# Interplay of Operational Audit Practices, Sustainable Audit Methods, Training Quality and Operational Leak Prevention

**Engil Joy P. Pagapulaan**

**Master in Business Administration (MBA) Student of the Graduate School Lourdes College, Cagayan de Oro City**

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## ABSTRACT

Operational leaks remain a major concern for distribution companies due to their effects on efficiency, cost management, regulatory compliance, and environmental sustainability. This study examined the factors influencing operational leak prevention in a distribution company in Misamis Oriental, guided by Stakeholder Theory, which emphasizes ethical and transparent practices to protect stakeholder interests and organizational legitimacy. Using a descriptive-correlational design, data were gathered from 200 employees through an adapted five-point Likert scale questionnaire. Statistical tools included descriptive statistics, factor analysis and canonical correlation analysis (CCA). Findings revealed high employee perceptions across all variables, indicating that structured operational controls and sustainability-driven practices are actively implemented. Results showed that riskbased compliance auditing, integrated sustainability initiatives, and effective employee training work synergistically to minimize operational leaks. Canonical loadings (CCA) further demonstrated that consistent auditing enhances inventory control, reduces spoilage, and minimizes operational errors, supporting the rejection of the null hypothesis. The study highlights the importance of sustainable audit methods in improving operational efficiency, reducing errors, and promoting responsible resource utilization. Overall, the findings provide both empirical and practical insights for distribution companies in emerging markets aiming to improve sustainability and operational performance. Future research may explore additional factors such as organizational culture, employee engagement, and technological integration using longitudinal or mixed-method approaches.

**Keywords:** Internal auditing, Operational leak prevention, quality of training, sustainable audit methods

## THE PROBLEM

## INTRODUCTION

Auditing practices have progressed from simple error detection in financial statements to thorough assessments of organizational operation, especially in distribution companies. It has transitioned from detecting primary errors in financial statements to evaluating all aspects of an organization's operations; including its governance, risk management, and compliance activities. This transformation plays a major role in enhancing the confidence of stakeholders in the honesty and dependability of the company. However, internal auditing is still facing certain main issues such as the insufficient knowledge of very complex financial areas and the persistent risk of external pressures leading to and influencing the auditors' decisions (Johnson & Lee, 2022; Patel et al. 2023).

The main focus of internal auditing is on the determination of the overall condition of the organization through an in-depth examination of its operations, systems, and projects (Thompson, 2021). Although, there is a possibility that the audits will indicate that the financial statements are free of significant errors and due to such limitations, they can never be considered to be fully accurate (Garcia & Martinez, 2022). This is the reason why it is essential to work on enhancing both legal frameworks and accounting systems in order to make financial reporting and corporate governance more reliable.

They give the external auditors by providing good foundation and assurance based on facts and consulting services leading to improvement in the organization's operations (Institute of Internal Auditors [IIA], 2023).

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Internal audits carried out by quality officials measure operations with the help of internal standards and bring about gradual changes in governance, control and risk management (Hut Mossel et al. 2020). Besides financial risks, Internal auditing and auditors also considers other sustainability issues such as reputation development environmental impact, and human resource management (Williams et al. 2021; Chen & Zhang, 2022). Identifying and fixing deviations in time can be easily done through an efficient internal audit plan.

Operational audits are different from departmental or financial audits in that they study the full business processes in order to raise the level of effectiveness as a whole. As the result of strategic management, strategic audits monitor internal and external environments, assess performance and carry out changes (Rodriguez & Kim, 2023). Success on the internal auditing by auditors is largely credited due to a thorough and robust follow-up and an evaluation over a period of time. This research study investigates how operational practices are associated and implemented via a distribution company in Misamis Oriental.

Effective internal audit strategies are vital for identifying and correcting deviations preemptively. Unlike departmental or financial audits, operational audits examine entire business processes to boost overall effectiveness. Strategic audits, as the culmination of strategic management, track internal and external factors, evaluate performance, and implement corrections (Rodriguez & Kim, 2023). Success on the company's internal controls are well-anchored on rigorous followup and strict assessment.

Although sustainability in auditing is becoming more widely acknowledged, there is still a significant knowledge gap regarding the integration of operational leak prevention aspects, especially in distribution situations. Although the emphasis of traditional auditing has been on financial statement risks, recent studies advocate a more holistic approach to risk assessments, which consider the operational, strategic, and compliance factors (Knechel et al., 2017). To identify new vulnerabilities in the midst of sophisticated fraud, auditors must use advanced analytics and industry knowledge (Glover et al., 2021). According to recent studies (Smith et al., 2021; Alvarez & Gupta, 2022), there is a lack of literature on the function of auditing on preventing leaks, and distribution companies are particularly vulnerable to supply chain disruptions and data breaches. Sealing this gap gives the information on how the auditing can be used to minimize operational leaks.

These particular vulnerabilities of a distribution company with limited resources in Misamis Oriental are the basis for the study's context and purpose. This site was chosen as it is representative of how the region depends on distribution networks as the economic stability factor, yet it is also at risk of leaks due to old infrastructure and human factors. The focus on this field will enable the study to provide tailor-made and practical solutions to bridge this gap that can enhance sustainable corporate practices and shape laws on similar cases. Given that worldwide research frequently ignores regional subtleties in emerging economies, this decision is motivated by the need for localized insights (Fernandez et al., 2023).

## THEORETICAL AND CONCEPTUAL FRAMEWORK

This paper explored two important aspects: Operational Audit Practices, and Sustainable Audit Methods, that are essential in averting any operational leakage on a distribution company based in Misamis Oriental. Auditors can improve efficiency and effectiveness in monitoring operations if sustainable auditing techniques are used alongside with efficient audit practices. As a result, these elements help to minimize operational leaks and reduce risks including resource losses, unauthorized disclosures, and compromised organizational integrity.

The Stakeholder Theory by R. Edward Freeman is used to support this study because it postulates that internal stakeholders, including shareholders, that upholds its functioning. The theory emphasize that efficiency and ethical processes minimize threats that may interfere societies or discredit authority. Additionally, Holistic Audit theory by Lawrence Sawyer holds that auditing should be seen as an integrated process that includes an organization's financial statements and continuously assesses an organization's adherence to industry norms, internal procedures, and regulatory standards. In order to help organization avoid noncompliance and ensure consistent regulatory compliance, these two theories highlight the cohesiveness of multiple organizational components and the necessity for auditors to evaluate an organization's entire health and sustainability.

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In this study, one of the variables considered was **Operational Audit Practices**. Operational audit practices are a pivotal and a core aspect of organizational oversight, focusing on the efficiency and effectiveness of operational processes. There are studies on distribution companies implementing operational audit practices are only limiting to distribution companies like dry goods or food chains, but it exists also in logistics and delivery companies, indicates that regular internal audits enhance process efficiency, reduce costs, and improve overall performance by identifying inefficiencies, and compliance issues in warehousing, transportation, and inventory management. This practice demonstrates measurable benefits in operational effectiveness and sustainability for distribution firms. Bushuyev et al. (2021) describes the operational audit as the "methodological and inclusive approach for the strategic processes of the company/organization." Also Sharaf et al. (2020) identify the extent of application of the management approach based on ABM activities with operational auditing practices, Also, the notions of Seow and Rahimifard (2021) supported by Bag et al. (2020), stated that “Operational Audit Practices facilitate structured auditing to detect inefficiencies across production, storage, and distribution phases, implementing corrective measures that curtail both tangible losses (e.g., material waste) and intangible ones (e.g., reputational harm), ultimately enhancing value chain efficiency and organizational performance. These existing studies and literature show that operational audit practices contribute to identifying factors that reduce costs, and identifying unnecessary factors for resources and its prevention from operational leaks.

Risk-Based Auditing Practices, is a core dimension on Operational Audit Practices, that connects to prevent the company from committing operational leaks, which is defined as "a method that connects internal auditing to the overall risk management framework of an organization.” Risk-based auditing refers to the strategic and proactive approach to the auditing process that prioritizes audit resources and efforts on areas presenting the highest levels of risk to an organization's objectives, rather than applying uniform or cyclical reviews across all operations. Based on the Holistic Audit theory, it formulates strategic goals and policies, such as strategic decisions and also encompasses implementation, evaluation, and control through procedures, programs, and budgets. Kereselidze & Kapanadze (2023), the risk-based auditing serves as a "tool for evaluating the audit strategy and refining the audit plan, and it facilitates a clear and accurate assessment of the scope of audits, ensuring reliable evaluation of audit outcomes." This provides chances to firms that may take advantage and hazards that they need to prevent.

Risk-Based Auditing implementation, including auditor competence, management support, IT capabilities, organizational culture, and independence, which collectively enhance audit effectiveness and quality (Lois et al., 2021). Moreover, risk-based auditing adopts a forward-looking perspective, incorporating dynamic risk assessments and integration with enterprise risk management frameworks to promote organizational resilience and informed decision-making, thus risk management in risk-based auditing can minimize the risk of financial reporting fraud and can guarantee the achievement of organizational goals and provide long-term benefits because the implementation of risk management in auditing is emphasized on control. This reinforces the study’s proposition that Operational Audit Practices, particularly through Risk Based Auditing, is a key factor in developing comprehensive and robust auditing on a distribution company.

Empirical researches demonstrate that effective process compliance practices, including inventory management, distribution protocols, and supplier adherence checks, positively influences efficiency like logistics, reduces noncompliance risks (Wang et al. ,2020) and supports sustainability goals in sectors such as pharmaceutical, biomass, and general distribution networks (Santos & Barbosa, 2022).

Process Compliance Practices contributes to operational leak prevention by fostering proactive identification of deviations and corrective actions in warehousing, transportation, and reverse processes. To add, Process Compliance Practices in companies demonstrates how they are moving towards automated and real time monitoring, integrating digital tools, and changing frameworks to be more adaptable ensuring that they are abiding the rules especially on the operations and its internal standards, even though there are more complexities and disruptions. Compliance through this path means not only checking after the fact but making sure it is part of the daily working processes through tools such as well-defined policies, handing down knowledge to employees, real-time monitoring, automated checks, audits, and continually adapting to changes in regulations or business environments. During the research conducted by Baker (2021) it was mentioned that the effective compliance of processes is based on the constant monitoring and evaluation of the process in order to detect

deviations and take corrective measures immediately. These researches reveal the direction of compliance becoming more proactive, technology-supported to control risks in multi-tiered networks, transparency and ethical operations being fostered. All of these findings clearly indicate that Process Compliance Practices is a strategic enabler of performance, regulatory alignment, and long-term viability, primarily in distribution companies.

Internal Control Process is another dimension of Operational Audit Practices in which a vital part of preventing Operational Leaks in distribution companies. This encompasses the policies, procedures, and practices that ensure the integrity of financial and accounting information, promote operational efficiency, and ensure compliance with laws and regulations. Studies from 2021 onward demonstrate that internal control processes, guided by frameworks such as Committee of Sponsoring Organizations of the Treadway Commission (COSO), are essential in distribution companies for preventing operational leaks, including inventory shrinkage, theft, misappropriation, and process inefficiencies that lead to financial and material losses. An efficient internal control system aids an organization in attaining its goals of delivering dependable financial information and protecting its assets and other important resources (Hoai, Hung & Nguyen 2022).

Furthermore, according to International Organization of Supreme Audit Institutions (INTOSAI) (2020), internal control is defined as the act of safeguarding resources from loss, misuse and damage, with the stated objective of preservation. Abiodun (2020) agrees that internal controls are established to protect assets, prevent theft and misuse of assets and detect and deter fraudulent actions.

In addition, Sibanda et al. (2020) state that internal control guarantees the accuracy, timeliness and compliance of financial reporting with the company's norms and regulations. Management is responsible for ensuring that internal control systems are strengthened to eliminate vulnerabilities and to prevent fraud and to prevent operational leaks. These findings from existing literature predicts the existence of internal audit but that it also helps to explain the role and responsibilities assigned to internal auditors by the organization and to the extent to which a company’s internal controls are effective in preventing fraud, adhering to rules, and enhancing operational efficiency.

Another variable that was assumed to influence the Operational Leak Prevention was Sustainable Audit Methods. This variable is involved by the use of various frameworks and techniques to measure a company's environmental, social, and governance (ESG) performance by combining conventional audit with sustainability-related indicators for ensuring future viability and compliance with regulations. In their recent article, Permata and Nugruho (2023) define sustainable audit methods as "the measurement conducted on different aspects of business such as environmental effect, social responsibility activities and governance procedures in order to give stakeholders with a holistic view of sustainability in the course of time."

These techniques frequently make use of metrics like life-cycle assessments, material analysis and stakeholder audits to measure effects and promote enhancements. Recent reports highlight their development with regard to world sustainability requirements. Dumay et al. (2022) surmised that the benefits of integrated auditing techniques will ultimately increase transparency in ESG reporting, The aforementioned authors mentioned that case studies of Australian companies demonstrate less green-washing auditing by stakeholders. Likewise, a study conducted by Mios et al. (2023) shows that European banks with sustainable audit practices enhance risk management and empirical evidence shows a 15-20% rise in the accuracy of ESG disclosures after auditing. This assertion and result highlight the concentration of sustainability in the form of auditing techniques or practices, an indication of the increasing nature of the environmental and social risks and opportunities that may be confronted by the companies/organizations.

Eco-friendly Practices entails sustainable activities such as use of renewable resources and minimization of pollution which is audited in accordance to standards such as ISO 14001. Recent research underscores their role in corporate resilience. For example, Li et al. (2021) found in their study that ecofriendly practices in Chinese manufacturing firms in China are being audited via Life Cycle Audit, reducing carbon footprints by 12-18%, as supported by longitudinal data from 200+ enterprises. Additionally, an analysis by Singh et al. (2022) shows that stakeholder-audited eco-friendly initiatives in Indian SMEs enhance market competitiveness, with survey results

from 150 firms indicating improved brand reputation, showing that implementing eco-friendly practices via Sustainable Audit Methods is important especially in distribution companies.

Meanwhile, Waste Reduction Practices focus primarily on eliminating waste through recycling and using circular economy models, these are checked at audits by means of waste diversion rates, among other metrics. This helps distribution companies to raise their economic level and at the same time advance ecological sustainability target. Kumar et al. (2021) point out that Indian textile industries after the implementation of the waste reduction policies audited in the top-level achieve 25-30% reduction, the data is sourced from 100 firms using lean auditing tools. Apart from the statement of Kumar and company, the research done by Zhang et al. (2023) examined the stories about blockchain adoption in global supply chains and revealed how Waste Reduction Practices is a big part of business and distribution companies to better waste tracking and reduced losses.

Energy Efficiency Practices, also a vital variable in this study, refers to deliberate actions and employing the latest technologies to use the least amount of energy as possible. Green Audits like these can be done by measuring the amount of energy used and the level of carbon dioxide emissions, often using smart technologies. In a study conducted in the public sector, it was found that changing the layout of a warehouse so as to reduce the travel of equipment and other sources of idling, and the use of integration of renewable energy sources such as solar panels on the premises are the main contributors to lower energy use and emissions (U.S. Department of Energy, 2023; NREL, 2023). Energy Efficiency Practices does not only limit the use of operational energy but also produce great savings in terms of costs and are responsible for major cuts to greenhouse gas emissions or CFCs in the long run, mostly through use of existing infrastructure to install renewables and smart controls (Menegaki et al. 2025).

The training quality of the staff in distribution companies refers to a welldesigned employee training on ESG topics, which is followed up by measuring how well the employees remember their lessons and perform their jobs. Some studies highlight its role in changing organizations, embedding training in an organization or institution is key if we are to steer and inspire people to acquire the skills and knowledge they need (Prabhu, et al. 2020). What is more, Gupta et al. (2023) have shown that audit of training programs of the Indian companies, significantly grow their levels of innovativeness, due to the improved ability to apply skills, as revealed by the pre-post assessments of 200 employees. Today, advancement and investing in training becomes a necessity.

The main focus of this paper is the Operational Leak Prevention, which is a pre-planned designed methods and tools that can help minimize unintentional losses, such as wastage of resources, exposure of confidential information, or breakdown of physical systems in the operations of a business. These measures are usually a part of the sustainability framework to raise the efficiency and compliance. As the dependent variable in this study, it is driven by different auditing methods and practices, that produces a decrease in environmental pollution and savings on the financial side. A study from Chen et al. (2021) confirms that manufacturing leak prevention audits help reducing operational losses by 15-20%, in a study of 150 Chinese firms with data coming from IoT-enabled sensors.

Furthermore, a parallel study conducted by Kumar et al. (2023) reveals that blockchain-based leak prevention in supply chains significantly reduces disruptions. Improved traceability and a 25% decrease in leak-related occurrences were shown in case studies of 200 international businesses. This makes operational leak prevention a measurable dependent variable, primarily through measurements based on real data from field trials and simulations, such as leak frequency, responding duration, and mitigation success rates.

Among its sub-variables, Reduction in Product Losses & Wastage refers to cutting down on inefficiencies at the levels of production, storage, and distribution; all of which lead to operational leak prevention as they are methods of stopping unintended outflows of resources or materials. Moving towards circular economy principles and conducting waste audits enables organizations to identify where leaks are happening, for example through spoilage or overproduction, thereby saving resources and cutting costs. This sub-variable also functions as a preventive measure, ensuring that operational processes are carried out in a way that avoids losses that might lead to larger systemic problems. The supporting literature highlights its importance through the data-backed evidence, as Kumar et al. (2021) after studying waste reduction techniques in 100 Indian textile firms found that product losses could be reduced by 25%, with the help of lean auditing tools.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

Moreover, Zhang et al. (2023) also made it clear how blockchains could be used in global supply chains. For example, they achieved 20% wastage reduction due to improved tracking and visibility that prevented leaks which in turn, increased safety and compliance and also reduced the risk of harm to employees and the community and at the same time, the increased visibility and accountability of operations strengthen the trust of other stakeholders. Minimizing errors in operation, this basically means that the actions and efforts (e.g. quality control training technology) aimed at reducing mistakes in the working processes which indeed lead to the prevention of operational leaks by making sure of the work accuracy and stopping the cases of failure that could lead to leaks. It is about establishing regular inspections and communication tools that help the early detection and correction of deviations so the operational integrity can be sustained. From the point of view of sustainable development, minimizing errors is a part of the larger scheme of efficiency and risk management in order to prevent spill-over effects of errors in most cases, that lead to the leakage of resources and safety hazards.

Recent studies provide empirical evidence of its advantages. Gupta and Sharma (2023) conducted a meta-analysis on lean methodologies in logistics which showed a 15% increase in efficiency and a 22% decrease in errors, supported by warehouse performance metrics. Further, Gupta et al. (2023) revealed through a study that training programs, when audited, helped reduce errors by 10% in Indian companies as employee assessments before and after training demonstrated higher level of skills and lesser number of leak incidents. Efficient operations basically mean making processes simpler and using technology to get the most out of the resources, which is very important to operational leak prevention because it leads to less waste and more reliable systems. This sub-variable's objective is to concentrate on performance metrics, such as comprehensive output and the consumption of energy, as a means to maintain operations without any unintended losses.

Strong proof of its function is provided by recent studies. According to data from 300 site locations, Wang et al. (2021) found that energy audits in U.S. industrial sectors result in efficiency increases of 10–15%. An investigation by Liu et al. (2021) demonstrated that AI-driven improvements in Chinese cities reduce inefficiencies by 18%, reducing leaks through improved grid management and predictive repair, corroborating Wang's findings.

The study then assumed that the distribution company’s operational audit practices, how they sustain their audit methods, and the quality of training they give to their employees would matter in terms of operational leak prevention.

Figure 1 depicts the schematic presentation of the study.

**Statement of the Problem**

This study sought to determine the association between Operational Audit

Practices, Sustainable Audit Methods and Quality of Training to Operational Leak Prevention of a distribution company in the province of Misamis Oriental, Philippines. Specifically, the researcher sought to seek the following questions as listed below:

What is the participants’ assessment of operational audit practices in terms of:

1.1 Risk-based auditing;

1.2 Process compliance practice; and

1.3 Internal control process?

What is the participants’ assessment of the sustainable audit methods in terms of:

1.4 Eco-friendly compliance practice; 2.2 Waste reduction practices; and

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

Energy efficiency practices?

What is the participants' assessment of the quality of training?

4. What is the participants' assessment of the operational leak prevention considering:

4.1 Reduction in product losses and wastage;

4.2 Minimize errors in operation; and

4.3 Improved Operational efficiency?

Are operational audit practices, sustainable audit methods and training quality significantly associated with the operational leak prevention of the company?

