

Literature Review: Evolution And Implementation of The Concepts of Effectiveness, Efficiency, And Economy in Performance Auditing

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ABSTRACT

This literature review aims to explore the evolution and implementation of the concepts of effectiveness, efficiency, and economy in performance audits through a systematic approach to relevant literature. Performance audits, as a management oversight tool, play a critical role in assessing the extent to which organizations achieve their strategic objectives, optimize resource utilization, and maintain a balance between the benefits gained and the costs incurred. This study utilizes five performance audit outcomes from various sectors as a basis for comparison to identify variations in the application of these key concepts. The findings indicate that effectiveness in performance audits is often measured by the organization's success in achieving expected outcomes aligned with its strategic goals. Efficiency, on the other hand, emphasizes the optimization of work processes and resource use, considering the input-output relationship.

INTRODUCTION

Performance audits have undergone a significant evolution from a mere administrative audit mechanism to a strategic approach that focuses on optimal resource management and the achievement of organizational goals. In the process, performance audits have not only evolved as a tool to ensure financial accountability, but also as a means to assess the success of an organization in applying the principles of effectiveness, efficiency, and economics (the 3E principle). This evolution is influenced by the increasingly complex dynamics of modern organizational needs, both in the private and public sectors, which require a more holistic and results-based approach to evaluation.

In the private sector, the development of performance audits is characterized by a strengthening focus on operational efficiency to support business sustainability and competitiveness in the global market. In contrast, in the public sector, the evolution of performance audits reflects a paradigm shift from simply fulfilling administrative compliance to more transparent and outcome-oriented management of public services. The 3E principle became the main framework in this development, with the aim of providing a clear guide to measuring the success of an organization based on the relationship between the resources used and the results achieved.

This study aims to delve deeper into how the 3E principle has been applied in performance audits through the analysis of five efficiency audit samples from various sectors. This sample includes three private companies and two public entities:

1. PT. Semen Gresik (Persero): As a state-owned company, the implementation of the 3E principle can be seen in the company's efforts to improve operational effectiveness through the management of production processes that are in line with national strategic goals. Efficiency is achieved through optimization of manufacturing processes that minimize waste, while economical is realized in production cost control without sacrificing the quality of results.
2. PT. Envirolab Nusantara: This environmental laboratory company applies the principle of effectiveness by ensuring testing services in accordance with international quality standards. Efficiency is applied through the use of automation technology to speed up work processes, while economy is achieved through the management of operational costs that remain affordable for clients without reducing service coverage.
3. PT. PLN ULP Ruteng, East Nusa Tenggara: The implementation of the 3E principle in the unit's performance audit includes increasing effectiveness through increasing the accessibility of electricity services in remote areas. Efficiency is achieved through planned infrastructure maintenance, while economy is realized through the management of operational budgets with a focus on providing affordable energy.
4. PT. Belvamas Maritim Indontama: This maritime logistics company applies the principle of effectiveness by ensuring timely delivery of goods according to customer needs. Efficiency is achieved through optimizing transportation routes and maximizing resource utilization, while economy is realized

through competitive transportation cost management without compromising service quality.

5. PT. Aneka Karya Farma: As a pharmaceutical company, the principle of effectiveness is applied by ensuring equitable and timely distribution of health products. Efficiency is achieved through the digitization of logistics processes, while economy is realized through controlling production and distribution costs to maintain competitive product prices in the market.

This evolution is also reflected in the methodological approach used, where performance audits now use more information technology and data-driven analysis to improve the accuracy and relevance of evaluations. Over time, performance audits have become more strategic instruments by taking into account various contextual factors, such as organizational complexity, regulatory dynamics, and stakeholder expectations. However, despite many developments, the implementation of performance audits still faces challenges, especially in the consistency of the application of the 3E principles across various sectors. Factors such as the auditor's technical capacity, the diversity of sectors, and regulatory changes often affect the success of its implementation. Therefore, this study not only maps these developments and challenges, but also offers recommendations to improve the effectiveness of performance audits in meeting the needs of modern organizations.

