up mechanism so that audit results can have a real impact on improving organizational performance. Further research is recommended to use quantitative approaches or mixed methods to measure the relationship between the level of maturity of risk-based internal audits, the implementation of ISO 9001, and financial and service performance.

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