**Hypotheses**

Problems 1, 2, 3, and 4 are hypothesis-free. Based on Problem 5, the null hypotheses were tested at .05 level of significance:

**$Ho_1$:** Operational audit practices are not significantly associated with operational leak prevention.

**$Ho_2$:** Sustainable Audit Methods are not significantly associated with operational leak prevention.

**$Ho_3$:** Quality of training is not significantly associate with operational leak prevention of the company.

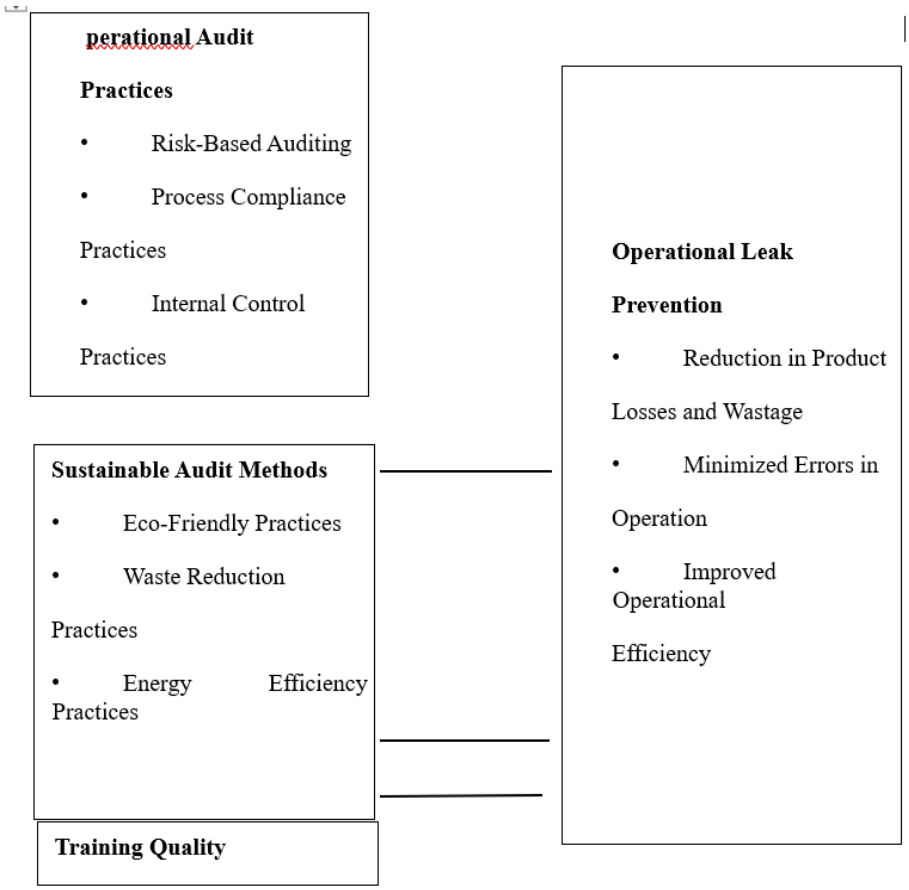



**Figure 1. Schematic Presentation of the Study Significance of the Study**

The significance of this study lies in optimizing strategic auditing of the internal auditors, which demonstrates the effective execution through an efficient strategy, and it highlights the strategy's integrity, especially in distribution companies that need to follow the standards for regulations and compliance. There are possible

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

beneficiaries of the research in distribution industries. The insights and implications on this study can benefit the distribution company involved. Through this study, these interested and involved parties can improve their company especially on strategic auditing abilities and the betterment of the distribution companies.

**Employees**. Since this study utilized different auditing strategies in order to have a smooth sailing auditing that can benefit the distribution industries/companies, findings would provide employees with a clearer understanding of effective operational and sustainable audit practices, which enhanced their skills, improved work efficiency, and strengthened their compliance with organizational standards.

**Internal Auditors.** The findings of this study would give way to internal auditors how their Auditing Strategies and Sustainable Audit Practices helps the distribution companies to improve auditing and how to avert Operational Leak Prevention.

**Scope and Delimitation of the Study**

This research aimed to explore the Interplay of Operational Audit Practices, Sustainable Audit Methods, Training Quality, and Operational Leak Prevention in a distribution company located in Misamis Oriental, based on the theories utilized in this study. The scope of the study was limited to a distribution company within the researchers' vicinity, with approximately 341 employees. The study was delimited to a company that conducted monthly auditing and did not include other sectors such as manufacturing, retail, or service industries. Data were collected through an online survey questionnaire using Google Forms during the researcher's data-gathering period. The researcher selected 200 participants from the company based on specified inclusion and exclusion criteria. One limitation of the study was the limited number of questions fewer than two under the dimension of Risk-Based Auditing, which might have affected the results. Although scales with only two indicators can still provide acceptable measurement of a construct when the items are carefully selected and demonstrate adequate reliability and validity (Taber, 2022), the very limited number of items in this dimension remains a noted constraint. This study's limitations and delimitation were essential to guarantee a targeted evaluation of the unique difficulties and procedures faced by the distribution industry.

**Definition of Terms**

The following terminologies are being found and used in this study. These terms are defined operationally and contextually.

**Operational Audit Practices**. This pertains to systematic evaluation of a company's operational processes, procedures, and performance to ensure efficiency, effectiveness, and compliance with established standards and regulations. In the context of this study, it comprised: risk-based auditing, process compliance practices, and internal control practices.

**Risk-Based Auditing.** This is referred to as the risks that could impact an organization's ability to achieve its objectives. It prioritizes audit resources and efforts based on the risk associated with various organizational processes, activities, or areas.

**Process Compliance Practices.** This term refers to promoting

consistency, accountability, and transparency in an organization's activities, minimizing non-compliance risk and enhancing overall operational efficiency **Internal Control Process.** This is defined as an approach organizations use to design, implement, and maintain internal controls to ensure the effectiveness and efficiency of operations, the reliability of financial reporting, and compliance with applicable laws and regulations.

**Operational Leak Prevention.** This refers to strategies, practices, and precautionary measures that organizations adhering to identify, mitigate, and eliminate leaks or losses in their operational processes. These

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

leaks can exhibit in various forms, that includes financial discrepancies, inventory losses, inefficiencies in supply chains, and wastage of resources. This comprised the following:

**Reduction in Product Losses and Wastage.** This refers to the **practice that is important for refining operational efficiency, reducing costs, associating areas where product losses and waste occur, and promoting sustainability.**

**Minimizing Errors in Operation.** This refers to shrinking down errors, auditors can help organizations boost their processes, enhance accuracy, and promote overall operational effectiveness.

**Improved operational efficiency.** It refers to the systematic strengthening of an organization's ability to develop output while minimizing input resources, achieved through the optimization of processes, waste reduction, elimination of redundancies, and strategic allocation of resources to deliver higher quality products or services at lower costs and with greater speed, that resulting in enhanced productivity, reduced operational expenses, and exceptional organizational performance.

**Sustainable Audit Practices.** This refers on auditing methods and approaches incorporating sustainability principles into evaluating an organization's operations, processes, and performance.

**Eco-friendly Practices.** This refers on integrating environmental considerations into the auditing process, ensuring that organizations comply with financial and regulatory standards and adhere to environmental sustainability principles.

**Waste Reduction Practices.** This referred to a practice that focuses on enhancing operational efficiency, reducing environmental impact, and promoting sustainability by ensuring that resources are used effectively and waste is managed responsibly.

**Energy Efficiency Practices.** This referred on enhancing the overall efficiency of energy use within an organization, leading to reduced environmental impact and operational costs.

**Quality Training**. This referred to an essential for ensuring that employees acquire the skills and knowledge needed to perform their jobs effectively, leading to improved performance and productivity within the organization. It encompassed foundational and structured learning programs, progressive skill development initiatives, and a performance-based discipline that is designed to enhance employees' competencies, adaptability, and work efficacy.

## REVIEW OF RELATED LITERATURE AND STUDIES

This chapter presents existing literature and related studies about the effectiveness and the Interplay of Operational Audit Practices, Sustainable Audit Methods to prevent Operational Leak Prevention on a distribution company in Misamis Oriental.

### Operational Leak Prevention

Operational Leak Prevention applies to the strategies and practices that is implemented to identify, mitigate, reduce and eliminate leaks in different operational contexts, particularly in industries such as oil and gas, water management, and manufacturing. Effective Leak Prevention is crucial for minimizing environmental impact, reducing operational costs, and ensuring compliance with regulatory standards (Baker et al., 2020). An effective internal control system helps organizations safeguard assets and vital resources while providing reliable financial information (Hoai, Hung, & Nguyen, 2022). Additionally, the internal audit process identifies risks that could prevent the organization from reaching its strategic aims and objectives, warns management of risks to business processes, and proactively suggests enhancements to help mitigate those risks.

Considering the previous statement, the extent to which internal controls are effectively designed to guarantee the ongoing growth of the shifting competition. Having a functional internal control system is a good sense of

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

advantage, having detective, preventive, directive, corrective, or compensatory controls, and these functions are built to reduce significant mistakes, omissions, waste, intentional actions, and fraud that can adversely impact the company's performance (Quasim, 2021).

In addition, Vulley (2022) states that internal control systems are crucial for effectively and proficiently monitoring and evaluating a business's performance. The Degree of quality in identifying and reporting abnormalities and violations is proportional to objectivity, independence, and proficiency. At the same time, the success of compliance with rules and internal procedures, the authenticity of financial reporting, and the forestalling of assets should all be guided by concepts from the appropriate internal audit function regarding the efficiency and effectiveness of the operations (Farouk & Hassan, 2014). An effective internal audit helps management oversee the sufficiency of internal controls, reducing the effects of risks like fraud and the company's reputation. The main goal of the internal auditors is to help the company's operational units on managing its risk by identifying issues and recommending improvements that can help to enhance the organization or the company's current standing and the reputation of the internal auditors.

Finally, the existing literature and research has provided an in-depth discussion, which is relevant to the relationship between sustainable audit methods and operational audit procedures, and their vital roles in deterring operational leaks in the distribution companies and can be useful to a Misamis Oriental-based distribution company. To avoid leaks, study of operational leak prevention is aimed at emphasizing the importance of strategic audits to enhance organizational performance and ensure that the organization complies with its internal policies and legal requirements. In the end, this chapter's insights highlight the need for businesses to have strong auditing procedures that support both operational effectiveness and sustainable development objectives, guaranteeing long-term success in a constantly changing business environment.

**Operational Audit Practices**

This theme illustrates auditing to be a necessary and basic mechanism that can be used to measure and enhance its operational effectiveness, risk management and compliance, which is paramount in identifying and preventing leakage of distribution processes on distribution companies (either wastage of resources or erroneous procedures).

Operational audit practices are being designed and enhanced to measure the performance of an organization in fulfilling its operational goals and also provide the avenue to enhance the performance of an organization. Operational audits aim at critically evaluating the operations of an organization in a manner that focuses on the effectiveness and efficiency of the process.

Operational audits evaluate the adherence of an organization to standards in the industry, legal requirements, internal policies, and legal requirements. It is generally acknowledged that strategic auditing is a necessary and essential stage in comprehending a company's success. This is important given the transition in auditing practice landscape, as many organizations are moving away from traditional or old-school internal audits and moving on towards a more strategic methodology. The landscape of auditing underwent a paradigm shift as technological innovations, particularly in the realm of data analytics, revolutionized the audit process (Ali & Meah, 2021).

The streamline of auditing practices has gained motivation and attention during the industrial revolution, a period that is marked by the rapid growth and increasing complexity of businesses (Kotb et al., 2020). Effective management and strong internal controls are essential for preventing and reducing waste that could lead to financial losses for the company. Many companies are engaged in trading because the trading sector offers good prospects despite many failing to carry out their operations. Most of these failures are caused by organizations that are required to learn how to market themselves with other organizations and do not keep up with the modernization and advancements in the business sector (Ulya, 2022). This enables the business accomplish its goal by feeding a systematic and measured process for evaluating and improving the effectiveness of governance, control, and risk management standards.

The emergence of innovative technology has significantly changed auditing practices, especially in the areas of data analytics and automation (Lombardi et al., 2022). These days, auditors may quickly identify such dangers

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

and discrepancies by using sophisticated computing tools to analyze large amounts of financial data. Due to this shift, data-centric approaches and techniques in auditing have surfaced, emphasizing the ever-growing importance of leveraging data-driven insights in the auditing. field (Alharasis et al., 2023). It is impossible to overestimate the importance of audit procedures since they are crucial for encouraging the efficient use of internal auditing, increasing an organization's productivity, and bolstering a business's capacity to make wise strategic decisions.

According to He and Li's (2023) concept, a strategic audit is necessary to make sure that the organization's objectives, plans, and regulations are all in line. It is achieved by carefully evaluating both internal and external procedures and choosing the best ones. Because it assesses businesses' strategic directions and confirms that operational procedures are carried out successfully, it is significant to the auditing process (Kibrit, 2023).

Work performance, competence, objectivity, independence, and integrity are all part of internal audit quality. Moreover, it has been suggested that quality internal audits would be more responsive to risk management, and would offer the audit committee a stronger support. These aspects are critical in the impact of internal audit on risk management, governance, and control.

A comprehensive set of standards is followed by internal auditors to align with their accounting standard to make sure that all financial transactions are in order. This is to provide greater assurance to the user of financial statements of the quality of auditing reports.

**Sustainable Audit Methods**

To avoid sustainability leaks (including environmental harm or reputational damage) which adds to operating expenses in distribution businesses, this theme adds environmental, social, and governance (ESG) issues to auditing, mitigating long-term risks and ethical business.

Numerous perspectives have been used to analyze the relationship between audit and sustainability, emphasizing its difficulties, possibilities, and ramifications. It focuses how auditors assess ecological risks, and how environmental disclosures affect stakeholders' opinions and investment decisions.

Sustainable auditing provides the stakeholders with a holistic and fundamental outlook of the long-term viability of a company through its governance. processes, CSR initiatives, and the impact on the environment. This reflects the increasing awareness of organizations' social and ecological risks and opportunities and this highlights the incorporating sustainability factors into auditing procedures.

These methods aim to assess an organization's financial and operational aspects and environmental, social, and governance (ESG) impacts. The goal is to ensure organizations operate responsibly and ethically while contributing to sustainable development.

Environmentally, increased human and industrial impact on the surrounding ecosystems have resulted in environmental changes, which have developed into one of the most significant issues in this era. Hence, sustainability has emerged as a critical factor in achieving environmental balance (Yadav et al., 2021).

Sustainable auditing has become essential to the accounting profession due to the increasing awareness of environmental, social, and governance issues. For example, Jones and Solomon (2023) emphasize the need to improve the relevance and credibility of financial reporting by incorporating sustainability factors into auditing procedures.

Furthermore, according to Wang and Liu (2023), companies that emphasize transparency and sustainability by their auditing methods have the chance to gain the credibility and trust of investors, customers, and the stakeholders, in which it improves their reputation and competitive edge. Sustainable auditing includes assessing the company/organization's sustainable performance, including environmental aspects, social responsibility, and corporate governance standards.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

Green accounting for sustainable development is influenced by many external variables such as the enterprise's administrator's level of awareness, institutional and regulatory hurdles, the scale of the enterprise's operations, and other factors may all play a role (Agyemang et al., 2023). Ecological, social and financial metrics are commonly thought to be dependent on each other and therefore sustain ability is commonly described as a combination of the three. Companies have to report environmental information that gives the entire narrative of the company including how value is created, the business strategy, threats, risks and opportunities, and the performance of the business in relation to its strategic goals (Kalbouneh et al., 2023). Recent studies emphasized the importance of adopting a culture of transparency and accountability within organizations to overcome resistance to environmental auditing (Carson et al., 2020). Having a strong leadership commitment, a good stakeholder engagement, and incentives for sustainability performance can help to overcome organizational barriers to environmental auditing. In their research of the impact of market dynamics and investor preferences on business sustainability practices, Wang & Liu (2023) points out possible financial advantages of transparent and reliable sustainability reporting. Despite these technological developments, obstacles to the adoption of sustainable audits still exist, requiring coordinated efforts from businesses, politicians, and civil society to remove obstacles and promote a sustainable culture.

Organizations can use the knowledge gained through combining different research areas, adopting advanced technologies, and encouraging cooperation among different groups to increase their ability to use sustainable auditing methods effectively. As a result, such organizations can produce great social, environmental and economic impacts through their actions. Similarly, from an investment standpoint, investors nowadays focus more on the sustainability aspect of the company when they make decisions about investments. They perceive companies that have strong sustainable practices as not only more resilient but also as capable of creating value over the long term (Clarkson et al. 2020). In addition, the accounting profession is increasingly recognized the importance of sustainability, and its members are increasingly holding pro-environmental opinions (Tiggeman, 2020).

**Training Quality**

This theme pivots on employee development as a human capital factor, improving and optimizing employee skills in a distribution company setting to prevent operational leaks through better performance and error reduction in distribution workflows through rigorous training.

Increased operational efficiency is one of the key benefits of investing in training quality. When employees get thorough training, they become more skilful in performing their duties which results in less mistakes and more output. Human resource management recognizes training as a major factor and moreover, it is becoming more and more indispensable these days to develop the activities of the staff and support them both with their physical abilities and their kind of thinking towards different subjects and ideas mainly for the purpose of increasing productivity (Anwar & Abdullah, 2021). Employee productivity are highly influenced by well-designed training programs since they efficiently close skills gaps and adjust employees' abilities to reach the goals of the organization. Studies show that when training is well_designed and implemented, it not only equips employees with necessary technical skills but also improves critical thinking, problem_solving, and adaptability in dynamic work environments (Jones, 2020).

Training and development collectively assist in increasing the information provided, skills and the way that they think to show a result that can affect the organization and to motivate the employer to enter a competitive state (Sultan et al. 2020). This basic knowledge not only improves personal work output but at the same time, it facilitates the proper operation of the whole distribution company. Besides, a study by Nguyen (2022) revealed that ongoing training and development programs help build a learning culture, thereby supporting employee retention and making the organization more competitive. Training that is of high quality was also associated with higher staff morale because when employees see their company investing in their development, they are more willing to show greater commitment and loyalty (Lopez & Martinez, 2023). In fact, training is a set of activities aimed at the employees through which they are stimulated to alter their own way of thinking and to increase their current knowledge about certain issues (Othman et al. 2019). In addition, Khan & Abdullah (2019) point out that training is done to heighten the individual's skills and performance so they are able to meet the organization's requirements. Training quality can be viewed as a human capital strategic investment that develops

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

employees' capabilities, upgrades their levels of critical analysis, and implements standardized methods within a distribution environment.

By providing employees with the latest information, technical skills, has the ability to solve problems, top-notch training significantly decreases operational mistakes, cuts down on leakage, and increases overall efficiency of the workflow. This makes the workforce ready and willing to change, responsible, and committed to self-improvement that the organization can deliver the level of performance expected and will be able to respond satisfactorily to the changes in the operational and environmental challenges.

In summary, the quality of training in distribution companies is a critical investment that yields significant returns in operational efficiency, safety, employee retention, and adaptability, ultimately driving the success of the organization.

## RESEARCH METHODS

This chapter outlined the research design, participants and sampling utilized in the study, research instrument, validity and reliability of the instrument used, scoring procedure, data gathering, ethical considerations, and the statistical treatments of data that is engaged and utilized in this research study.

### Research Design

This research study used a descriptive-correlational design, in examining relationships among variables without manipulating them. According to Creswell and Creswell (2018), descriptive-correlational design generally permits the investigator to describe a state of affairs and to evaluate the interrelations between variables by means of statistical techniques. The study utilized Canonical Correlation Analysis (CCA) to determine how operational leaks affected the processes of a distribution company located in Misamis Oriental.

### Participants of the Study and Sampling Procedure

The data were collected from the company which distributed dry goods such as soap, kitchen items, shampoos, toothpaste, and other related products. These goods were supplied to shopping malls, groceries, and hypermarkets. The distribution company has a total of 341 employees. Using the Taro Yamane formula the sample size was 184. The study utilized 200 participants to cover possible outliers.

Simple random sampling was utilized. The participants were composed of currently employed staff members, such as managers, supervisors, sales agents, drivers, ISR encoders, audit staff, and warehouse supervisors and checkers in which meets the study's inclusion criteria. Employees who were on maternity leave, probationary staff with less than six months of service, and those unwilling to participate were excluded. The workforce ranges from laborers to skilled managers who prioritized reliability and efficiency. Employees manage high-risk areas such as inventory, revenue, and warehousing, which require continuous monitoring, while low-risk areas include corporate communications, minor expenses and equipment's concerns. Meanwhile, the study excluded employees on extended or maternity leave, and those unwilling to participate, as involvement was voluntary.

According to Makwana et.al (2023) this technique is commonly used in research studies to ensure that the sample is representative of the population and to minimize bias, The Taro Yamane Formula, named after the mathematician Taro Yamane, is a statistical sampling approach used to calculate sample sizes in research methodologies. It backs up in enhancing the precision of identifying which portion of a population to sample within an acceptable margin of error.

### Research Instrument

A researcher-made or structured questionnaire with various sources, via 5point Likert scale was used as a main instrument for data collection to achieve the necessary data for the most of this study. The questionnaire consisted

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

of questions on the company practices to prevent operational leak prevention. The Likert Scale is a rating scale that helped the participants gauge their attitudes or opinions. The questionnaire has 10 sections based on the given variable on this study organized and has its own reference for each questions which are relevant to the problem and the sources of the questions here are as follows:

For the Risk-Based Auditing, the notions of the questions were based on Institute of Internal Auditors (IIA) (2013). For Process Compliance Practice, from COSO (2013) and KPMG (2015)." For Section 3: Internal Control Process, questions are based from Moeller (2013) and AICPA (2017).

On the section of Eco-Friendly Compliance Practice, most of the items were retrieved from Chopra & Meindl (2016) and UNEP (2020). Additionally, Waste

Reduction Practices questions were derived from authors Arlbjørn & Vagn Freytag (2013), added by the ideas of Sarkis & Zhu (2018). For the questions under the sub-variable Energy Efficiency Practices, questions are retrieved by a study of Capehart et.al. (2016).

On the other hand, the items on the Quality of Training, were supported by the ideas of Noe (2017).

Meanwhile, on the items to measure the Operational Leak Prevention, Reduction in Product Losses and Wastages, were based on authors Kumar & Singh (2018). In addition, the questions about Minimizing Errors in Operation came from the ideas of Gunasekaran et.al (2015) & Rushton et.al (2017). As to Improved Operational Efficiency, the items were from Slack et.al (2020).