This research is expected to provide relevant insights into the evolution of the concept and application of the 3E principles in performance auditing, as well as help identify opportunities to strengthen audit frameworks that are more responsive to the dynamic needs of the public and private sectors. Thus, this study can contribute to improving the accountability, transparency, and sustainability of organizational operations in the future.

LITERATURE REVIEW

Performance Audit

Performance audit is an independent and objective examination of an organization's activities or programs to assess whether resources have been used appropriately and whether program objectives are being achieved. According to Johnsen (2016) in the Global Encyclopedia, performance audit is an evaluation based on decisions or goals set by the legislature, which focuses on the economic, efficient, and effectiveness aspects of public programs or organizations. In Indonesia, Law No. 15 of 2006 states that performance audit is an examination of economic, efficient, and effectiveness aspects carried out for the benefit of management. In general, performance audits aim to provide new information and recommendations for improvement oriented towards achieving "value for money", i.e. the use of resources as efficiently and economically as possible to achieve effective results.

The Evolution of Performance Audits

The concept of performance auditing began to develop rapidly in the late 20th century as New Public Management demanded transparency and public accountability. Although performance audits can be traced back to the 1960s, the special practice of performance audits only grew into a separate activity in the

late 1970s to early 1980s. This change is supported by increasing government spending and the demand for efficient use of the budget. For example, in Australia, the Audit Act Amendment of 1979 required the Auditor-General to conduct performance audits (economics and efficiency). Similarly in England, the concept of value-for-money (economical, efficient, effective) has been developed since the mid-20th century. At the international level, INTOSAI (through ISSAI 300) and state audit bodies (e.g. NAO, GAO, ANAO) developed formal guidelines for performance auditing in the 1980s–2000s. In the United States, for example, since 2004 the GAO has begun actively conducting performance audits to assess whether government programs are running on purpose. In Indonesia, performance audits began to be intensified after government reforms: the BPK introduced massive performance audits after the 2001 regional autonomy law and Law 15/2006. Thus, the evolution of performance audits can be seen from the shift in the focus of traditional accounting audits towards the performance assessment of public programs that include 3E.

The Concept of Effectiveness, Efficiency, and Economy (3E Principles) in Performance Audit

Economic (economical) principles, efficiency, and effectiveness are the main frameworks in international performance audits. ISSAI 3910 defines the economic principle as minimizing resource costs (taking into account quality, quantity, and procurement time). The principle of efficiency is defined as obtaining the maximum output from existing resources, which is the relationship between input and output in terms of quantity, quality, and time. Meanwhile, the principle of effectiveness focuses on achieving goals and expected outcomes. As an illustration, the NAO (UK) states that value-for-money is defined as the optimal use of resources (economy, efficiency, effectiveness) to achieve the expected results. This definition is in line with other performance audit literature that asserts that a performance audit assesses the extent to which an entity's operations have been run economically, efficiently, and effectively. Thus, 3E is not just a separate concept, but interrelated in assessing organizational performance.

The Relationship of the 3E Principle to Performance Auditing

In performance audits, the 3E principle is the main evaluation criterion. ISSAI explicitly states that a performance audit by a state audit agency is an independent audit to see whether the government's operations, programs, or organizations have been carried out according to the principles of economy, efficiency, and effectiveness. This means that the performance auditor assesses (1) whether expenditures are carried out economically (resources are purchased at the best price and with minimal use), (2) whether the use of resources is efficient (getting the maximum results with existing inputs), and (3) whether the results and outputs of the program are effective (achieving the goals that have been set). At the national level, Law No. 15/2006 also mandates that performance audits aim to ensure that public spending is carried out economically, efficiently, and effectively. With this focus, performance audits differ from traditional

financial audits because they do not just check compliance, but measure value for money through the three 3E principles.