**Validity and Reliability of the Research Instruments**

The tool's credibility in this study ensured that the stability and reliability of the research instrument were validated by the panel of experts and subject-matter specialists, whose feedback and add-ons were integrated into the final version of the questionnaire for the survey in this study. After the questionnaire's revisions and feedback from the panel of experts in this study, A pilot test was conducted with at least thirty (30) participants and the instrument's internal consistency and reliability were evaluated using the Cronbach's Alpha Coefficient with a coefficient of 0.70 or higher considered acceptable (Nunnally & Bernstein, 1994; Hair et al., 2019).

Taber K. S. (2022) Further emphasized that despite criticisms, Cronbach's Alpha is still extensively used to evaluate internal consistency in questionnaires. The results showed both acceptable and high reliability across all constructs, namely Risk Based Auditing ( $\alpha = 0.846$) , Process Compliance Practices ($\alpha = 0.642$) , Eco Friendly Practices ( $\alpha = 0.697$) , Waste reduction practices ( $\alpha = 0.657$) , Energy efficiency practices ( $\alpha = 0.642$), Quality of Training ( $\alpha = 0.712$) ,

Reduction in product losses and wastage ( $\alpha = 0.673$) Minimized Errors in Operation ( $\alpha = 0.633$) & Improved Operational Efficiency ( $\alpha = 0.608$) indicating that no constructs required major revision. Immediately after the pilot testing stage, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were performed and measured using the real-time data from this study.

This study underwent Exploratory Factor Analysis (EFA), which used a data-driven approach to reveal the fundamental structure of the perceived variables and identify hidden constructs based on the actual responses of the participants, and also employed Confirmatory Factor Analysis (CFA) is hypothesisdriven type of method that are used to test a pre-specified theoretical model by verifying if the observed variables fit a defined factor structure (Hair et al. 2019).

Table 16 The study displayed the results of the Exploratory Factor Analysis (EFA) of Operational Audit Practices and the KMO value is 0.723, indicating outstanding sampling adequacy, while the Bartlett's test of sphericity was significant, $\chi^2$ (210) = 1109.025, $p < .001$, and consequent, the results provided strong justification for the extraction of latent factors using EFA.

**Table 16 Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity of Operational Audit Practices**

| Test | Value |
|---|---|
| **Kaiser-Meyer-Olkin (KMO) Measure** | 0.723 |
| **Bartlett's Test of Sphericity** | |
| Approx. Chi-Square | 1109.025 |
| Degrees of Freedom (Df) | 210 |
| Significance (Sig.) | 0.000 |

Table 16 presents the rotated component matrix obtained using principal component analysis with Varimax rotation. The results revealed a clear threefactor structure. All factor loadings exceeded the acceptable threshold of 0.50, supporting convergent validity (Hair et al., 2019). The factor structure was interpreted well and being consistent with theoretical expectations, anchored the adequacy of the measurement model for further confirmatory factor analysis.

**Table 17 Rotated Component Matrix (Varimax Rotation) of Operational Audit Practices**

**Rotated Component Matrix[a]**

| | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| ICP 4 | .698 | | |
| IPC 5 | .667 | | |
| IPC 6 | .629 | | |
| ICP 1 | .588 | | |
| ICP 3 | .576 | | |
| ICP 2 | .569 | | |
| IPC 7 | .545 | | |
| PCP 5 | | .713 | |
| PCP 6 | | .669 | |
| PCP 4 | | .647 | |
| PCP 3 | | .595 | |
| RBA 5 | | .473 | |
| PCP 7 | | | |
| RBA 7 | | | .647 |
| RBA 2 | | | .595 |
| RBA 4 | | | .585 |
| RBA 3 | | | .536 |
| RBA 6 | | | .472 |
| RBA 1 | | | .446 |
| PCP 1 | | | |
| PCP 2 | | | |

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

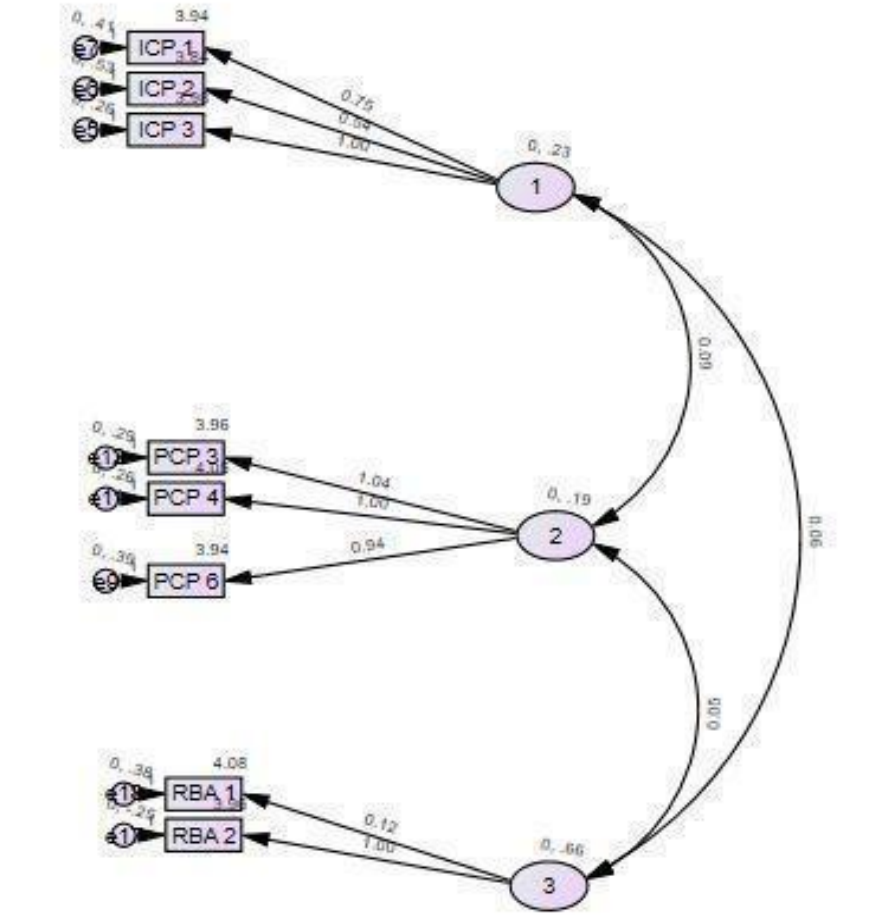
**a. Rotation converged in 6 iterations.**

Table 17 presents the model fit indices for the confirmatory factor analysis (CFA) of Operational Audit Practices. The results indicate that the measurement model achieved excellent fit across multiple criteria. In addition, the chi-square probability value was non-significant (p = .573), and the relative chi-square (CMIN/DF = .901) was

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

below the suitable threshold of 2.00 (Kline, 2016). The comparative fit index (CFI = .1.00), normed fit index (NFI = .902), and Tucker-Lewis index (TLI = 1.022) has exceeded their respective cut-off values, emphasizing a very good model fit (Hu & Bentler, 1999).

**Table 18 CFA Model Fit Indices for Operational Audit Practices**




CFA Table for Operational Audit Practices

| Criterion Fit Indices | Standard Value | Model Value |
|---|---|---|
| P-Value | >0.05 | 0.573 |
| CMIN/DF | <2.00 | 0.901 |
| CFI | >0.95 | 1.00 |
| NFI | >0.90 | 0.902 |
| TLI | >0.95 | 1.022 |
| RMSEA | <0.05 | 0.00 |

In addition, the Root Mean Square Error of Approximation (RMSEA = .0.00) was well below the recommended threshold of .05, confirming the adequacy of the measurement model. Overall, the CFA results support the construct validity of the measurement model and justify its use for subsequent structural analysis.

Table 18 also presents the KMO value of 0.774 indicates excellent sampling adequacy, meaning the data are highly suitable for factor analysis. The Bartlett's Test of Sphericity is significant ($\chi^2$ = 1224.572, df = 210, p < .001), confirming that the correlation matrix is not an identity matrix and that the items have sufficient correlations to proceed with factor analysis. Together, these results strongly support the appropriateness of conducting factor analysis on the dataset.

**Table 19 Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity of Sustainable Audit Methods**

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .774 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1224.572 |
| df | | 210 |
| Sig. | | .000 |

Table 19 also presents the rotated component matrix from principal component analysis using Varimax rotation. Component 1 included items EFCPs

1,2,3,4,5 & 7, with factor loadings ranging from 0.505 to 0.638, meanwhile EFCP 4 has only a factor loading indicating a well-defined construct; however, EFCP 6 has only .490 below usual factor loading but still sufficient. Component 2 comprised items WRP 1–WRP 7, with loadings between 0.465 and 0.501,

reflecting a coherent and sufficient construct. Component 3 consisted of items EEP 1–EEP 4, with loadings ranging from 0.505 to 0.549, indicating a consistent dimension, while EEP 5 has slightly below coherent factor loading with 0.494 factor loading and EEP 6 was excluded due to insufficient factor loading. All the items that were kept had loadings higher than 0.50, which is the suitable threshold, thus providing the support for convergent validity (Hair et al. 2019). The rotated solution was reasonable and was consistent with the theory, and the algorithm converged by the eighth iteration, so the factor structure is appropriate and stable in terms of the follow-up CFA or SEM analysis.

**Table 20 Rotated Component Matrix (Varimax Rotation) of Sustainable Audit Methods**

Here is your **Rotated Component Matrix** (Factor Loadings) presented in a clean table format:

| Variable | Component 1 | Component 2 | Component 3 |
|---|---|---|---|
| EFCP 7 | 0.638 | | |
| WRP 2 | 0.582 | | |
| EFCP 3 | 0.576 | | |
| EFCP 5 | 0.574 | | |
| EFCP 4 | 0.520 | | |
| EFCP 2 | 0.516 | | |
| EFCP 1 | 0.505 | | |
| EFCP 6 | 0.490 | | |
| WRP 5 | 0.485 | | |
| EEP 2 | | 0.583 | |
| EEP 4 | | 0.549 | |
| EEP 1 | | 0.505 | |
| EEP 3 | | 0.503 | |
| EEP 7 | | 0.501 | |
| EEP 5 | | 0.494 | |
| EEP 6 | | 0.525 | |
| WRP 4 | | 0.501 | |
| WRP 3 | | | |
| WRP 7 | | | 0.467 |
| WRP 1 | | | 0.463 |
| WRP 6 | | | 0.435 |

Extraction Method: Principal Component Analysis.

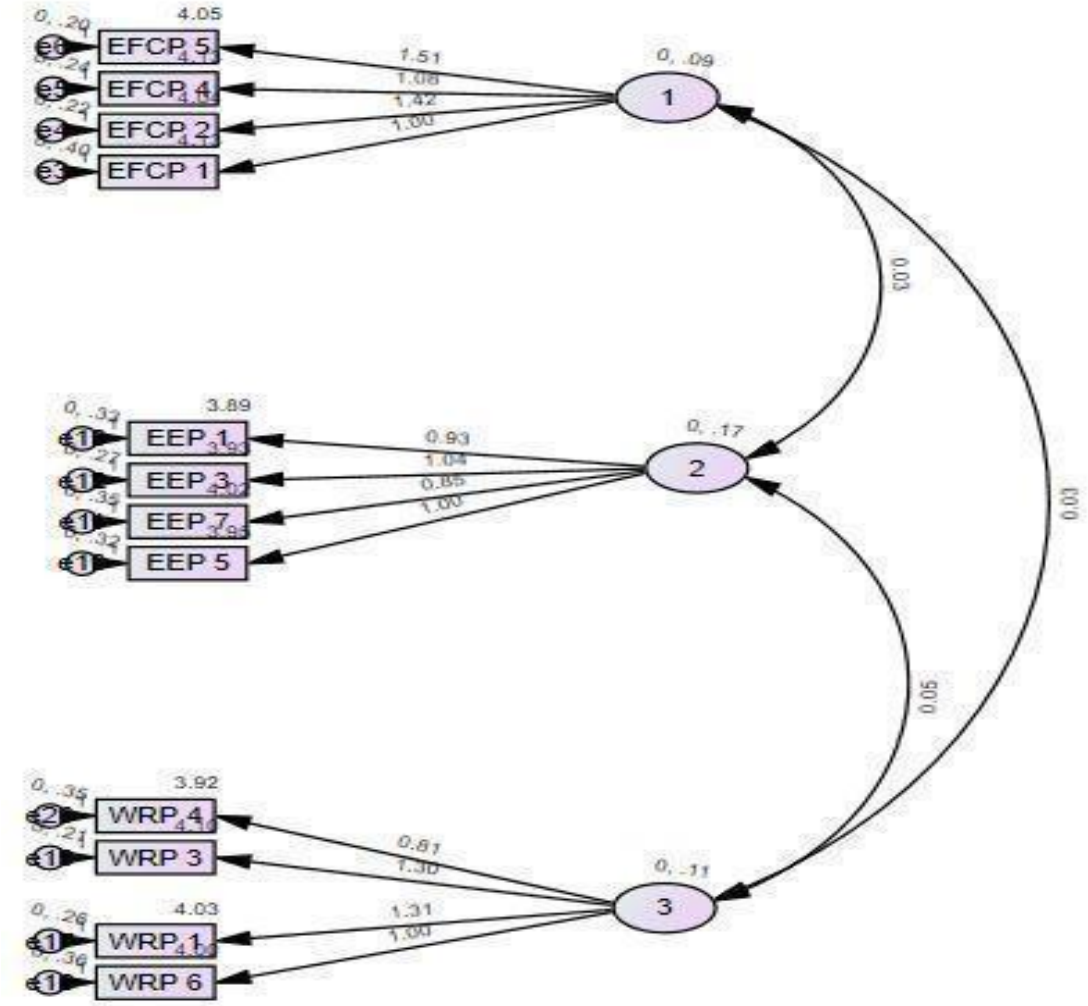
a. 3 components extracted.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

Table 20 presents the CFA model fit indices for the *Sustainable Audit*

*Methods*, indicating an excellent overall fit. The chi-square probability p-value was non-significant (p = .988), meeting the recommended criterion (p > .05) and suggesting no significant difference between the hypothesized and observed data.

**Table 21 CFA Model Fit Indices for Sustainable Audit Methods**




CFA Table for Sustainable Audit Methods

| Criterion Fit Indices | Standard Value | Model Value |
|---|---|---|
| P-Value | >0.05 | 0.988 |
| CMIN/DF | <2.00 | 0.609 |
| CFI | >0.95 | 1.00 |
| NFI | >0.90 | 0.918 |
| TLI | >0.95 | 1.082 |
| RMSEA | <0.05 | 0.00 |

Table 21 presents the KMO value of 0.781 indicates excellent sampling adequacy, the dataset is highly suitable for factor analysis. Bartlett's Test of Sphericity is significant ($\chi^2 = 252.538$, df = 21, p < .000), confirming that the correlation matrix is not an identity matrix and that the variables are sufficiently relevant and coincided for factor extraction.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

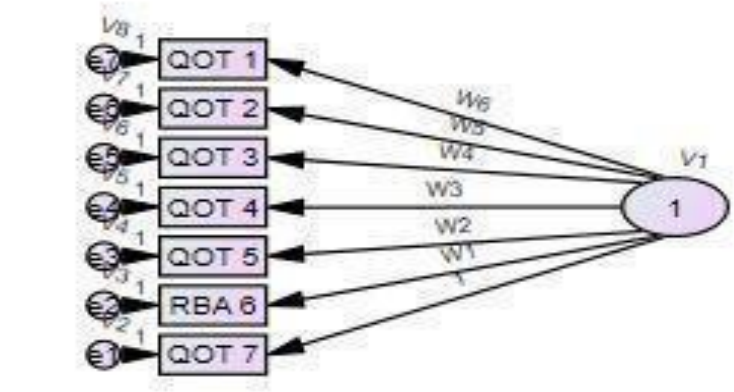
**Table 22 Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Quality of Training**

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .781 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 252.538 |
| df | | 21 |
| Sig. | | .000 |

Table 22 presents the CFA model fit indices for the *Quality of Training*, indicating an excellent overall fit. The chi-square probability p-value was nonsignificant (p = .161), meeting the recommended criterion (p > .05) and suggesting no difference between the hypothesized and observed data.

**Table 23 CFA Model Fit Indices for Quality of Training**




CFA Table for Quality of Training

| Criterion Fit Indices | Standard Value | Model Value |
|---|---|---|
| P-Value | >0.05 | 0.161 |
| CMIN/DF | <2.00 | 1.365 |
| CFI | >0.95 | 0.975 |
| NFI | >0.90 | 0.914 |
| TLI | >0.95 | 0.962 |
| RMSEA | <0.05 | 0.043 |

Table 23 presents the results of the Kaiser–Meyer–Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity of Operational Leak Prevention. The KMO value of 0. 740 indicates very good and coherent sampling adequacy, suggesting that the data are suitable for factor analysis and that the patterns of correlations among the variables are compact enough to yield reliable factors.

**Table 24 Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Operational Leak Prevention**

| KMO and Bartlett's Test | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .740 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1093.767 |
| df | | 210 |
| Sig. | | .000 |

Table 24 presents the component matrix obtained to evaluate the validity and reliability of the Operational Leak Prevention measurement model. Following the exploratory factor analysis, only items with strong and sufficient standardized factor loadings were retained to ensure a parsimonious and well-fitting construct.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

The Operational Leak Prevention was measured thru different dimensions. Dimensions RIPLAW 1,3,4,5,6 & 7, have standardized loadings ranging from 0.557 to 0.713, only RIPLAW 2 with the below standard loading but still sufficient with a range of 0.481, indicating strong indicator–construct relationships. The highest loadings were observed for RIPLAW 3 (.713) and RIPLAW 4 (.711), underscoring prevention on operational leak prevention. In addition, the dimension of IOF 1-7, which have standardized loadings that ranges up to .0526 - 0.703, denotes strong and convergent standardized factor loadings. And lastly, the dimension MEO 1, depicts sufficient loading of 0.458, while the other items MEO 2-7 has strong and consistent factor loading ranging from 0.566 to 0.696, hence indicate a strong and cohesive ecological construct.

**Table 25 Rotated Component Matrix (Varimax Rotation) of Operational Leak Prevention**

**Rotated Component Matrix[a]**

| | | | | |
|---|---|---|---|---|
| RIPLAW 3 | | .713 | | |
| RIPLAW 4 | | .711 | | |
| RIPLAW 6 | | .685 | | |
| RIPLAW 1 | | .609 | | |
| RIPLAW 5 | | .589 | | |
| RIPLAW 7 | | .557 | | |
| RIPLAW 2 | | .481 | | |
| IOF 4 | | | .703 | |
| IOF 6 | | | .675 | |
| IOF 3 | | | .664 | |
| IOF 5 | | | .628 | |
| IOF 2 | | | .590 | |
| IOF 1 | | | .552 | |
| IOF 7 | | | .526 | |
| MEO 3 | | | | .696 |
| MEO 4 | | | | .667 |
| MEO 5 | | | | .632 |
| MEO 2 | | | | .629 |
| MEO 6 | | | | .626 |
| MEO 7 | | | | .566 |

Component

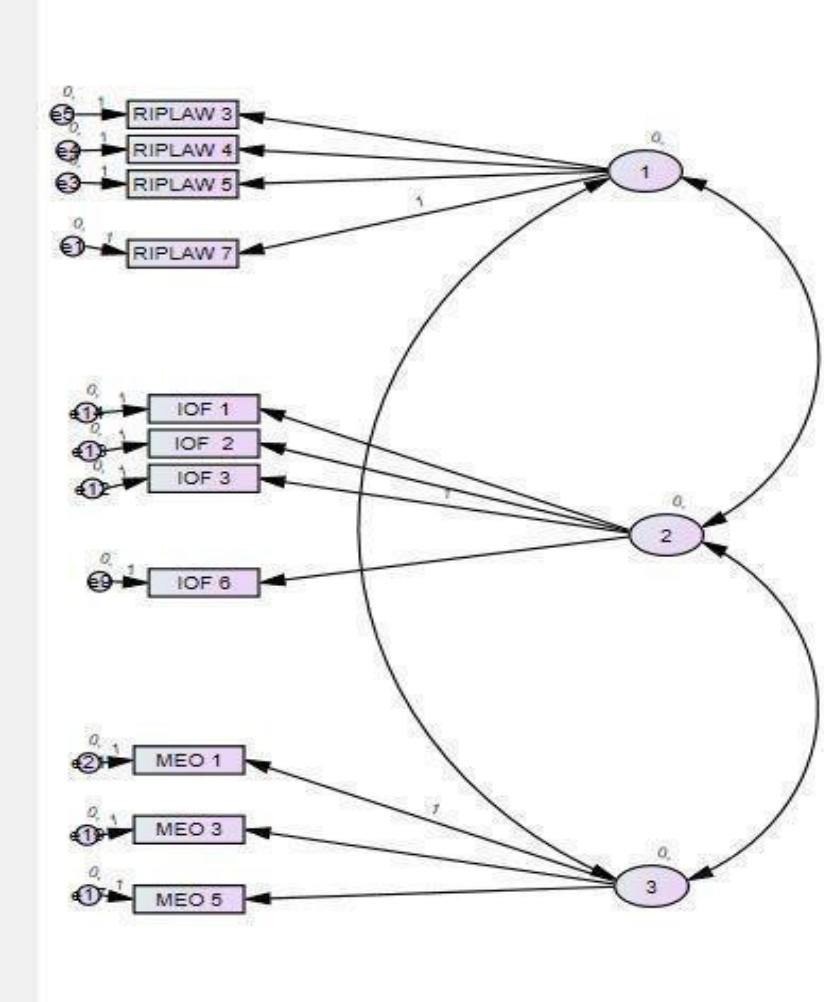
| | | | |
|---|---|---|---|
| MEO 1 | | | .458 |
| | 1 | 2 | 3 |

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 5 iterations.

Table 25 presents the model fit indices for the Confirmatory Factor Analysis (CFA) of Operational Leak Prevention. The results indicate that the measurement model achieved excellent fit across multiple criteria. Specifically, the chi-square probability value was non-significant (p = .909), the Root Mean Square Error of Approximation (RMSEA = .000) was below the stringent criterion of 0.05, indicating a close fit of the model to the population covariance matrix. In summary, these results indicate that the measurement model exhibits satisfactory goodness-of-fit, indicating that it is appropriate for further structural equation modeling and hypothesis testing.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

**Table 26 CFA Model Fit Indices for Operational Leak Prevention**




CFA Table for Operational Leak Prevention

| Criterion Fit Indices | Standard Value | Model Value |
|---|---|---|
| P-Value | >0.05 | 0.909 |
| CMIN/DF | <2.00 | 0.720 |
| CFI | >0.95 | 1.000 |
| NFI | >0.90 | 0.902 |
| TLI | >0.95 | 1.062 |
| RMSEA | <0.05 | 0.000 |

Table 26 presents the results of the Confirmatory Factor Analysis (CFA) conducted to assess the validity and reliability of the measurement model for the *Operational Audit Practices* construct.

Table 27 Results of Confirmatory Factor Analysis and Composite Reliability of Operational Aduit Practices and its Dimensions

| **Variable / Dimensions** | **Composite Reliability** | **Decision** |
|---|---|---|
| **Operational Audit Practices** | | **Acceptable** |
| 1. Risk Based Auditing | 0.846 | |
| 2. Process Compliance Practices0.642 | | |

Table 27 presents the results of the Confirmatory Factor Analysis (CFA) conducted to assess the validity and reliability of the measurement model for the Sustainable Audit Methods construct.

**Table 28 Results of Confirmatory Factor Analysis and Composite Reliability of Sustainable Audit Method and its Dimensions.**

| Variable / Dimensions | Composite Reliability | Decision |
|---|---|---|
| **Sustainable Audit Methods** | | **Acceptable** |
| 1. Eco Friendly Practices | 0.697 | |
| 2. Waste Reduction Practices | 0.657 | |
| 3. Energy Efficiency Practices | 0.642 | |

Table 28 presents the results of the Confirmatory Factor Analysis (CFA) conducted to assess the validity and reliability of the measurement model for the Quality of Training construct.

**Table 29 Results of Confirmatory Factor Analysis and Composite Reliability of Quality of Training and its Dimensions.**

| Variable / Dimensions | Composite Reliability | Decision |
|---|---|---|
| 1. **Quality of Training** | 0.712 | **Acceptable** |

Table 29 presents the results of the Confirmatory Factor Analysis (CFA) conducted to assess the validity and reliability of the measurement model for the Quality of Training construct

**Table 30 Results of Confirmatory Factor Analysis and Composite Reliability of Operational Leak Prevention and its Dimensions.**

| Variable / Dimensions | Composite Reliability | Decision |
|---|---|---|
| **Operational Leak Prevention** | | **Acceptable** |
| 1. Reduction in product losses and wastage | 0.673 | |
| 2. Minimized errors in operation | 0.633 | |
| 3. Improved operational efficiency | 0.608 | |

**Scoring Procedure**

The researcher gathered the study's data in a detailed and well-organized way and to assess participants' comprehension, the study employed the 5-point Likert scale found in the questionnaire:

| Scale | Range | Description | Interpretation |
|---|---|---|---|
| 5 | 4.51-5.00 | Strongly Agree | Very High |
| 4 | 3.51-4.50 | Agree | High |
| 3 | 2.51-3.50 | Neutral | Moderate |
| 2 | 1.51-2.50 | Disagree | Low |
| 1 | 1.00-1.50 | Strongly Disagree | Very Low |

**Data Gathering Procedures & Ethical Consideration**

The data commenced when the ethical clearance from the Research Ethics Committee of Lourdes College was sought. To ensure the integrity and safety of participants, a consent form was sent to the participants, who were informed about the objectives of the research study. Participants were oriented on the purpose of the study, questionnaire contents, and estimated completion time. Questionnaires were administered face-to-face or online, depending on the availability of the participants. Complete questionnaires were collected immediately to ensure high response rates. The researcher ensured that the participants' data were treated with utmost confidentiality and that were stored securely and accessed.

Kuhnt et al. (2025) highlights that ethical challenges and equity issues in development research frequently violate the Belmont Report principles (Respect for Persons, Beneficence, and Justice) when applied to research staff,

rather than only to study participants, with problems arising at structural, country-level, and individual levels such as insecurity, distress, and exploitation.

Respect for persons was observed in terms of giving the participants all the information about the study: its purpose, the objectives and methodology, by way of a written statement that was included in the consent form. To safeguard the confidentiality of the study, unique codes were assigned to responses to ensure no confidential information will leak via questionnaire.

All the data were kept in password-protected files which only the research team had access to and were retained for five years and then destroyed permanently. Participants also were told that they could decide to leave the study at any time without their decision leading to any penalty or negative consequence.

According to The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1979), the Belmont Principle is a crucial guideline to adhere to when conducting research on human subjects that upholds the best interests of the participants in terms of rights and well-being and ensures that the information remains confidential and secure.

The Belmont Principles primarily focus on these three pillars of ethics, which include respect towards people, beneficence, and justice. Respect for Persons emphasizes how crucial it is to acknowledge the autonomy and dignity of study participants.

To allow potential participants to make informed decision regarding participation without taking any risks, researchers should provide them with detailed information on the study, its objectives, procedures, risks and benefits.

This practice should be voluntary to avoid coercing and misguiding people to take part. This then becomes part of our duty as researchers to go an extra mile and ensure that these groups are not exploited or subjected to any form of severe harm. Beneficence, on the other hand, obliges researchers to maximize the possible benefits and minimize suffering to participants. Scientists have to critically balance the perceived benefits of their activity with the risks. The goal is to ensure that the benefits to participants or society outweigh any potential risks and the researchers should continuously monitor the welfare of participants throughout the study, making adjustments as necessary to mitigate risks and enhance benefits.

Lastly, Justice. The principle of justice addresses the fair distribution of the benefits and burdens of research.

This procedure is a provision or a safety measure for the participants' privacy, and in order to prevent loss, unlawful access, and security breaches, the data must be stored securely.

**Statistical Treatment of the Data**

The following statistical tools were employed to organize the data that were gathered:

For problems 1 to 4, it employed descriptive statistics such as frequency, percentages, mean and standard deviation to describe the participants' assessment of Operational Audit Practices, Sustainable Audit Methods, Training Quality and Operational Leak Prevention.

Whereas, Problem 5 used the Canonical Correlation Analysis (CCA) to determine whether the operational audit practices, sustainable audit methods and training quality were significantly associated with the operational leak prevention.

Prior to perform CCA on this problem, the Test of Normality, No Outliers and Test of Multi-collinearity was executed to support the validity of the results and it is attached on the Appendix A on page 112.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

## Presentation, Analysis, And Interpretation Of Data

This chapter includes the presentation, analysis, and interpretation of data gathered from the questionnaires distributed to the participants. This also contains the presentation of data in tabular form and their corresponding interpretations.

**Problem 1. What is the participants' assessment of the company's operational audit in terms of: Risk-based auditing: and, Process compliance practice?**

This presents the frequency, percentage, and mean distribution of participants' assessment of the company's operational audit in terms of risk-based auditing. The obtained overall mean of 4.02 that is categorized as High and the standard deviation of 0.49 represent the homogeneous impressions with rather low variability of the responses. The results imply that the company effectively employs the risk-based auditing methods, including prioritization of high-risk areas and the concentration of audit resources on a more operationally exposed process. Just

5.50% of them rated the practice as Very High, and 23.50% rated it Moderate. They all put it on the High category with 71 percent of them in the 3.51-4.50. The fact that none of the participants rated the practice Low or Very Low indicates that the staff members tend to have a positive attitude to the risk-based auditing methodology at the company. With the standard deviation of 0.49, the overall mean of 4.02, which is high, was calculated showing consistent perceptions with a relatively low response variability. Nevertheless, the existence of intermediate ratings means that there might be a variation in the implementation to all units.

**Table 1 Frequency, Percentage, and Mean Distribution of the Participants' Assessment of Company's Operational Audit in terms of Risk-Based Auditing**

| Range | Description | Interpretation | Frequency | Percentage |
|---|---|---|---|---|
| 4.51-5.00 | Strongly Agree | Very High | 11 | 5.50 |
| 3.51-4.50 | Agree | High | 142 | 71.00 |
| 2.51-3.50 | Neutral | Moderate | 47 | 23.50 |
| 1.51-2.50 | Disagree | Low | 0 | 0.00 |
| 1.00-1.50 | Strongly Disagree | Very Low | 0 | 0.00 |
| | | **Total** | **200** | **100.0** |
| | | **Overall Mean** | **4.02** | |
| | | **Interpretation** | **High** | |
| | | **SD** | **0.49** | |

**Specific Indicators M Description SD**

1. The audit process evaluates risks 4.08 Agree 0.63 linked to business operations.
2. High-risk areas are given priority 3.96 Agree 0.64 during audit planning and execution.

Recent researches 2021-2024 regularly indicate that companies that apply robust risk-based auditing, such as those described by Knechel & Salterio (2021), Hay et al. (2022), and Ariffin et al. (2024), typically achieve better internal control, better risk mitigation, and more efficient audit procedures.

As to the indicator "The audit process evaluates risks linked to business operations" ($M = 4.08$, $SD = 0.63$), which is translated as Agree, has the highest mean. This implies that employees always believe that the audit process mainly aims at detecting and evaluating the risks related to the business operations. The standard deviation is rather small, indicating the consistency of the responses. This finding demonstrates that the audit structure embraces risk identification which is an ideal organizational practice. Recent studies confirm this inference: Hay et al. (2022) note that organizations with comprehensive risk assessment procedures have superior internal control outcomes and Knechel and Salterio (2021) emphasize that strong risk assessment is the first step in effective risk-based auditing.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

The indicator "High-risk areas are given priority during audit planning and execution" ($M$ = 3.96, $SD$ = 0.64) has a lower mean than the first indicator, but it still fits within the Agree interpretation. There may be employees who might think that high-risk areas are not always prioritized in all departments, as shown by the slightly higher SD, which shows more variability in responses. This suggests an opportunity for the company to enhance the regular application of risk prioritizing in audits. Recent literature that grounds the perspective, such as the proposal of Mensah and Ofori (2023) to solidify audit-planning frameworks and maintain a steady focus on high-risk areas or the study by Ariffin et al. (2024). The recent literature that grounds the perspective includes the proposal by Mensah and Ofori (2023) to strengthen audit-planning frameworks and have a consistent (2024) report that organizations with clear audit prioritization strategies achieve better risk mitigation and governance performance.

Table 1 displays the results of frequency, percentage, and mean distribution of the participants' evaluation of the business's operational audit with regard to process compliance procedures. The majority of participants rated the practice as High (64% lying between 3.51 and 4.50), Moderate (19%), and Very High (17%). he perception of the Process Compliance Practices of the company is mostly positive since no participant rated the practice as Low or Very Low. The calculated mean of 3.98, High, and standard deviation of 0.54 imply that there are consistent impressions with moderate response variability.

**Table 2 Frequency, Percentage, and Mean Distribution of the Participants' Assessment of Company's Operational Audit in terms of Process Compliance Practice**

| Range | Description | Interpretation | Frequency | Percentage |
|---|---|---|---|---|
| 4.51-5.00 | Strongly Agree | Very High | 34 | 17.00 |
| 3.51-4.50 | Agree | High | 128 | 64.00 |
| 2.51-3.50 | Neutral | Moderate | 38 | 19.00 |
| 1.51-2.50 | Disagree | Low | 0 | 0.00 |
| 1.00-1.50 | Strongly Disagree | Very Low | 0 | 0.00 |
| | | **Total** | **200** | **100.0** |
| | | **Overall Mean** | | **3.98** |
| | | **Interpretation** | | **High** |
| | | **SD** | | **0.54** |

**Specific Indicators**

**M** **Description** **SD**

1 Regular audits are carried out to evaluate 3.96 Agree 0.70 adherence to internal policies and procedures.

2 The audit team provides education and 4.05 Agree 0.67 provides resources to facilitate the knowledge of compliance requirements among employees.

3 The resources and tools that can be used to 3.94 Agree 0.75 make sure that there is compliance in distribution are effective and user-friendly.

The results suggest that the company has been able to establish process compliance standards, including routine audits, resources and training, and maintenance of user-friendly technologies to uphold operational standards and regulations. The moderate findings, however, imply that there is still room to improve when it comes to the implementation of compliance processes in all the units in a consistent manner. These findings are corroborated by recent studies, which have shown that well-structured audit interventions and high compliance cultures lead to higher operational performance, less errors and increased compliance with internal standards (Rahman and Al-Dhaimish, 2021; Mensah and Ofori, 2023).

With the highest mean ($M$ = 4.05, $SD$ = 0.67), the indicator "The audit team offers training and gives resources to support employee understanding of compliance requirements" is described as Agree. Meanwhile, Corporate adherence to internal audit procedures and rules is mostly good with a mean of 4.05. This implies that the

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

majority of participants agree with this indicator and that it has a good rating. The findings were also consistent with those of Chang et al. (2020) who note that internal checks are paramount in promoting consistent policy compliance and reduce organizational risk. The access to specialist training and resources also enhances staff confidence and consistency in operations.

On the contrary, the indicator with the lowest mean is on "The tools and resources to support the compliance in the distribution are effective and userfriendly" ($M = 3.94$, $SD = 0.75$). This result is consistent with a 2020 study demonstrated that compliance solutions are effective in distribution organizations despite user-friendliness issues.

The findings resonate with the study conducted by Johnson et al. (2020) found that while implementing automated tracking systems and other tools increased regulatory adherence by up to 25%, user interfaces frequently required training to be fully effective. This highlights the potential effectiveness of compliance solutions in distribution organizations, despite the challenges they frequently face in terms of user-friendliness and adoption.

Table 3 shows the summary of participants' assessment of the company's operational audit practices across the three dimensions. All the factors fall within the High interpretation range, suggesting that participants generally perceived the organization's operational audit procedures favorably. Specifically, Process

Compliance Practice scored 3.98, Risk-Based Auditing scored 4.02, and the total Operational Audit Practices component scored 4.00. Participant perceptions are constant and response variability is low, as seen by the extremely low standard deviations (0.39) for the entire operational audit procedures.

**Table 3 Summary Table of Operational Audit Practices**

| Dimensions | Mean | Description | SD |
|---|---|---|---|
| Risk Based Auditing | 4.02 | High | 0.49 |
| Process compliance practice | 3.98 | High | 0.54 |
| Operational Audit Practices | 4.00 | High | 0.39 |

The dimension namely Risk-based Auditing has the highest mean ($M = 4.02$, $SD = 0.49$), which regarded as High. This implies that participants think the organization's operational audit processes are mostly focused on identifying, assessing, and managing risks. The standard deviation is relatively low, indicating that the perceptions of employees about the effectiveness of risk-based auditing in the organization are similar. This result shows how the issue of risk concerns are incorporated in the planning and conducting audits in an enabling audit environment. Rahman and Al-Dhaimish (2021) also found that the regulatory environment, as well as the maturity of corporate governance, is a crucial factor in successful risk-based audit methods.

On the contrary, process compliance practices received the least mean of all the measures ($M = 3.98$, $SD = 0.54$) since it still belongs to the High interpretation. Even though participants recognize that they have high compliance with the laid down operational practices, the views of consistency might differ marginally across departments as depicted by the higher standard deviation. This variance indicates particular areas in which compliance standards can be more continuously applied during audit procedures. Cohen and Simnett (2021) supported this interpretation by stating that despite the compliance, compliance. Methods are important, their effectiveness depends on their continuous implementation to strengthen corporate control environments and enhance reporting quality.

With a mean score of 4.00 and a standard deviation of 0.39, which is regarded as high, participants' assessments of operational audit methods were generally favorable and consistent. The blend of risk-based auditing and process compliance processes shows how effective the company's internal audit function is. All findings show that a successful internal control and long-term organizational achievements rely on an operational audit model that is strategic, risk-conscious, and compliance-oriented.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue IV April 2026

**Problem 2. What is the participant's assessment of the sustainable audit methods in terms of:**

**Eco-friendly compliance practice; 2.2 Waste reduction practices; and**

**Energy efficiency practices?**

Table 4 displays the frequency, percentage, and mean distribution of participants' evaluations of the distribution company's eco-friendly compliance practices. The figures reflect an overall mean of 4.08, which is interpreted High, and a standard deviation of 0.46. This study found that the compliance initiatives of the company are often taken positively by the employees, who regard the company as environmentally friendly.

**Table 4 Frequency, Percentage, and Mean Distribution of the Participants' Assessment of Sustainable Audit Methods in terms Eco-friendly Compliance Practice**

| Range | Description | Interpretation | Frequency | Percentage |
|---|---|---|---|---|
| 4.51-5.00 | Strongly Agree | Very High | 27 | 13.50 |
| 3.51-4.50 | Agree | High | 143 | 71.50 |
| 2.51-3.50 | Neutral | Moderate | 30 | 15.00 |
| 1.51-2.50 | Disagree | Low | 0 | 0.00 |
| 1.00-1.50 | Strongly Disagree | Very Low | 0 | 0.00 |
| | | **Total** | **200** | **100.0** |
| | | **Overall Mean** | **4.08** | |
| | | **Interpretation** | **High** | |
| | | **SD** | **0.46** | |

**Specific Indicators**

| No. | Statement | Mean (M) | Description | SD |
|---|---|---|---|---|
| 1 | The company integrates eco-friendly compliance practices into daily operations. | 4.13 | Agree | 0.70 |
| 2 | The audit process evaluates adherence to environmental laws, regulations, and standards. | 4.04 | Agree | 0.64 |
| 3 | Eco-friendly compliance practices are reviewed and updated regularly based on audit results. | 4.13 | Agree | 0.59 |
| 4 | Audit findings related to environmental compliance are clearly communicated to relevant stakeholders. | 4.05 | Agree | 0.64 |

Based on the findings, the distribution company in Misamis Oriental shows a good and steady dedication towards sustainable and environmentally-friendly auditing. These practices involve the routine compliance review, incorporating environmental concerns into day-to-day activities, and reporting and communicating monthly audit results to stakeholders. Al-Abbasi's (2021) research, supported by the theories of Mohamed (2022) and Bennani (2022), states that "focusing on integrating sustainability into audit practices enhances environmental stewardship, reduces operational risks, and fosters long-term organizational sustainability." This suggests that long-term sustainability will be in a better position for profitable operations if the distribution company in this study adopts and practices sustainable audit techniques.

From the indicators, the *company incorporates eco-friendly compliance practices into every day operations* and *Eco-friendly compliance practices are analyzed and periodically updated according to audit outcomes* have the highest means ($M = 4.13$, $SD = 0.70$; $M = 4.13$, $SD = 0.59$), both of which are regarded as High. This means that the participants are highly informed about the organization in its commitment to incorporate sustainability in its operations and auditing procedures. The implementation of environmentally friendly compliance procedures and the continuous development were always agreed by the participants, which can be proved by rather small values of standard deviation. This outcome shows the company's proactive dedication to environmental stewardship

and risk reduction. This is in line with a study conducted by Al-Abbasi (2021), who emphasized the importance of applying sustainable practices to audit systems to promote environmental responsibility and minimize operational risks.

Moreover, sustainable auditing enhances environmental performance through systematic evaluation of operational, financial, and legal factors to reduce pollution and encourage long-term sustainability, Mohamed (2022) and Bennani (2022. Conversely, although it remains under the High interpretation, the lowestmean indicator is Audit processes assess compliance with environmental laws ($M = 4.04$, $SD = 0.64$). This implies that although the environmental requirements are usually followed, they do not get as much attention as other sustainability-oriented audit procedures. The average spectrum of answers suggests that the perceptions of the legal compliance can vary among people. This outcome is in line with AlAbbasi's (2021) finding that legal compliance is often viewed as procedural rather than innovative, which may reduce its perceived contribution to broader sustainability objectives. Bennani (2022) also emphasized the need to regularly report audit results and keep compliance processes updated so that governance, transparency, and trust in the stakeholders could be improved

The overall scores and the absence of low or very low scores suggest that there is a strong and united corporate commitment to sustainable and environmentally-friendly audit practices. Such findings, indicating the role of sustainable audits in fostering environmental responsibility and long-term corporate prosperity, do not contradict the global trends towards sustainable development.

Table 5 presents the frequency, percentage and the mean distribution of the assessments of participants of the company on the sustainable audit methods in regards to the waste reduction practices. The data imply that the participants are mindful of reducing its wastes.