Application of the 3E Principle to Selected Entities

The implementation of the principles of economy, efficiency, and effectiveness can be illustrated in various entities. In general, a performance audit will assess the 3E aspects of each company's business activities, For example:

1. PT Semen Gresik (BUMN cement): In the cement industry, the economic aspect can be in the form of controlling production costs, such as the selection of raw materials (lime, clinker) at optimal prices and energy management. The efficiency aspect is seen from the comparison of cement output with the inputs used (for example, tons of cement per ton of coal or electricity). The effectiveness aspect is related to the achievement of production targets, product quality, and market share according to the strategic plan. The implementation of 3E means assessing whether Semen Gresik has purchased raw materials at the best price (economical), operates a factory with high productivity (efficiency), and meets production quotas and expected quality (effectiveness).
2. PT Envirolab Nusantara (environmental testing laboratory): As a laboratory, economic principles are reflected in the management of testing costs (e.g., the use of chemicals or laboratory equipment) to be cost-efficient. The principle of efficiency can be measured by the test throughput (number of samples tested per period) and the analysis completion time. Effectiveness is shown through the accuracy of results and service achievements according to quality standards. A performance audit on Envirolab will assess, for example, whether the laboratory's operating costs have been optimized (economical) and whether the tests are carried out in a timely manner with high accuracy (efficiency and effectiveness).
3. PT PLN ULP Ruteng (PLN service unit): A case study of the management audit shows that the function of procurement of goods and services at PLN ULP Ruteng is not efficient and has not been effective. This means that procurement costs may not be economical (there is a waste of money), and procurement activities do not result in optimal performance improvements. The study used 3E management audit criteria, and concluded that there were weaknesses in procurement planning and execution. These results reflect the importance of applying the 3E principle: for example, PLN must ensure the procurement of materials and services at reasonable prices (economical), minimize procurement delays (efficiency), and achieve operational targets (effectiveness) to improve company performance.
4. PT Belvamas Maritim Indontama (maritime services): In the shipping and logistics sector, economies can be achieved by choosing the route and fuel of the ship with the lowest cost. Efficiency is measured from asset utilization (number of voyages per vessel per year) and loading and unloading times. Effectiveness has to do with the accuracy of delivery and customer satisfaction. Performance audits in maritime companies will assess, for

- example, whether the ship's operational costs are minimized (economical) and whether the delivery schedule is well met (efficiency and effectiveness).
5. PT Aneka Karya Farma (pharmaceutical industry): In the pharmaceutical industry, economics includes the efficiency of purchasing medicinal raw materials at low cost, efficiency includes the ratio of output (drug production) to input (raw materials, labor), and effectiveness is reflected in the achievement of production targets and product quality according to standards. Performance auditors will assess production cost control (economical) as well as factory productivity (efficiency) and whether the final product meets patient needs (effectiveness).

Each of the above examples demonstrates the interpretation of 3E implementation practices according to performance audit theory: auditors conduct assessments from upstream (planning and procurement) to downstream (outputs and results) to ensure public budgets or company resources are used economically, efficiently, and effectively. This literature review uses a variety of international and national sources, including INTOSAI guidelines and scientific studies, to support the application of the 3E principle in performance audits.

METHODOLOGY

The method used in this study is the systematic literature review method, which refers to a structured approach to identify, analyze, and synthesize the existing literature on a specific topic. In this case, the main focus of the study is on the evolution of performance audits and the application of the 3E (Economical, Efficient, and Effective) principles in the public and private sectors. This method is applied to provide a deeper and more comprehensive understanding of changes and challenges in performance audits, as well as how the 3E principle is used to assess organizational performance

RESEARCH RESULT

Table 1. Comparison Table of Performance Audits with the Implementation of 3E Principles (Efficiency, Effectiveness, Economical)