**Table 5 Frequency, Percentage, and Mean Distribution of the Participants' Assessment of Sustainable Audit Methods in terms of Waste Reduction Practices**

| Range | Interpretation | Frequency | Percentage | |
|---|---|---|---|---|
| 4.51-5.00 | Very High | 24 | | 12.00 |
| 3.51-4.50 | High | 143 | | 71.50 |
| 2.51-3.50 | Moderate | 33 | | 16.50 |
| 1.51-2.50 | Low | 0 | | 0.00 |
| 1.00-1.50 | Very Low | 0 | | 0.00 |
| | **Total** | **200** | | **100.0** |
| | **Overall Mean** | | **4.01** | |
| | **Interpretation** | | **High** | |
| | **SD** | | **0.45** | |

**Specific Indicators**

| | | M | Description | SD |
|---|---|---|---|---|
| 1 | The company integrates effective waste reduction practices into its daily operations. | 4.03 | Agree | 0.67 |
| 2 | Employees actively participate in and support waste reduction efforts. | 4.10 | Agree | 0.63 |
| 3 | The company tracks, documents, and reports waste reduction metrics during sustainability audits. | 3.92 | Agree | 0.65 |
| 4 | The audits thoroughly evaluate key waste metrics (e.g., packaging waste, recycling rates, and excess inventory) to identify areas for improvement. | 4.00 | Agree | 0.68 |

Most participants rated the practices as High (71.5% of the scores were between 3.51-4.50), Moderate (16.5%), and Very High (12). Employee perception of the company's waste reduction activities is largely good, as

evidenced by the fact that no participants evaluated the procedures as Low or Very Low. The computed overall mean of 4.01, which is interpreted as High, and a standard deviation of 0.45 demonstrate the substantial agreement among participants with relatively little diversity in perceptions. These results are in line with earlier studies that demonstrate that proactive staff involvement, methodical tracking, and ongoing improvement are key components of successful environmental audit procedures (Singh et al., 2020; Lubna & Omar, 2023; Thompson et al., 2020).

With regard to the indicators of waste reduction practices, the indicator with the highest mean is on "Employees actively participate in and support waste reduction efforts" ($M$ = 4.10, $SD$ = 0.63) interpreted as High. This suggests that participants thought a key component of the organization's effective waste reduction strategy was employee participation. The relatively low standard deviation, which shows consistency in responses, reflects a shared understanding of the importance of employee involvement in sustainability programs. This outcome is in line with Singh et al. (2020), who emphasized that by encouraging adherence to environmental targets, incorporating waste reduction measures within audit procedures enhances operational effectiveness and environmental sustainability.

Nevertheless, even though it remained in the High category, the indicator, which had the smallest mean, was the one that claimed that the company monitors, records and publishes waste reduction measures during sustainability audits ($M$ = 3.92, $SD$ = 0.95). This shows that although there was an overall implementation of waste minimization techniques, systemic documentation and reporting was not always carried out in all audit activities. The increased standard deviation attracts attention to the possible imperfection of monitoring and reporting procedures, as it shows that the participants vary in their opinion. Thompson et al. (2020) confirm this observation by reporting that, when businesses have properly structured waste-tracking and reporting systems at the time of sustainability audits, they are more likely to record higher operational waste reduction and positive audit outcomes.

The participants rated sustainable audit techniques on waste reduction procedures in general and with an overall mean value of 4.01 which is considered as High, overall, the ratings were mostly positive and consistent. This implies that the company has successfully adopted waste minimization methods, which employees widely accepted as key to sustainability initiatives and operational effectiveness. The similarity in the relatively stable responses also means that the employees recognize the necessity of reducing the waste as a part of audit and operating processes. This implies that participants saw waste reduction as an essential component of sustainable audit procedures, improving business performance and environmental responsibility.

Table 6 shows the frequency, percentage and mean distribution of the evaluations of the company regarding the sustainable audit techniques by the participants with respect to the energy efficiency procedures are presented. A standard deviation of 0.48 and a mean of 3.95, which is considered to be high, the results indicate that employees tend to view energy efficiency measures favorably and there is very little fluctuation in their answers. Most of the participants rated the practices as High (68% falling between 3.51 and 4.50), Moderate (22%), and Very High (9.5%). No one of the participants rated the practices as Very Low, and only 0.5% rated them as Low.

**Table 6 Frequency, Percentage, and Mean Distribution of the Participants' Assessment of Sustainable Audit Methods in terms Energy Efficiency Practices**

| Range | Interpretation | Frequency | | Percentage |
|---|---|---|---|---|
| 4.51-5.00 | Very High | 19 | | 9.50 |
| 3.51-4.50 | High | 136 | | 68.00 |
| 2.51-3.50 | Moderate | 44 | | 22.00 |
| 1.51-2.50 | Low | 1 | | 0.50 |
| 1.00-1.50 | Very Low | 0 | | 0.00 |
| | **Total** | **200** | | **100.0** |
| | **Overall Mean** | | **3.95** | |
| | **Interpretation** | | **High** | |
| | **SD** | | **0.48** | |

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**Specific Indicators**

| M | Description | SD | |
|---|---|---|---|
| 1 | The company implements and promotes 3.89 | Agree | 0.69 energy-efficient practices in its operations. |
| 2 | Employees are trained on energy-saving 3.93 | Agree | 0.68 practices and their operational benefits. |
| 3 | The outcomes of energy efficiency 3.95 | Agree | 0.70 initiatives are communicated to stakeholders. |
| 4 | The energy audits in the company are 4.02 | Agree | 0.69 effective in focusing on energy efficiency enhancement related to the operations of the distribution system. |

The results prompt the organization to improve the energy efficiency of its operations by training its employees, conducting audits, and communicating its results. These results are in line with previous research showing how systematic energy audits, effective communication, and employee training enhance sustainability performance and operational efficiency (Bonrath et al., 2022; Ramirez et al., 2020; Chen & Liu, 2020).

The mean of the energy audit that targets energy efficiency improvements that are specific to distribution system = operations Agree, has the highest mean ($M$ = 4.02, $SD$ = 0.69), which is translated. This indicates that participants consistently feel that the organization's energy audit processes are effectively focused on identifying and resolving possibilities for energy efficiency in distribution system operations. The relatively low standard deviation indicates that participant perceptions of the effectiveness of focused energy audits were constant and dependable.

The mean for sustainable audit methods in terms of energy efficiency practices was 3.95, which is considered high and indicates a generally positive rating among participants The results indicate that the values of the company effectively operate to implement and internalize the energy saving practice, which underlies the long-term organizational performance and more broad sustainability objectives. This finding shows that audit processes consider energy efficiency, which is a positive organization practice. Contrary to previous literature, Ramirez et al. (2020) have demonstrated that distribution system-specific energy audits, including fleet route optimization and warehouse layout optimization, had substantial efficiency advantages, thus boosting operational performance.

On the other hand, the indicator that has the lowest mean, relative to the first indicator, is: The company implements and promotes energy-efficient practices in its operations. Morever, the indicator with the lower mean, "The company implements and promotes energy-efficient practices in its operations" ($M$ = 3.89, $SD$ = 0.69), exhibits somewhat lower participant appraisal. The fact that the standard deviation remains the same indicates that we may implement energyefficient procedures, but their promotion and regular use may be different in various sectors of operation.

This implies that there is a business opportunity to improve the routine practice and marketing of energy saving programs. This observation is backed by recent studies. Though the energy-saving measures, including training of the employees and incentive schemes lowered the energy consumption, Chen and Liu (2020) observe that the uneven application of the measures in operations may result in lower performance ratings on the whole.

Table 7 presents the summary of participants' assessment of Sustainable Audit Methods across different dimensions.The overall results reveal that the business effectively incorporates a number of sustainability-related elements into its audit processes. The overall mean of Sustainable Audit Methods is 4.01, which is interpreted as High which implies that the participants are mindful or their practice of reducing wastes, conserving energy and the practice of eco-friendly.

**Table 7 Summary Table of Sustainable Audit Methods**

| Dimensions | Mean | Interpretation | SD |
|---|---|---|---|
| Eco-Friendly Practices | 4.08 | High | 0.46 |
| Waste Reduction | 4.01 | High | 0.45 |
| Energy Efficiency | 3.95 | High | 0.48 |
| **Sustainable Audit Methods** | **4.01** | **High** | **0.32** |

"Eco-friendly practices" has the highest mean ($M$ = 4.08), which is considered high. This implies that the organization's sustainable audit techniques are routinely seen by participants as being heavily centered on incorporating ecofriendly practices into audit operations. This high mean indicates the reliability and consistency of the answers, indicating that there is a general perception that the audit structure of the organization is put into consideration in terms of ecofriendliness. This result indicates that auditing practice is a good corporate responsibility as it emphasizes the environment in the implementation of audits. This conclusion is supported by recent research, where Lee and Park (2020) discovered that the sustainability performance of businesses applying environmentally friendly audit methods greatly improved.

Nevertheless, the indicator with the lowest mean, namely, Energy efficiency practices ($M$ = 3.95) is also interpreted as High; however, the assessment of the participants is somewhat lower than the other indicators. This implies that energy saving programs are being introduced and appreciated, but they may not be prioritized as much as the environmentally friendly and waste reduction strategies in all aspects of operations.

This creates a possibility to have the company improve the daily use of energy-oriented auditing techniques. Rodriguez et al. (2020) found that the implementation of the energy efficiency components could be more specific to realise the full effectiveness, despite the case of full implementation. This result is in line with current research.

Overall, the composite mean for "Sustainable audit methods" was 4.01, which is considered high and indicates a generally pertinent and consistent assessment among participants. The organization's complete sustainability audit framework is effective, as seen by the incorporation of eco-friendly activities, waste reduction, and energy efficiency.

This finding resonates with what Brunelli et al. (2022) noted that environmental audits offer the management and boards of directors with an assurance of the organizational compliance with the safety, health and environmental performance.

**Problem 3. What is the participants' assessment of the Quality of Training?**

Table 3 presents the frequency, percentage, and mean distribution of participants' assessment of the company's sustainable audit methods in terms of energy efficiency practices. The figures show that the quality of training the participants received is high as shown in an overall mean of 3.96. The findings imply that the training programs are well-designed, relevant, and effectively delivered, resulting in enhanced employee competence, improved operational efficiency, and positive organizational outcomes. Its results indicate the importance of properly organized training programs in promoting energy efficiency within organizations and environmental sustainability on a long-term basis. This suggests that the training system not only meets industry standards but also successfully translates learning into improved performance in distribution operations.

Most participants rated the practices as High, with 74% falling within the 3.51–4.50 range, while 13.5% rated them as Moderate and 12.5% rated them as Very High. The procedures were not evaluated as Low or Very Low by any participants.

**Table 8 Frequency, Percentage, and Mean Distribution of Participants' Assessment on the Quality of Training**

| Range | Interpretation | Frequency | Percentage | |
|---|---|---|---|---|
| 4.51-5.00 | Very High | 25 | | 12.50 |
| 3.51-4.50 | High | 148 | | 74.00 |
| 2.51-3.50 | Moderate | 27 | | 13.50 |
| 1.51-2.50 | Low | 0 | | 0.00 |
| 1.00-1.50 | Very Low | 0 | | 0.00 |
| | **Total** | **200** | | **100.0** |
| | **Overall Mean** | | **3.96** | |
| | **Interpretation** | | **High** | |
| | **SD** | | **0.44** | |

**Specific Indicators**

| | M | Description | SD |
|---|---|---|---|
| 1. The training programs address the specific skill and knowledge needs of employees in distribution operations. | 3.89 | Agree | 0.77 |
| 2. Training materials and resources reflect current industry standards and practices. | 3.93 | Agree | 0.68 |
| 3. Trainers demonstrate expertise and competence in distribution-related topics. | 3.96 | Agree | 0.71 |
| 4. Employees report improved performance and efficiency after attending training. | 4.00 | Agree | 0.70 |
| 5. Training sessions incorporate hands-on activities and real-world scenarios relevant to distribution tasks. | 3.99 | Agree | 0.67 |
| 6. The training sessions are conducted in a timely manner and do not disrupt the distribution operations. | 3.91 | Agree | 0.80 |
| 7. The quality of training left a positive impact on the overall performance of the distribution company. | 4.03 | Agree | 0.67 |

The high overall assessment highlights the effectiveness of audits, training, and operational measures in promoting energy-saving actions, while the low standard deviation suggests broad agreement over their impacts. These results are in line with previous research that shows how well-thought-out energy-saving programs promote enhanced performance and operational sustainability (Testa et al., 2021; Chen & Liu, 2020).

The indicator "The quality of training left a positive impact on the overall performance of the distribution company" ($M$ = 4.03, $SD$ = 0.67), which is translated as Agree, has the highest mean. This implies that participants always believe the quality of training can greatly and positively influence the energy-saving practices in an organization. The low standard deviation indicates that the responses were stable and consistent, and it represented general perceptions on the effectiveness of training programs in supporting energy efficient operations. This finding demonstrates that considerate training programs enhance the productivity of the employees and their energy usage which proves to be an effective organizational tactic. This result is supported by recent research, with Testa et al. (2021) discovering that the capacity of employees to effectively introduce energy-efficient practices is substantially boosted by training initiatives that consider particular skill demands and realistic exercises.

In contrast, the indicator with a lower mean, "The training sessions are conducted in a timely manner and do not disrupt the distribution operations" ($M$ = 3.91, SD = 0.80), demonstrates a slightly weaker perception of the participants compared to the first indicator. It has a higher standard deviation, indicating a greater variation in the replies, which implies that some of the participants might have difficulties with their operations during implementation, although training sessions are generally perceived as timely. According to Krapu et al. (2020), training that is done according to the operational requirements and industry standards enhances performance

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especially when adequate scheduling and effective communication is ensured. This indicates a chance for the company to enhance training scheduling and coordination even more in order to reduce disruptions to workflow.

**Problem 4. What is the participants' assessment of the operational leak prevention in terms of:**

**Reduction in product losses and wastage;**

**Minimizing errors in operation; and**

**Improved operational efficiency?**

Table 9 shows the frequency, percentage, and mean distribution of the participants' assessment of operational leak prevention regarding the decrease in the product losses and wastage. It can be gleaned from the figures that the participants assess this sub-variable high as indicated in an overall mean of 3.94 interpreted as high. These results indicate that the company has been successful in incorporating leak protection measures into its operational processes. High consensus among participants can be attributed to frequent checking, participation of staff, and procedural practices that minimize wastage and enhance operation dependability. The practices align to the previous research that highlights the need to prevent leaks systematically in order to improve operational effectiveness, minimize mistakes, and facilitate sustainability efforts (Smith and Kumar, 2022; Chung et al., 2020; Bidawid, 2021).

The practices were viewed as High by most participants (76% fell between 3.51 and 4.50), Moderate by 13.5%, and Very High by 10%. None of the participants gave the practices a Very Low rating, and just 0.5% gave them a Low rating. The resulting overall average of 3.94, which is considered as High, having a standard deviation of 0.44 implies that employees tend to view the companies attempts to eradicate product losses and waste in a positive manner with a relatively small variation in responses.

**Table 9 Frequency, Percentage, and Mean Distribution of the Participants' Assessment of Operational Leak Prevention in terms of Reduction in Product Losses and Wastage**

| Range | Interpretation | Frequency | Percentage | Overall Mean | SD |
|---|---|---|---|---|---|
| 4.51–5.00 | Very High | 20 | 10.00% | | |
| 3.51–4.50 | High | 152 | 76.00% | | |
| 2.51–3.50 | Moderate | 27 | 13.50% | | |
| 1.51–2.50 | Low | 1 | 0.50% | | |
| 1.00–1.50 | Very Low | 0 | 0.00% | | |
| Total | | 200 | 100.00% | | |
| Overall | High | | | 3.94 | 0.44 |

**Specific Indicators**

| **M** | **Description** | **SD** |
|---|---|---|
| 1. Leak prevention practices have contributed to a significant reduction in product losses. 3.95 | Agree | 0.71 |
| 2. The company actively monitors and 4.02 addresses leaks to prevent resource wastage. | Agree | 0.73 |
| 3. Employees are trained to detect and report 3.95 leaks, helping to minimize product loss. | Agree | 0.67 |
| 4. The implementation of leak prevention 3.95 measures has reduced material wastage. | Agree | 0.70 |
| 5. Leak prevention strategies are regularly 3.82 reviewed and improved to enhance loss control. | Agree | 0.74 |

| | | |
|---|---|---|
| 6. There are clear procedures in place for reporting and addressing product losses and wastages in our distribution operations. | 3.94 | Agree | 0.67 |
| 7. company utilizes technology effectively to monitor and reduce product losses during distribution. | 3.96 | Agree | 0.66 |

The overall mean of the operational leak prevention techniques was 3.94 and the standard deviation was 0.44, which is high and generally positive and uniform evaluation among participants. The findings indicate that the systematic leak prevention methods have a positive impact on waste and products loss reduction, enhancing the efficiency of operation and advancing the sustainability objectives. The same can be further argued by Bidawid (2021), who pointed out that efficient strategies of leak prevention and quality control minimize waste production in a factory, energy usage, and defective products and contributes to the environmentally friendly work.

The indicator "The company actively monitors and addresses leaks to prevent resource wastage" (*M* = 4.02, *SD* = 0.73), which is translated as Agree, has the highest mean. This implies that customers always regard the company as aggressive in determining and addressing operational leaks to minimize product losses and wastage. The standard deviation is relatively low and it means that the perception of the effectiveness of leak monitoring techniques was consistent. This result demonstrates that the operating practices in the company include the prevention of leak, which is a powerful organizational practice. This observation is backed by recent research, with Smith and Kumar (2022) affirming the same. Pointed out that effective leak prevention systems that reduce resource waste require human involvement and continuous monitoring.

Although still rated as "Agree," the indicator *"Leak prevention strategies are regularly reviewed and improved to increase loss control"* (M = 3.82, SD = 0.74) received the lowest mean. This suggests that participants viewed it slightly less favorably than the other indicators. The somewhat higher standard deviation also indicates more varied responses, implying that not all areas consistently review and improve their leak prevention practices. This suggests an opportunity for the business to enhance its continuous evaluation and enhancement of its leak prevention strategies.

The frequency, percentage, and mean distribution of participants' evaluations of the company's operational leak prevention in terms of minimizing errors in operation are shown in Table 24. The perceptions of the participants to the effort of the company to minimize the operational errors are mostly positive with a small level of consistency as computed overall mean of 3.90 is considered high and standard deviation of 0.47.

The overall mean and standard deviation of the operational Leak Prevention techniques were 3.90 and 0.47 respectively in reduction of operational mistakes and is considered high and generally favorable assessment of the participants. The findings indicate the importance of the combination of the systematic processes and technical tools to minimize the mistakes, increase the accuracy of the operations, and contribute to the effectiveness of leak prevention as a whole. These results align with the study by Gupta and Patel (2020), who found that sophisticated monitoring tools and predictive analytics greatly decrease errors in operations and increase the reliability of the processes.

**Table 10 Frequency, Percentage, and Mean Distribution of the Participants' Assessment of Operational Leak Prevention in terms of Minimizing Errors in Operation**

| **Range** | **Interpretation** | **Frequency** | **Percentage** | |
|---|---|---|---|---|
| 4.51-5.00 | Very High | 21 | | 10.50 |
| 3.51-4.50 | High | 139 | | 69.50 |
| 2.51-3.50 | Moderate | 40 | | 20.00 |
| 1.51-2.50 | Low | 0 | | 0.00 |
| 1.00-1.50 | Very Low | 0 | | 0.00 |
| | **Total** | **200** | | **100.0** |
| | **Overall Mean** | | **3.90** | |
| | **Interpretation** | | **High** | |
| | **SD** | | **0.47** | |

**Specific Indicators**

| | M | Description | SD |
|---|---|---|---|
| 1. Leak prevention practices contribute to reducing errors in operational processes. | 3.86 | Agree | 0.76 |
| 2. Clear procedures for leak detection and reporting help prevent operational mistakes. | 3.75 | Agree | 0.77 |
| 3. Employee training on leak prevention has resulted in fewer process-related errors. | 3.96 | Agree | 0.72 |
| 4. Technology used in leak prevention improves operational accuracy and reduces human error. | 4.03 | Agree | 0.72 |
| 5. Regular audits of leak prevention practices help identify and correct errors promptly. | 3.89 | Agree | 0.74 |
| 6. The company uses automated systems (e.g., barcode scanners, RFID) to reduce manual errors in inventory management. | 3.93 | Agree | 0.77 |
| 7. Real-time tracking systems are implemented to monitor distribution activities and prevent delivery errors. | 3.87 | Agree | 0.80 |

The practices were classified as High by the majority of participants (69.5% falling between 3.51 and 4.50), Moderate by 20%, and Very High by 10.5%. There Were no participants who rated the procedures as Low or Very Low.

The indicator with the highest mean "Technology used in leak prevention improves operational accuracy and reduces human error" ($M = 4.03$, $SD = 0.72$), interpreted as Agree. This means that participants have an unvarying assumption that operational accuracy and minimization of human error is enhanced when technology is used to avert leaks. The similarity in the responses is illustrated by the relatively low standard deviation, indicating that there were no operational errors, and how technology could help was a similar idea among all participants.

This result indicates that technology is successfully incorporated in the leak prevention measures and that is a good organizational behavior. This conclusion is supported by recent research: Hosseini et al. (2020) found that the integration of technologies like RFID and bar-code systems can improve the accuracy of monitoring and decrease operational inconsistencies when used in combination with proper staff training.

Moreover, the indicator with the lower mean, Clear procedures for leak detection and reporting help prevent operational mistakes ($M = 3.75$, $SD = 0.77$) which is described as *agree* indicates slightly less strong perception of the participants as compared to the first indicator would be more accurate. The larger standard deviation means the greater variety of responses, which means that various businesses may not possess the same level of consistency and clarity in terms of detection and reporting of leaks. This implies that the business has a chance to minimize operational mistakes further through improving communication and procedural clarity. This fact is supported by a recent study of Hosseini et al. (2020), which states that technical solutions are most effective in combination with concise protocols and regular training of personnel.

Table 8 presents the frequency, percentage, and mean distribution of participants' assessment of the company's operational leak prevention in terms of improved operational efficiency. The perception of the influence of operational leak prevention on operational efficiency was very high with an overall mean of 3.92 with a standard deviation of 0.48 showing a generally positive and consistent evaluation among the participants. The results show how crucial leak prevention techniques are for increasing productivity, making the most use of available resources, and improving overall operational performance.

**Table 11 Frequency, Percentage, and Mean Distribution of the Participants' Assessment of the Operational Leak Prevention in terms of Improved Operational Efficiency**

| Range | Interpretation | Frequency | Percentage | |
|---|---|---|---|---|
| 4.51-5.00 | Very High | 26 | | 13.00 |
| 3.51-4.50 | High | 139 | | 69.50 |
| 2.51-3.50 | Moderate | 35 | | 17.50 |
| 1.51-2.50 | Low | 0 | | 0.00 |
| 1.00-1.50 | Very Low | 0 | | 0.00 |
| | **Total** | **200** | | **100.0** |
| | **Overall Mean** | | **3.92** | |
| | **Interpretation** | | **High** | |
| **SD** | | | **0.48** | |

**Specific Indicators**

| | M | Description | SD |
|---|---|---|---|
| 1. Leak prevention measures have enhanced overall operational efficiency. | 3.90 | Agree | 0.74 |
| 2. Fewer leaks result in more efficient use of resources and time. | 3.76 | Agree | 0.76 |
| 3. Leak prevention practices help streamline operational processes. | 3.99 | Agree | 0.71 |
| 4. Reduced leak-related interruptions have improved employee productivity. | 3.99 | Agree | 0.71 |
| 5. The company regularly evaluates leak prevention efforts to drive continuous efficiency improvements. | 3.92 | Agree | 0.78 |
| 6. Team collaboration plays a crucial role in enhancing operational efficiency. | 3.97 | Agree | 0.78 |
| 7. The company effectively utilizes data analytics to identify areas for improving operational efficiency. | 3.94 | Agree | 0.79 |

The practices were categorized as High by most participants (69.5% falling between 3.51 and 4.50), Moderate by 17.5%, and Very High by 13%. The procedures were not evaluated as Low or Very Low by any participants. Employees generally consider the company's operational leak prevention measures are beneficial in enhancing efficiency, with comparably consistent agreement among participants, as indicated by the estimated overall mean of 3.92 (interpreted as High) and standard deviation of 0.48.

These findings suggest that the business successfully used leak prevention strategies that boost output, reduce interruptions, and simplify operational processes. These techniques align with studies that emphasize the significance of continuous monitoring, effective process controls, and systematic leak prevention in improving operational efficacy and reducing waste in supply chains (Fernie et al., 2022; Beck & Peacock, 2024; Hosseini et al., 2020).

The indicator with the highest mean is "Leak prevention practices help streamline operational processes" and "reduced leaks-related interruptions have improved employee productivity" ($M$ = 3.99, $SD$ = 0.71), which the participants have expressed their agreement to these indicators. This is an indication that operational leak prevention is often perceived by the participants as positively influencing more efficient operations and efficient employees. The standard deviation is relatively low indicating that responses were steady and consistent, indicating that most people have identical beliefs concerning the effectiveness of leak prevention in promoting operational effectiveness. This result indicates that a reduction in leakages minimizes the disruption of operations and promotes the efficiency of time and resource use which are both positive organizational behaviors.

Recent research has demonstrated that data analytics-based integrated leak prevention systems based on real-time monitoring and employee training greatly enhance operational efficiency indicators such as supply chain operational efficiency and inventory turnover (Fernie et al., 2022; Beck and Peacock, 2024).

Conversely, the indicator Fewer leaks lead to better utilization of resources and time (M = 3.76, SD = 0.76) received the lowest mean though it is still interpreted as high. This suggests an opportunity for the business to further enhance coordination and process evaluation in order to maximize the efficiency advantages from leak prevention efforts. The findings confirm the current literature, as Hosseini et al. (2020) mention that ongoing analytics and monitoring are necessary, and Chung et al. (2020) emphasize that teamwork and systematic review of the processes are the main factors that can lead to the operational enhancement.

Table 26 displays a summary of the participants' assessment of the operational leak prevention across the major dimensions. Generally, the participants assessed the operational leak prevention high as indicated in an overall mean of 3.92. This indicates that the firm has effectively adopted the leak prevention methods that reduce wastage, remove operation errors and increase productivity. These findings align with previous studies that have demonstrated that continuous monitoring, employee training, and systematic identification of leaks significantly improve operational performance and contribute to the overall sustainability of the organization (Hosseini et al., 2020; Chung et al., 2020).

**Table 12 Summary Table of Operational Leak Prevention**

| Dimensions | Mean | Description | SD |
|---|---|---|---|
| Reduction of Product Losses and Wastage | 3.94 | High | 0.44 |
| Minimize In Errors | 3.90 | High | 0.47 |
| Improved Operational Efficiency | 3.92 | High | 0.48 |
| Operational Leak Prevention | 3.92 | High | 0.32 |

The figures further show that among the dimensions Operational Leak Prevention, Reduction of Product Losses and Wastage is rated the highest with a mean of 3.94, followed by minimizing errors with a mean of 3.92. The comparatively low standard deviations, especially the aggregate measures 0.32, indicate that participants' opinions on these techniques' efficacy are consistent.

With a standard deviation of 0.32, the total mean score for operational leak prevention strategies was 3.92, which is regarded as strong and shows a generally favorable and consistent assessment among participants. The results affirm the effectiveness of operational leak prevention strategies by minimizing product losses, mistakes, and improvements. This indicates that participants always tend to think that leak prevention strategies are the best at reducing wastage and loss of resources in operational processes. The general perception is that the organizational operational architecture has an inbuilt monitoring and preventive measures through the relatively low standard deviation. The present finding is in consonance with Chung et al. (2020) who found that combining leak prevention strategies with continuous monitoring reduces operational errors and enhances process reliability, which lends validity to this idea.

**Problem 5. Are Operational audit practices, sustainable Audit Methods, and quality of training significantly associated with operational leak prevention of the company?**

$Ho_1$: Operational audit practices are not significantly associated with operational leak prevention.

$Ho_2$: Sustainable Audit Methods are not significantly associated with operational leak prevention.

$Ho_3$: Quality of training is not significantly associated with operational leak prevention

Table 13 presents the results of the canonical correlation analysis between operational audit practices and operational leak prevention. The investigation revealed a statistically significant relationship between the participants' assessment of operational audit procedures and operational leak prevention, with a canonical correlation value of $R = 0.305$ and a corresponding $R^2 = 0.093$. This suggests that differences in operational audit procedures account for around 9.3% of the variance in operational leak prevention. The relationship's significance is further supported by the F-value of 3.268 and p-value of.004 ($p < 0.05$), which offer enough proof to reject the null hypothesis ($H_{o1}$).

The canonical correlation demonstrates a weak, but significant relationship, indicating that audit procedures, especially those that are compliance oriented, are useful in reducing operational leakage. As a result, there is no significant correlation between operational audit procedures and operational leak prevention. Leak prevention performance will thus, in the long term, be realistically but slowly increasing in importance to businesses that keep increasing the frequency and depth of audits.

**Table 13 Canonical Loadings of Operational Audit Practices on Operational Leak Prevention**

| Variable | Cross loading | R | $R^2$ | F | p |
|---|---|---|---|---|---|
| Operational Audit practices<br>Risk based auditing<br>Process compliance practices | <br>-0.161<br>-0.279 | <br><br>.305 | <br><br>.093 | <br><br>3.268** | <br><br>.004 |
| Operational leak prevention<br>Reduction in product losses and wastage | <br>-0.247 | | | | |
| Minimize errors in operation | -0.210 | | | | |
| Improved operational efficiency | -0.162 | | | | |

*Significant at 0.05 two-tailed alpha level.

The highest canonical loading among the indicators of sustainable audit methods is Process Compliance Practices (–0.279). This implies that observing standard operating procedures, operating protocols, and relevant documentation is the most important aspect regarding reducing operational leakages. The adherence by employees to audit processes is essential in maintaining effectiveness in operations and reducing risks.

The negative loading is relatively high, which implies that the changes in Process Compliance can influence the operational leak prevention significantly. Recent studies of Mensah and Ofori (2023) and Rivera and Santos (2021) support these findings, showing that organizations with a high compliance culture experience fewer incident related to leaks and more stable operational results. Conversely, among operational leak prevention dimensions, "Reduction in Product Losses and Wastage" (–0.247) had the highest loading. This implies that sustainable audit methods have the strongest correlation with the organization's ability to safeguard resources.

Regular auditing improves inventory control, reduces spoilage, and lowers operational errors, according to canonical loading. Organizations with efficient audit practices have lower rates of material loss and operational discrepancies, according to Han and Choi (2022), and Alonso & Ortega (2023). Additionally, continuous monitoring and structured audit interventions lower loss-related incidents by promoting accuracy in operational tasks.

With a canonical correlation of $R = 0.305$, $R^2 = 0.093$, $F = 3.268$, and $p = 0.004$ ($p < 0.01$), Table 27 suggests a statistically significant association between operational leak prevention and sustainable audit techniques. These findings demonstrate that differences in audit techniques account for 9.3% of the variance in operational leak prevention, demonstrating the significant relationship between operational audit practice implementation and operational leak prevention. Sustainable audit practices, especially those aimed at environmental and operational risk assessment, can help achieve greater efficiency of resources and reduce risk through the detection of inefficiencies and compliance gaps during the initial stages of operational processes, which is supported by the insignificant but significant canonical correlation outcome (Bonsu et al., 2025).

All these studies support the implication that sustainable audit techniques are needed to minimize leakages of operations and improve the overall discipline of operations. Moreover, the integration of sustainability into audits boosts longterm performance and operational discipline in general by strengthening responsibility and active risk management systems (Herghiligiu et al., 2023).

Consequently, this argument concerning the given null hypothesis is refuted. These results indicate that sustainable auditing is strategically relevant in promoting operation resilience. These processes lead to cost saving, better legal and environmental standards and reduction of risks caused by operational leak or waste by

proactively identifying and sealing compliance and efficiency gaps. Companies that employ the techniques more often position themselves to longterm productivity, discipline, and more broad-based sustainability outcomes.

Table 14 presents the results of the canonical correlation analysis between sustainable audit methods and operational leak prevention. The analysis found that there was a statistically significant association between the evaluations of sustainable audit methodologies and operational leak prevention by the participants with a canonical correlation of R = 0.403 and R 2 = 0.162. This shows that about 16.2% of the change in operational leak prevention could be explained by the changes in sustainable audit methodologies. The fact that the F-value 4.671 and p-value.000 ($p < 0.01$) which is enough to reject the null hypothesis ($H_{o2}$) support the fact that the relationship is significant. The sustainability-oriented audit techniques that significantly reduce operational leakage and inefficiencies based on the canonical relationship are waste minimization, energy conservation efforts and green practices. Inefficiencies include waste reduction, energy efficiency initiatives, and eco-friendly practices.

**Table 14 Canonical Loadings of Sustainable Audit Methods on Operational Leak Prevention**

| Variable | Cross loading | R | $R^2$ | F | p |
|---|---|---|---|---|---|
| Sustainable audit methods<br>Ecofriendly practices Waste reduction practices<br>Energy efficiency practices | -0.272 -0.289 -0.263 | .403 | .162 | 4.671** | .000 |
| Operational leak prevention<br>Reduction in product losses and wastage | -0.315 | | | | |
| Minimize errors in operation | -0.238 | | | | |
| Improved operational efficiency | -0.280 | | | | |

**Significant at 0.01 two-tailed alpha level.

"Waste Reduction Practices" (–0.289) is the indicator with the largest canonical loading under sustainable audit techniques, signifying that putting organized waste reduction procedures in place has the biggest impact on reducing operational leakages. This indicates that sustainability-oriented auditing, particularly waste reduction is the key to reducing product losses and inefficiencies in operation. The recent research such as that by Smith and Kumar (2022) supports this finding. The best loading was on the operational leak prevention criteria of Reduction in Product Losses and Wastage (–0.315). This indicates that the sustainable auditing practices are also associated with the quantifiable reduction in product losses and waste of resources. The significant negative loading reflects the direct relationship between sustainable auditing and reduction of operational leakage and process efficacy. On the same note, Chung et al. (2020) observed that sustainability-driven audit standards of developing integrated leak prevention techniques have significant positive outcomes on the accuracy and efficiency of operations.

Overall, Table 14 illustrates a significant correlation between sustainable audit techniques and operational leak prevention., with a canonical correlation of $R = 0.403$, $R^2 = 0.162$, $F = 4.671$, and $p = 0.000$ ($p < 0.01$). These findings show that differences in sustainable audit techniques account for 16.2% of the variation in operational leak prevention. The negative canonical loadings for eco-friendly practices (–0.272), waste reduction practices (–0.289), energy efficiency practices (–0.263), and operational leak prevention indicators show that the application of sustainability-focused audit measures directly reduces leakages, operational errors, and inefficiencies. These findings support the significance of sustainable auditing methods in enhancing operational efficacy, lowering errors, and promoting resource efficiency within the business.

Table 15 presents the results of the canonical correlation analysis between the quality of training and operational leak prevention. With a canonical correlation value of $R = 0.512$ and a matching $R^2 = 0.262$, the analysis showed a statistically significant link between them. Therefore, the third null hypothesis is rejected. This implies that approximately 26.2% of the variation in operational leak prevention can be attributed to the level of training provided. The F-value of 23.151 and the p-value of.000 ($p < 0.01$) provide additional evidence of this link's significance. These findings imply that enhanced training is significant in terms of avoiding leakages in operation, especially in terms of minimizing errors and waste of products.

Based on the canonical loadings, errors are primarily reduced by training, and waste reduction and overall efficiency improvements playing a supporting role.

**Table 15 Canonical Loadings of Quality of Training on Operational Leak Prevention**

| Variable | Cross loading | R | $R^2$ | F | p |
|---|---|---|---|---|---|
| Quality of training | 0.512 | .512 | .262 | 23.151** | .000 |
| Operational leak prevention<br>Reduction in product losses and wastage | 0.272 | | | | |
| Minimize errors in operation | 0.472 | | | | |
| Improved operational efficiency | 0.225 | | | | |

**Significant at 0.01 two-tailed alpha level.

There is a considerable association between reducing operational errors and high-quality training, as evidenced by the indicator "Minimize Errors in Operation" (0.472), which has the biggest canonical loading under operational leak prevention. This means that proper training programs prevent employees to make mistakes, improper handling or supervision that could cause spillages, leakages or irregular stock levels. The positive loading is quite significant; the fact that the loading is positive indicates that the quality of training is a significant factor that influences operational accuracy. This conclusion is supported by a recent study. A study of resolver (2023) established that intensive staff training or protocols and error prevention substantially reduces operational and administrative errors, which reduces product losses and enhances leak prevention success.

The indicator with the lowest canonical loading, "Improved Operational Efficiency" (0.225), on the other hand, still shows a positive connection but a more compact and direct influence of training quality on efficiency results than error minimization.

This implies that even though training is an indirect way of enhancing operational efficiency, there are other complementary issues such as technology adoption, process design, and organizational controls, which are also influential. Phase V Fulfillment (2025) found that comprehensive training programs increase inventory management and minimize waste by lowering human error-related inefficiencies such mislabeling, inappropriate handling, and procedural deviations. This conclusion is corroborated by literature.

Although their impact on broader efficiency gains remains modest without integration of complementary elements like automation or optimized workflows, comprehensive and foundational training programs primarily excel at minimizing human errors in operational processes, such as procedural deviations and handling inaccuracies. This indirectly boosts efficiency by reducing waste and revamp (Emroozi et al., 2025).

By addressing the underlying causes of inconsistencies, targeted employee training greatly improves inventory accuracy and operational discipline, according to additional empirical studies. As a result, the study's null hypothesis is disproved. When paired with systematic controls, this eventually helps prevent leaks and maintain performance benefits (Debala, 2023).

Organizations like distribution businesses can maximize advantages by combining technological and procedural changes with high-quality, targeted training. This results in better operation performance, leakages, and efficiency of resources. This observation falls in step with recent research indicating the importance of integrated, people-based approaches to risk reduction in high stakes situations.

In conclusion, Table 15 shows a statistically significant and pertinent canonical link between Operational Leak Prevention and Training Quality, with a canonical correlation of $R = 0.512$, $R^2 = 0.262$, $F = 23.151$, and $p = 0.000$ ($p < 0.01$). These results indicate that the difference in training quality explains 26.2% of variance in the operational leak prevention variable.

The practical and effective approach in reinforcing the operational leak prevention and overall operational performance, as it is reflected in those positive canonical loadings in diverse indicators, is to invest in high-quality training and particularly focus on the skills of minimizing errors.

## SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

This chapter presents a summary of the study's problems, methodology, and findings. It also discusses the conclusions drawn from the study's findings.

**Summary**

The Problem. This study analyzes the Interplay of Operational Audit Practices, Sustainable Audit Methods, Training Quality and Operational Leak Prevention in Misamis Oriental. This study looks into how a distribution company's processes are affected by operational leaks. Distribution Companies face serious difficulties as a result of operational leaks, which include resource losses, impaired integrity, and unapproved disclosures of highly confidential information.

This said study specifically answered the following problems mentioned in this study: 1.) What is the participants' assessment of operational audit practices in terms of: 1.1 Risk-based auditing; 1.2 Process compliance practice & 1.3

Internal control process? 2.) What is the participant's assessment of the sustainable audit methods in terms of: 2.1 Eco-friendly compliance practice; 2.2 Waste reduction practices; & 2.3 Energy efficiency practices. 3.) What is the participants' assessment of the quality of training? 4.) What is the participants' assessment of the operational leak prevention considering: 4.1 Reduction in product losses and wastage; 4.2 Minimize errors in operation; & 4.3 Improved Operational efficiency. 5.) Do Operational audit practices, sustainable audit methods and quality of training have significant association with operational Leak Prevention? and 6.) What are managers' experiences in preventing operational leak in the company?

*Method*. The researcher utilized quantitative methods in a specific sequence. In this design, researchers first collect and analyze quantitative data, which provides a broad overview of a research question. With 200 employees, they were included as participants. The instrument's reliability was validated using

Cronbach's Alpha, which showed high internal consistency for all dimensions. Additionally, Canonical Correlation Analysis was applied to the survey instrument to ensure the validity and reliability of the constructs measured. The data were gathered, tabulated, and analyzed using descriptive statistics, including frequency, percentage, and mean distribution.

**Findings**. Based on the data gathered from the study, the following findings are orderly presented:

1. Overall, Operational Audit Practices was rated high which means that the company shows a good application and implementation of the risk-based auditing principles, i.e. prioritizing high-risk areas and putting the audit effort on the processes that are more exposed to operations.

2. The participants generally perceived the sustainable audit methods reflecting a strong implementation of embedding sustainability into routine processes and integrating eco-friendly compliance into daily operations.

3. The participants assessed the quality of training high which implies that the company ensures that various measures were effectively adopted in daily operations and that environmental compliance was integrated into routine onto business practices.

4. Overall, operational leak prevention was assessed as high implying that the practices are already well-integrated into the company's operational processes.

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5. The Operational Audit Practices, Sustainable Audit Methods and Quality of Training were significantly associated with Operational Leak Prevention. This demonstrates that reducing risks and preserving operational effectiveness required constant adherence to audit processes. The CCA results in this study showed statistically significant associations between operational leak prevention and operational audit practices ($R = 0.305$, $R^2 = 0.093$, $p = .004$), sustainable audit methods ($R = 0.403$, $R^2 = 0.162$, $p = .000$), and quality of training ($R = 0.512$, $R^2 = 0.262$, $p = .000$), leading to the rejection of all three null hypotheses, with process compliance practices, waste reduction practices, and minimization of operational errors emerging as the strongest contributing indicators respectively

## CONCLUSION

The study examined the implementation and effectiveness of operational and sustainable audit methods in distribution companies the focus being laid on risk-based auditing, compliance practices, green practices, waste management, energy conservation, training of employees, and prevention of operational leakages. The results demonstrate that these audit mechanisms, processes, methods and practices are systematically embedded and installed in the organization's processes in order to help strengthen internal control and operational stability. In contrast to previous auditing and sustainability literature, which primarily focuses on urban/global supply chains, manufacturing, or financial audits, this study makes a unique contribution by providing the first localized, empirical investigation of operational leak prevention in a rural Philippine distribution company in Misamis Oriental, developed for similar small-to-medium distribution firms in developing regions.

The study's findings demonstrate how the organization's internal control and operational stability are strengthened by the methodical embedding and etching of audit systems, procedures, techniques, and practices. Through the integration of high-quality training, focused training and improvement of technology and process, organizations like distribution businesses are able to utilize and maximize diverse approaches and practices, which translate to greater efficiency in resources, reduction of leakages, and sustainable operational performance. These coordinated actions anchor both the environmental stewardship and performance enhancement.

The company demonstrates a methodical approach to sustainability and compliance, bolstered by ongoing capability development and active employee involvement. Environmentally conscious behaviors are reinforced while operational discipline is improved through training programs and sustainabilitydriven projects. Both environmental stewardship and performance enhancement are supported by these coordinated initiatives. Overall, the study confirms that a strong framework for risk management, efficiency improvement, and long-term organizational performance is provided by coordinating operational audits with sustainability-oriented policies.

## RECOMMENDATIONS

Based on the findings of this study, the following recommendations are endorsed. Each recommendation specifies the responsible stakeholders to ensure clarity in implementation and accountability.

1. **For Distribution Company Management** that they may emphasize on addressing the high-risk areas, create and incorporate effective audit procedures, and apply the same procedures across the entire departments. This will be achieved in a bid to maintain operational efficiency and enhance the efficiency of internal control systems.

2. **For Sustainability or Environmental Compliance Officers.** The sustainability or environmental compliance officers may reinforce and enforce these environmentally friendly practices by promoting waste reduction and energy efficiency practices. To promote regular adoption and participation in the sustainability audit or green auditing programs, they may conduct regular monitoring, revise sustainability policies where need be, and ensure effective communication with employees.

3. **For Human Resource and Training Departments.** The HR management and other training departments may develop, create, and implement comprehensive training programs on energy efficiency and

sustainable practices and operational leak prevention. Teaching has to be applicable, situation-oriented, and strategically planned to have as minimal business interruption as possible and as much employee engagement and skill implementation as possible.

4. **For External Auditors and Consultants.** To enhance risk mitigation, resource efficiency, and compliance with environmental standards, external auditors and sustainability consultants have to detect the gaps in the implementation, provide practical comments, and offer practical solutions. In order to track advancement and guarantee that suggested enhancements are successfully incorporated into organizational procedures, they should also carry out routine follow-up evaluations. 5. **For Future Researchers.** In order to provide more comprehensive insights and support future findings, future researchers may build upon this study by looking into new variables that affect operational and sustainable audit effectiveness, such as organizational culture, employee engagement, and technological integration.

**APRIL 2026**

**Approval Sheet**

This thesis entitled "INTERPLAY OF OPERATIONAL AUDIT PRACTICES, SUSTAINABLE AUDIT METHODS, TRAINING QUALITY AND OPERATIONAL
**LEAK PREVENTION,"** prepared and submitted by **ENGIL JOY P. PAGAPULAAN** in partial fulfillment of the requirements for the degree of Master in Business Administration (MBA) has been examined and is recommended for acceptance and approval for ORAL EXAMINATION.

**CYRIL C. CHAVEZ, DM-HRM**
Mentor

**PANEL OF EXAMINERS**

Approved by the committee on Oral Examination with the grade of _____

**ANTHONY LY B. DAGANG, DBM**

Chair

**MIGUELA B. NAPIERE, PhD** Member

**JUDITH C. CHAVEZ, DM-HRM** Member

**RHANDY M. OYAO, DBM**

Member

Accepted and approved in partial fulfillment of the requirements for the Master In Business Administration (MBA) degree.

JUDITH C. CHAVEZ, DM-HRM
Director, Graduate School
April 2026

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## REFERENCES

1. Abdulameer, S., Obaid, N., & Alreeshawee, R. (2023). The role of strategic auditing in achieving sustainable performance and its impact on improving the competitive advantage of the product. World Bulletin of Management and Law, 22, 75–87.
2. Abiodun, E. A. (2020). Internal control procedures and firm's performance. International Journal of Scientific and Technology Research, 9(2), 6407–6415.
3. Adams, M. B. (1994). Agency theory and the internal audit. Managerial Auditing Journal, 9(8), 8–12.
4. Alvarez, R., & Gupta, S. (2022). Operational leak prevention in distribution sectors. Journal of Business Risk Management, 15(3), 45–62.
5. Alzeban, A., & Gwilliam, D. (2020). Factors affecting internal audit effectiveness. Journal of International Accounting, Auditing and Taxation, 74–86.
6. Anwar, G., & Surarchith, N. K. (2015). Factors affecting shoppers' behavior. International Journal of Social Sciences & Educational Studies, 1(4), 10.
7. Anwar, G., & Abdullah, N. N. (2021). Inspiring future entrepreneurs. International Journal of English Literature and Social Sciences, 6.
8. Assche, K., Valentinov, V., & Verschraegen, G. (2019). General system theory relevance. Systems Research and Behavioral Science, 36.
9. Bag, S., Gupta, S., & Kumar, S. (2020). Industry 4.0 adoption. International Journal of Production Economics, 231, 107844.
10. Bonrath, A., Eulerich, M., & Lopez-Kasper, V. (2022). Internal auditor's role in ESG. SSRN Electronic Journal.
11. Bonsu, M. O., et al. (2025). Sustainability auditing and corporate governance. Business Strategy and the Environment.
12. Brunelli, S., Murzakhmetova, A., & Falivena, C. (2022). Environmental auditing. Sustainability, 14(22), 15163.
13. Bushuyev, S., Kozyr, B., & Zaprivoda, A. (2021). Strategic audit of infrastructure. Technology Audit and Production Reserves, 2(2).
14. Chalmers, K., Hay, D., & Khlif, H. (2019). Internal control in accounting research. Journal of Accounting Literature, 42, 80–103.
15. Chang, Y., Lee, S., & Park, H. (2020). Internal audits and compliance. Journal of Business Ethics, 165(3), 523.
16. Chen, Y., Li, Y., & Wang, J. (2021). IoT-based leak prevention. Journal of Manufacturing Systems, 58, 123–135.
17. Chen, Y., & Liu, J. (2020). Energy-efficient practices. Journal of Industrial Ecology, 24(3), 567–580.
18. Chen, L., & Zhang, Y. (2022). Sustainability in internal auditing. International Journal of Auditing, 28(4), 112–129.
19. Chung, S. Y., Lee, J. H., & Lee, K. H. (2020). Operational leak prevention strategies. Sustainable Production and Consumption, 23, 121–132.
20. Cohen, J. R., & Simnett, R. (2021). Assurance of sustainability reports. Contemporary Accounting Research, 38(2), 986–1015.

21. Daghfous, A., & Zoubi, T. (2017). Auditing framework for supply chain sustainability.
22. Dahir, A. A., & Omar, N. (2016). Internal audit and organizational performance. Journal of Business Management, 2(9), 12–33.
23. Debala, G. (2023). Inventory optimization and efficiency. Cogent Business & Management, 10(1).
24. Dissanayake, D. G. K., Weerasinghe, D., & Wijesinghe, K. N. (2022). Sustainability audit practices. Journal of Cleaner Production, 356.
25. Eissa, N., Gerard, F., & Zeitlin, A. (2020). Innovative audit strategy impacts. National Tax Journal, 112, 1–12.
26. European Commission. (2020). Sustainable audit methods.
27. Farouk, A. M., & Hassan, U. S. (2014). Audit quality and financial performance. International Journal of Accounting and Taxation, 2(2), 01–22.
28. Freeman, R. E. (1984). Strategic management: A stakeholder approach.
29. Glover, S. M., Prawitt, D. F., & Wood, D. A. (2021). Auditing & assurance services.
30. Goosen, R., & van Dyk, H. O. (2017). Internal audit planning framework. Southern African Journal of Accountability and Auditing Research, 19(1), 59–70.
31. Gupta, S., Kumar, V., & Singh, M. (2023). Training quality reducing errors in operations. Journal of Cleaner Production, 388, 135889.
32. Hazzaa, O. T., Abdullah, D. F., & Dhahebi, A. M. (2022). Role of corporate governance and internal control system.
33. He, M., & Li, H. (2023). Strategic audit of state-owned enterprises. Frontiers in Business, Economics and Management, 10(2), 169–173.
34. Herghiligiu, I. V., et al. (2023). Sustainable corporate performance and audit reports. Sustainability, 15(18).
35. Hoai, T. T., Hung, B. Q., & Nguyen, N. P. (2022). Internal control systems and innovation. Heliyon, 8(2).
36. Hosseini, S., Wong, K. H., & Raahemifar, K. (2020). Leak detection methodologies. International Journal of Production Research, 57(4), 1048–1063.
37. Hut-Mossel, L., Welker, G., Ahaus, K., & Gans, R. (2020). Audit programmes in healthcare. BMJ Open, 7(6).
38. Hsu, K. L., & Kwan, T. L. (2021). Flow-depth prediction models. Water Resources Management, 35(3), 1079–1100.
39. Institute of Internal Auditors (IIA). (2019). Code of Ethics.
40. Institute of Internal Auditors (IIA). (2023). International standards for internal auditing.
41. Jiang, L., Messier Jr., W. F., & Wood, D. A. (2020). Internal audit services and performance. Auditing: A Journal of Practice & Theory, 39(1), 101–124.
42. Johnson, A., Smith, B., & Lee, C. (2020). Digital compliance platforms. Journal of Supply Chain Management, 56(2), 45–62.
43. Johnson, T., & Lee, K. (2022). Internal auditing challenges. Journal of Internal Auditing, 14(3), 22–39.
44. Johnston, J. H., & Zhang, J. H. (2018). IT investment and reporting timeliness. Journal of Emerging Technologies in Accounting, 15(1), 77–101.
45. Johnstone, L. (2020). Environmental management systems in SMEs. Journal of Cleaner Production, 244.
46. Jones, L., & Solomon, J. (2017). Sustainability in organizational culture. Journal of Business Ethics, 142(1), 1–16.
47. Kalbouneh, A., Aburisheh, K., Shaheen, L., & Aldabbas, Q. (2023). Sustainability accounting structure. Cogent Business & Management, 10(2).
48. Khan, M. A., & Ali, M. (2021). Operational leak prevention framework. International Journal of Auditing, 25(2), 123–135.
49. Kibrit, J. M. (2023). E-commerce audit effectiveness. BAU Journal, 4(2).
50. Knechel, W. R., Niemi, L., & Sundgren, S. (2017). Audit quality indicators. Auditing: A Journal of Practice & Theory, 36(4), 121–141.
51. Knechel, W. R., & Salterio, S. E. (2021). Risk-based auditing. Auditing: A Journal of Practice & Theory, 40(1), 1–25.
52. Krapu, M., et al. (2020). Energy audits for efficiency. Renewable and Sustainable Energy Reviews, 81, 3085–3096.

53. Kumar, V., Singh, M., & Gupta, S. (2023). Blockchain in supply chains. International Journal of Production Economics, 255.
54. Kuhnt, J., et al. (2025). Ethics in research staff. World Development Perspectives, 37.
55. Latifah, S. W., & Soewarno, N. (2023). Environmental accounting strategy. Cogent Business & Management, 10(1).
56. Lawson, B. P., Muriel, L., & Sanders, P. R. (2017). COSO internal control framework. Research in Accounting Regulation, 29(1), 30–43.
57. Lee, H., & Park, S. (2020). Eco-friendly audit methods. International Journal of Sustainable Development, 23(2), 145–162.
58. Li, D., Zhao, Y., & Cao, C. (2021). Eco-friendly manufacturing practices. Journal of Cleaner Production, 279.
59. Liu, Y., Li, Z., & Xu, X. (2022). AI in operational efficiency. Renewable and Sustainable Energy Reviews, 158.
60. Lois, P., Drogalas, G., Nerantzidis, M., Georgiou, I., & Gkampeta, E. (2021). Risk-based internal audit. Corporate Governance, 21(4), 645–662.
61. Lombardi, R., de Villiers, C., Moscariello, N., & Pizzo, M. (2022). Blockchain in auditing. Accounting, Auditing & Accountability Journal, 35(7), 1534–1565.
62. Lubna, B., & Omar, C. (2023). Environmental internal auditing. Journal of Economic and Administrative Research, 17(1), 333–351.
63. Menegaki, M., et al. (2025). Net-zero logistics facilities. Computers & Industrial Engineering.
64. Mio, C., Fasan, M., & Costantini, A. (2023). ESG reporting and audit committees. Journal of Cleaner Production, 388.
65. Musah, A., et al. (2022). Corporate governance and SME performance. Cogent Business and Management, 9(1).
66. Nanzala, L. I., & Ingabo, O. W. (2021). Internal control and financial performance. International Journal of Finance and Accounting, 2(2).
67. Patel, R., Singh, A., & Kumar, V. (2023). Internal audit effectiveness. Auditing Perspectives, 16(1), 55–72.
68. Phase V Fulfillment. (2025). Inventory shrinkage prevention.
69. Permatasari, M. P., & Setyastrini, N. L. P. (2019). CSR disclosure factors. Journal Accounting and Taxation, 5(1).
70. Quasim, A. A. (2021). Internal control and employee performance. Journal of Asian Finance, Economics and Business, 8(3), 855–863.
71. Raaum, R. B., Morgan, S. L., & Waring, C. G. (2020). Performance auditing.
72. Rahman, A., & Al-Dhaimish, O. (2021). Strategic audit mechanisms. Corporate Governance Review, 29(3), 249–.
73. Ramirez, M., Torres, A., & Vega, L. (2020). Energy audits in distribution. Energy Policy Journal, 45(2), 134–149.
74. Rodriguez, J., & Kim, H. (2023). Strategic auditing in management. Strategic Management Journal, 44(5), 789–806.
75. Rodriguez, M., Fernandez, J., & Lopez, A. (2020). Waste reduction audits. Environmental Science & Policy, 112, 45–58.
76. Singh, R., Bansal, S., & Gupta, V. (2020). Sustainability in audit practices. Journal of Cleaner Production, 258.
77. Smith, J., & Kumar, V. (2022). Employee training and product loss. Journal of Operational Management, 61(1–2), 22–34.
78. Taber, K. S. (2022). Cronbach's alpha in research instruments. Research in Science Education, 48(6), 1273–1296.
79. Testa, F., Iraldo, F., Vaccari, A., & Ferrari, E. (2021). Environmental audits in SMEs. Business Strategy and the Environment, 25(6), 517–534.
80. Thompson, R. (2021). Holistic auditing evaluation. Journal of Auditing Theory, 9(2), 67–84.
81. Thompson, R., Patel, K., & Nguyen, T. (2020). Waste reduction metrics. Journal of Cleaner Production, 267.

82. Tiggemann, S. (2020). Sustainability in auditing. Sustainability Accounting, Management and Policy Journal.
83. U.S. Energy Information Administration. (2024). Energy efficiency and conservation.
84. Vulley, D. (2022). Internal control systems effectiveness. European Journal of Accounting, Auditing and Finance Research, 10(4), 63–75.
85. Wang, J., Li, Y., & Wu, J. (2021). Audits and operational efficiency. Energy Policy, 149.
86. Wang, X., & Liu, Y. (2023). Sustainable auditing and stakeholder perceptions. Asia-Pacific Journal of Accounting & Economics, 30(1–2), 167–168.
87. Williams, E., Erasmus, P., & Coetzee, S. (2021). Internal auditing for sustainability. Sustainability Accounting, Management and Policy Journal, 12(3), 445–462.
88. Zhang, Y., Ren, S., & Si, S. (2023). Blockchain in supply chains. International Journal of Production Research, 61(10), 3387–3406.

# APPENDIX

## Appendix A

### Canonical Correlation Assumptions

Test of normality

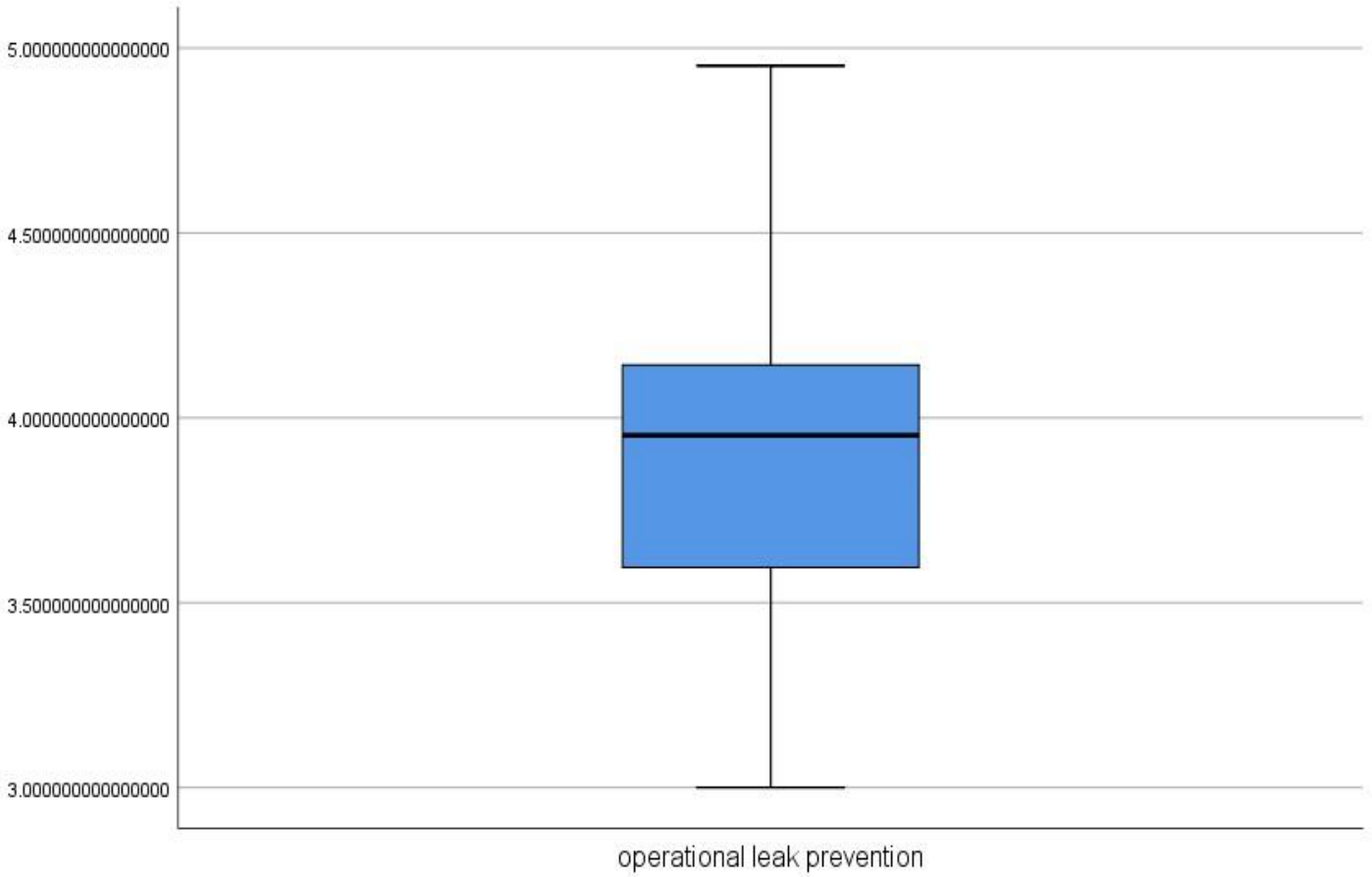
**Tests of Normality**

| | Kolmogorov Statistic | df | Smirnov[a] Sig. | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
| | | | | Statistic | df | Sig. |
| operational leak prevention | .126 | 55 | .029 | .969 | 55 | .167 |

a. Lilliefors Significance Correction

The test of normality for the dependent variable, operational leak prevention, produced mixed but generally acceptable results. The KolmogorovSmirnov test indicated a statistically significant deviation from normality (Statistic = 0.126, df = 55, p = 0.029). However, the Shapiro-Wilk test, which is considered more robust for moderate sample sizes like n=55, was not significant (Statistic = 0.969, df = 55, p = 0.167), suggesting that the data can be regarded as approximately normally distributed and suitable for parametric analysis such as canonical correlation.

No Outliers




No outliers were detected in the dataset, which is an important assumption for multivariate techniques. The absence of extreme values ensures that the results of the canonical correlation analysis are not unduly influenced by anomalous cases, thereby enhancing the stability and generalizability of the findings.

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**Test of No Multi-collinearity**

Model

| | | | | |
|---|---|---|---|---|
| 1 | (Constant) | .817 | | |
| | | | | |
| | Quality of training | .006 | .321 | 3.118 |
| | sustainable audit methods | .021 | .364 | 2.747 |
| | Operational audit practices | .001 | .462 | 2.165 |

a. Dependent Variable: operational leak prevention

The VIF values (2.165–3.118) and corresponding tolerances (.321–.462) show that all predictors—quality of training, sustainable audit methods, and operational audit practices; are within acceptable multi-collinearity limits. Since all VIFs are below 5 and tolerances are above .20, the model does not suffer from harmful multi-collinearity, meaning each variable provides unique explanatory power in predicting the outcome.

**Factor Analysis**

**EFA Operational Audit Practices**

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .723 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1109.025 |
| | Df | 210 |
| | Sig. | .000 |

**Rotated Component Matrix[a]**

Component

| | 1 | | 2 | | 3 | |
|---|---|---|---|---|---|---|
| ICP 4 | | .698 | | | | |
| IPC 5 | | .667 | | | | |
| IPC 6 | | .629 | | | | |
| ICP 1 | | .588 | | | | |
| ICP 3 | | .576 | | | | |
| ICP 2 | | .569 | | | | |
| IPC 7 | | .545 | | | | |
| PCP 5 | | | | .713 | | |
| PCP 6 | | | | .669 | | |
| PCP 4 | | | | .647 | | |
| PCP 3 | | | | .595 | | |
| RBA 5 | | | | .473 | | |
| PCP 7 | | | | | | |
| RBA 7 | | | | | | .647 |
| RBA 2 | | | | | | .595 |
| RBA 4 | | | | | | .585 |
| RBA 3 | | | | | | .536 |
| RBA 6 | | | | | | .472 |
| RBA 1 | | | | | | .446 |
| PCP 1 | | | | | | |
| PCP 2 | | | | | | |

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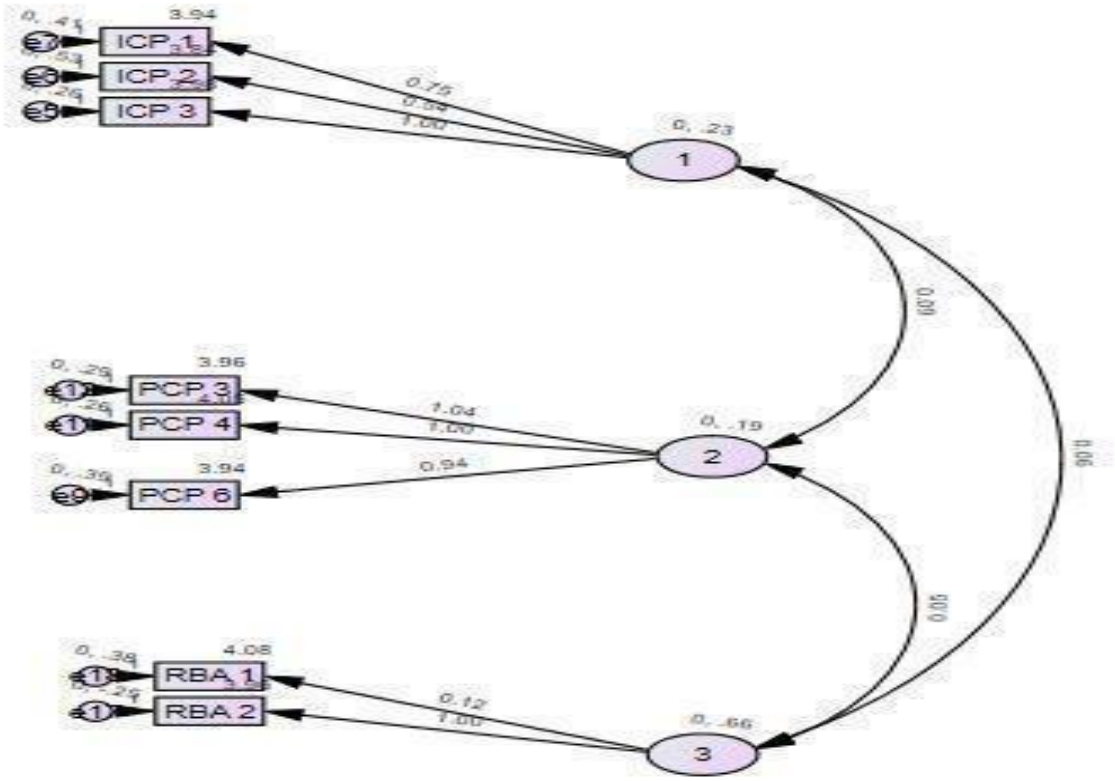
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

CFA Operational Audit Practices




CFA

| Criterion Fit Indices | Standard Value | Model Value |
|---|---|---|
| P-Value | >0.05 | 0.573 |
| CMIN/DF | <2.00 | 0.901 |
| CFI | >0.95 | 1.00 |
| NFI | >0.90 | 0.902 |
| TLI | >0.95 | 1.022 |
| RMSEA | <0.05 | 0.00 |

Composite reliability testing

Decision Rules (Hair et al., 2019; Fornell & Larcker, 1981)

CR ≥ 0.70 → Good reliability

.60 ≤ CR < 0.70 → Acceptable for exploratory research **CR < 0.60** → Poor reliability, revision recommended

Risk Based Auditing 0.846

Process Compliance Practices 0.642

Internal Control Practices 0.505 Remove this variable **APPENDICES**

**APPENDIX B Research Instrument Survey Questionnaire**

**Certificate Of Consent**

You are invited to take part in this study, which aims to identify *"KEY FACTORS OF OPERATIONAL LEAK PREVENTION AMONG DISTRIBUTION COMPANIES"*. The survey will take approximately 20 minutes to complete. Your honest opinions will greatly contribute to achieving the study's objectives. Risk: There are no risks associated with your participation in this study. Confidentiality: All information gathered will be kept strictly confidential.

You have been invited to collaborate in this research study because you are part of a Distribution Company, and your experiences and insights as an employee who knows auditing strategies and preventing operational leaks are important. You were not chosen for any personal reason, but simply because your role and perspective can help provide vital information for the said research study. Your participation is voluntary, and your decision will be respected.

If you have any questions or need clarification please contact me at Mobile: 0935-856-5363 or Email: engiljoyp@gmail.com/engil.pagapulaan@lccdo.edu.ph

Dear Participants,

Can I please share your spare time to answer this Survey? If you have questions and clarifications, you may ask anytime. This survey will not take more than 20 minutes. There are no right or wrong answers. Please read the questions carefully and answer honestly. Please provide the answer needed and tick the box before your chosen option in the items that follow.

A. Demographic Profile

| | |
|---|---|
| Name of the Company (optional) | |
| Name (optional) | |
| Participant's Age | [ ] 23 to 29 years old [ ] 40 to 49 years old<br>[ ] 30 to 39 years old [ ] 50 years old and above |

Instructions: Indicate your level of agreement with each statement regarding the company's operational audit practices using the following scale:

1 - Strongly Disagree; 2 – Disagree; 3 – Neutral; 4 – Agree; 5 - Strongly Agree

| Section 1: Risk-Based Auditing | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. The audit process evaluates risks linked to business operations. | | | | | |
| 2. High-risk areas are given priority during audit planning and execution. | | | | | |
| Source/Reference/s: Institute of Internal Auditors (IIA). (2013). "International Standards for the Professional Practice of Internal Auditing." Retrieved from https://na.theiia.org/standardsguidance/mandatory-guidance/Pages/Standards.aspx | | | | | |
| Section 2: Process Compliance Practice | 1 | 2 | 3 | 4 | 5 |
| 3.Regular audits are carried out to evaluate adherence to internal policies and procedures. | | | | | |
| 4.The audit team offers training and gives resources to support employee understanding of compliance requirements. | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 6. The tools and resources available for ensuring compliance in distribution are effective and user-friendly. | | | | | |
| Source/References: COSO (2013). "Internal Control - Integrated Framework." Committee of Sponsoring Organizations of the Treadway Commission. Retrieved from https://www.coso.org/Documents/990025P-Executive-Summary-final-may20.pdf<br><br>KPMG. (2015). "Compliance Management: A Practical Guide." Retrieved from https://home.kpmg/xx/en/home/insights/2015/06/compliance-management.htm | | | | | |

| Section 3: Internal Control Process | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. The audit team evaluates the adequacy and design of internal control systems. | | | | | |
| 2. Internal controls are routinely tested to confirm they operate as intended. | | | | | |
| 3. The audit team works collaboratively with management to enhance internal control practices. | | | | | |
| Source/References: Moeller, R. R. (2013). "Executive's Guide to COSO Internal Controls: How to Unlock Total Value and Compliance." Wiley. ISBN: 978-1118490340.<br><br>American Institute of Certified Public Accountants (AICPA). (2017). "Understanding and Applying Internal Control Principles." Retrieved from https://www.aicpa.org/content/dam/aicpa/interestareas/frc/downloadabledocuments/understanding-and-applying-internalcontrol-principles.pdf | | | | | |
| Section 4: Eco-Friendly Compliance Practice | 1 | *2* | 3 | 4 | 5 |
| 1. The company integrates eco-friendly compliance practices into daily operations. | | | | | |
| 2. The audit process evaluates adherence to environmental laws, regulations, and standards. | | | | | |
| 4.Eco-friendly compliance practices are reviewed and updated regularly based on audit results. | | | | | |
| 5.Audit findings related to environmental compliance are clearly communicated to relevant stakeholders. | | | | | |
| Sources/References: Chopra, S., & Meindl, P. (2016). *Supply Chain Management: Strategy, Planning, and Operation*. 6th ed. Pearson. (For insights on sustainable logistics and supply chain practices). | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| United Nations Environment Programme (UNEP). (2020). *Emissions Gap Report 2020*. (For regulatory compliance and environmental standards). | | | | | |
| Section 5: Waste Reduction Practices | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| 1.The company integrates effective waste reduction practices into its daily operations. | | | | | |
| 3. Employees actively participate in and support waste reduction efforts. | | | | | |
| 4. The company tracks, documents, and reports waste reduction metrics during sustainability audits. | | | | | |
| 6. The audits thoroughly evaluate key waste metrics (e.g., packaging waste, recycling rates, and excess inventory) to identify areas for improvement. | | | | | |
| Source/References: Sarkis, J., & Zhu, Q. (2018). "Environmental sustainability and production: Taking the road less travelled." *International Journal of Production Research*, 56(1-2), 743-759. (For waste metric evaluation and auditor training).<br><br>Arlbjørn, J. S., & Vagn Freytag, P. (2013). "Evidence of lean: A review of international peer-reviewed journal articles." *European Business Review*, 25(2), 174-205. (For auditing lean practices related to waste reduction). | | | | | |
| Section 6: Energy Efficiency Practices | 1 | 2 | 3 | 4 | 5 |
| 1. The company implements and promotes energy-efficient practices in its operations. | | | | | |
| 3.Employees are trained on energy-saving practices and their operational benefits. | | | | | |
| 5.The outcomes of energy efficiency initiatives are communicated to stakeholders. | | | | | |
| 7.The company's energy audits effectively target energy efficiency improvements specific to distribution system operations. | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Sources/References: Capehart, B. L., Turner, W. C., & Kennedy, W. J. (2016). *Guide to energy management* (8th ed.). Fairmont Press. | | | | | |
| Section 7: Quality of Training | 1 | 2 | 3 | 4 | 5 |
| 1. The training programs address the specific skill and knowledge needs of employees in distribution operations. | | | | | |
| 2. Training materials and resources reflect current industry standards and practices. | | | | | |
| 3. Trainers demonstrate expertise and competence in distribution-related topics. | | | | | |
| 4. Employees report improved performance and efficiency after attending training. | | | | | |
| 5. Training sessions incorporate handson activities and real-world scenarios relevant to distribution tasks. | | | | | |
| 6. The training sessions are conducted in a timely manner and do not disrupt the distribution operations. | | | | | |
| 7. The quality of training left a positive impact on the overall performance of the distribution company. | | | | | |
| Source/References: Noe, R. A.<br>(2017). "Employee Training and<br>Development." McGraw-Hill Education. ISBN:<br>978-1259641280. | | | | | |
| *Section 8: Reduction In Product Losses And Wastages* | 1 | 2 | 3 | 4 | 5 |
| 1. Leak prevention practices have contributed to a significant reduction in product losses. | | | | | |
| 2. The company actively monitors and addresses leaks to prevent resource wastage. | | | | | |
| 3. Employees are trained to detect and report leaks, helping to minimize product loss. | | | | | |
| 4. The implementation of leak prevention measures has reduced material wastage. | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 5. Leak prevention strategies are regularly reviewed and improved to enhance loss control. | | | | | |
| 6. There are clear procedures in place for reporting and addressing product losses and wastages in our distribution operations. | | | | | |
| 7. company utilizes technology effectively to monitor and reduce product losses during distribution. | | | | | |
| Sources/References: Kumar, S., & Singh, R. (2018). "A study on compliance management in supply chain." *International Journal of Supply Chain Management*, 7(2), 1-10. Kumar, S., & Singh, R. (2016). "A study on the impact of supply chain management practices on product loss in distribution." *International Journal of Logistics Systems and Management*, 25(1), 1-15.<br>DOI: 10.1504/IJLSM.2016.075123 | | | | | |
| *Section 9: Minimizing Errors In Operation* | 1 | 2 | 3 | 4 | 5 |
| 1. Leak prevention practices contribute to reducing errors in operational processes. | | | | | |
| 2. Clear procedures for leak detection and reporting help prevent operational mistakes. | | | | | |
| 3. Employee training on leak prevention has resulted in fewer process-related errors. | | | | | |
| 4. Technology used in leak prevention improves operational accuracy and reduces human error. | | | | | |
| 5. Regular audits of leak prevention practices help identify and correct errors promptly. | | | | | |
| 6. The company uses automated systems (e.g., barcode scanners, RFID) to | | | | | |
| reduce manual errors in inventory management. | | | | | |
| 7. Real-time tracking systems are implemented to monitor distribution activities and prevent delivery errors. | | | | | |
| Sources/References: Gunasekaran, A., Subramanian, N., & Rahman, S. (2015). Improving supply chain performance through RFID technology. *International Journal of Production Economics*, 162, 86-95. https://doi.org/10.1016/j.ijpe.2014.12.019 Rushton, A., Croucher, P., & Baker, P. (2017). *The handbook of logistics and distribution management* (6th ed.). Kogan Page. | | | | | |
| *Section 10: Improved Operational Efficiency* | 1 | 2 | 3 | 4 | 5 |
| 1. Leak prevention measures have enhanced overall operational efficiency. | | | | | |
| 2. Fewer leaks result in more efficient use of resources and time. | | | | | |
| 3. Leak prevention practices help streamline operational processes. | | | | | |
| 4. Reduced leak-related interruptions have improved employee productivity. | | | | | |
| 5. The company regularly evaluates leak prevention efforts to drive continuous efficiency improvements. | | | | | |
| 6. Team collaboration plays a crucial role in enhancing operational efficiency. | | | | | |
| 7. The company effectively utilizes data analytics to identify areas for improving operational efficiency. | | | | | |
| Sources/References: Slack, N., Chambers, S., & Johnston, R. (2020). "Operations Management." Pearson Education Limited.<br>ISBN: 978-0273716860. | | | | | |

Qualitative Research Question: What are managers' experiences with the effectiveness of preventing operational leaks?

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**APPENDIX C**

**Letter of Informed Consent Lourdes College, Inc.**

Cagayan de Oro City

Higher Education Department

Dear Participant,

I am Engil Joy P. Pagapulaan, a candidate at Lourdes College pursuing a Master's degree in Hospitality Management. I am currently conducting my thesis,tentatively titled, **"INTERPLAY OF OPERATIONAL AUDIT PRACTICES, SUSTAINABLE AUDIT METHODS, TRAINING QUALITY AND OPERATIONAL LEAK**

**PREVENTION."** Participation in this survey is entirely voluntary, and you may withdraw at any time without any consequences. All information collected will remain anonymous, strictly confidential, and securely stored. If you agree to participate, please read the questionnaire carefully and answer all questions to the best of your knowledge. Should you wish to receive a summary of the research findings once available, you may request it at the contact details provided below. Sincerely,

ENGIL JOY P. PAGAPULAAN engil.pagapulaan@lccdo.edu.ph

09358565363

**CERTIFICATE OF CONSENT**

I have read the preceding information, or it has been read to me. I have had the opportunity to ask questions about it. I consent voluntarily to participate in this study.

Print Name of Participant:

_____

Signature of Participant:

_____

Date: _____

**LOURDES COLLEGE**
*Inc.*
Gen. Capistrano Street, Cagayan de Oro City
CAMPUSES: Higher Education Department *Capistrano-Hayes Sts.* Integrated Basic Education Department *Macasandig*
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April 15, 2026

## APPROVAL SHEET FOR FINAL REVISION

| **TO :** | **GRADUATE SCHOOL PANEL** | **SIGNATURE** |
|---|---|---|
| Mentor : | **CYRIL C. CHAVEZ, DM-HRM** | _____ |
| Member: | **JUDITH C. CHAVEZ, DM-HRM** | _____ |
| Member: | **MIGUELA B. NAPIERE, PhD** | _____ |
| Member: | **RHANDY M. OYAO, DBM** | _____ |
| Chair: | **ANTHONY LY B. DAGANG, DBM** | _____ |

FROM: Director, Graduate School
*SUBJECT:* *FINAL REVISIONS*

Herewith is the final corrected draft of the Thesis Writing Paper of **MS. ENGIL JOY P. PAGAPULAAN** for your approval before the binding of this paper. Please affix your signature and sign the **Approval Sheet** if there are no more suggestions/recommendations to be incorporated in this final revision. Thank you very much.

**DR. JUDITH C. CHAVEZ**
Graduate School Coordinator

LOURDES COLLEGE
Inc.
Gen. Capistrano Street, Cagayan de Oro City
CAMPUSES: Higher Education Department *Capistrano-Hayes Sts.* Integrated Basic Education Department *Macasandig*
Tel Nos.: (088) 857-1423; (088) 857-4827 URL: http://www.lccdo.edu.ph E-mail: lc@lccdo.edu.ph

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Graduate School

# CERTIFICATE OF ORIGINALITY

This is to certify that the study entitled **"INTERPLAY OF OPERATIONAL AUDIT PRACTICES, SUSTAINABLE AUDIT METHODS, TRAINING QUALITY AND OPERATIONAL LEAK PREVENTION",** submitted as a requirement for the degree Master in Business Administration at the Lourdes College Graduate School, is my original work.

I duly acknowledge the guidance and contributions of my adviser, panel members, and others in relation to the research design, presentation, and language refinement. This study has not been previously published nor written by another person.

All information, whether quoted verbatim or paraphrased, has been properly cited and referenced. Nothing in this study violates copyright or other intellectual property rights.

I further grant permission to the Lourdes College Learning Commons to store my journal article in its institutional repository for wider dissemination of the study's findings.

**ENGIL JOY P. PAGAPULAAN**
(Signature over Student's Printed Name)
Date:

**CYRIL C. CHAVEZ, DM-HRM**
(Signature over Adviser's Printed Name)
Date:

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CAMPUSES: Higher Education Department Capistrano-Hayes Sts. Integrated Basic Education Department Macasandig
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Date: _____

**PROPOSAL APPROVAL FORM**

This thesis entitled **"INTERPLAY OF OPERATIONAL AUDIT PRACTICES, SUSTAINABLE AUDIT METHODS, TRAINING QUALITY AND OPERATIONAL LEAK PREVENTION"** prepared and submitted by **Engil Joy P. Pagapulaan** in partial fulfillment of the requirements for the degree **Masters in Business Administration** has been checked and is recommended for presentation to the panel.

Attached are: ___ Plagiarism Result
___ Certification that the Paper had been edited by experts.

**CYRIL C. CHAVEZ, DM-HRM**
(Mentor's Name & Signature)

Approved:

**DR. JUDITH C. CHAVEZ**
Director, Graduate School

CERTIFIED BY : International Organization for Standardization (ISO) 9001:2015 Quality Management System (TÜV Rheinland) ; Private Education Assistance Committee-Educational Service Contracting (PEAC - ESC)
ACCREDITED BY: Philippine Accrediting Association of Schools, Colleges and Universities (PAASCU); Bureau of Immigration (BI) ; Commission on Higher Education - Institutional Sustainability Assessment (CHED - ISA)
MEMBER : Catholic Educational Association of the Philippines (CEAP); Philippine Association for Graduate Education (PAGE) Region X; Philippine Association for Teacher Education (PAFTE); Association of Southeast and East Asian Catholic Colleges and Universities (ASEACCU); Asian Association of School HRMD Practitioners, Inc. (AASHPI); World Council for Curriculum and Instruction (WCCI); South East Asian Association for Institutional Research (SEAAIR) ; ASEAN Council of Physical Education and Sport (ACPES) ; Association of Private Secondary Schools in Cagayan de Oro City (APSSCO) ; Cagayan de Association of Private Elementary Education (CAPES); Philippine Society of Information Technology Educators (PSITE)

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## WAIVER FOR RESEARCH PRESENTATION AND PUBLICATION

I, **ENGIL JOY P. PAGAPULAAN** hereby acknowledge that in relation to my thesis entitled **"INTERPLAY OF OPERATIONAL AUDIT PRACTICES SUSTAINABLE AUDIT METHODS, TRAINING QUALITY AND OPERATIONAL LEAK PREVENTION"** Lourdes College has guided me in the conceptualization, data gathering, analysis, interpretation of the data and the completion of the paper. Thus, prior to the possible presentation and publication of this paper, I will seek the permission and guidance of the school.

**ENGIL JOY P. PAGAPULAAN** — (Signature over Student's Printed Name)

Date:

**CYRIL C. CHAVEZ, DM-HRM** — (Signature over Adviser's Printed Name)

Date:

Lourdes College, Inc.

Graduate School

## AI DECLARATION FORM

All thesis manuscripts and other written performance tasks must include a declaration statement. This statement should have three columns: 1) the tools used (e.g., ChatGPT, Co-pilot), 2) the prompts used, and 3) descriptions of how the information was generated.

**Statement of AI Declaration**

*I declare that the following AI tools were utilized:*

| AI Tools | Prompts Used | Descriptions of how the output was used in your work |
|---|---|---|
| Blackbox.AI | Prompt: What are Operational Audit Practices and Sustainable Audit Practices? | The output is to ensure that the thoughts are still intact to the existing studies. |

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| | | |
|---|---|---|
| Google<br><br>Scholar/Google<br><br>Gemini | Asked the AI about relevant articles, journals and existing studies that are related to my research topic about Operational Audit Method and<br><br>Sustainable Audit Practices. | Online Articles, PDFs, Journals and other existing studies are being utilized in RRL and other parts of the paper. |
| Blackbox.AI | Asked the AI what is all about the Bellmont Principle. | The output was to put the thought about the Bellmont Principle on Chapter 3, Data Gathering & Ethical<br><br>Consideration. |
| Wordvice AI | The Prompt used in this AI is to give clarity or to use simple words. | The output was to rephrase some words that are ambiguous and hard to understand. |
| ChatGPT | What is SDG 12 and how it affects Sustainable Auditing? | The output was used to give a brief description and background about the SDG 12. |

Noted by:

**ENGIL JOY P. PAGAPULAAN DM-HRM**
Researcher's Signature

**CYRIL C. CHAVEZ,**
Mentor

*Note: This statement must be attached in the appendix of a thesis manuscript but it must be cited in Chapter 3- Ethical Considerations.*

Reference: AI Framework of Siliman University, Dumaguete City

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# FINAL DEFENSE APPROVAL FORM

This thesis entitled _**"INTERPLAY OF OPERATIONAL AUDIT PRACTICES SUSTAINABLE AUDIT METHODS, TRAINING QUALITY AND OPERATIONAL LEAK PREVENTION"**

prepared and submitted by _ENGIL JOY P. PAGAPULAAN in partial fulfillment of the requirements for the degree _Master in Business Administration has been checked and is recommended for presentation to the panel.

Attached is the plagiarism result.

**CYRIL C. CHAVEZ, DM-HRM**
(Adviser's Name & Signature)

Approved:

DR. JUDITH C. CHAVEZ
Director, Graduate School

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