Research Title	Performance Audit Objects	Source	Implementation of the 3E Principle	Conclusions and Suggestions
ANALYSIS OF OPERATIONAL AUDITS IN AN EFFORT TO IMPROVE THE EFFICIENCY, EFFECTIVENESS, AND ECONOMY OF THE PRODUCTION PART (Study on PT. Semen	PT. SEMEN GRESIK (PERSERO)	AUDITOR	<p>EFFICIENCY:</p> <p>1. Raw Materials = Target vs. realization of raw material productivity:</p> <ul style="list-style-type: none"> - 2011: 95,65 % vs. 93,38 % (-2,27 %) - 2012: 82,70 % vs. 74,07 % (-8,63 %) - 2013: 93,69 % vs. 93,19 % (-0,50 %). <p>2. Workforce =</p> <ul style="list-style-type: none"> - 2011: 251.02 % - 257.46 % = +6.44 % (Efficient) - 2012: 278.84 % - 291.62 % = +12.78 % (Efficient) - 2013: 391.47 % - 424.76 % = +33.29 % (Efficient) 	<p>Conclusion:</p> <ol style="list-style-type: none"> 1. Efficiency: labor and partial capacity of efficient machinery; raw materials are not yet. 2. Effectiveness: only effective in 2013. 3. Economicalization: only economical in 2011, waste in 2012-2013.

Research Title	Performance Audit Objects	S e c t o r	Implementation of the 3E Principle	Conclusions and Suggestions
Gresik (Persero) (Roslia Ardiani Hijayati, Moch. Dzulkirom AR, Achmad Husaini 2014)			<p>3. Idle Capacity =</p> <ul style="list-style-type: none"> - 2011: 99.76 % loading → 0.24 % idle (Efficient) - 2012: 89.62 % loading → 10,38 % idle (Kurang optimal) - 2013: 98.39 % loading → 1.61 % idle (Efficient) <p>EFFECTIVENESS:</p> <ul style="list-style-type: none"> 1. Achievement Rate (AR) - 2011: 99.84 % (Almost effective) - 2012: 87.70 % (Not yet effective) - 2013: 104.18 % (Effective) <p>ECONOMICALIZATION:</p> <ul style="list-style-type: none"> 1. Product Value Economic (PVE) 2011: 97.39% (Econom) 2012: 110.13 % (Waste) 2013: 113.18 % (Waste) 	<p>Suggestion:</p> <ol style="list-style-type: none"> 1. Apply stock-taking of raw materials and late sanctions. 2. Synchronize the raw material supply with the machine capacity to press idle capacity. 3. Monitor overhead costs every month & look for energy efficiency opportunities. 4. Use real-time dashboards for AR and PTK to immediately know any irregularities.
THE EFFECT OF OPERATIONAL AUDIT IN IMPROVING EFFICIENCY AND EFFECTIVENESS ON PURCHASING PERFORMANCE AT PT ENVIROLAB NUSANTARA (Irta Paramita & Budi Tri Rahardjo, 2016)	PT. ENVIROLAB NUSANTARA	P R I V A T E	<p>EFFICIENCY : $t_{hitun_e n} = 2,683 > t_{\alpha}\beta_{1e} = 2,052$ $\beta_1 = 0.334$ (Operational audit efficiency had a significant effect ($p < 0.05$) on purchasing performance: every 1 tbsp increase in efficiency score → performance increased by 0.334 tbsp).</p> <p>EFFECTIVENESS : $t_{hitun_e n} = 3.376 > t_{\alpha}\beta_{1e} = 2.052$ $\beta_2 = 0.408$ Operational audit effectiveness had a significant effect ($p < 0.05$): every 1 tbsp increase in the effectiveness score → performance increased by 0.408 tbsp (stronger effect).</p> <p>ECONOMICALIZATION : $F_{hitun_e n} = 37,844 > F_{\alpha}\beta_{1e} = 3,354$ $R^2 = 0.737$ (Efficiency + effectiveness together significantly affected performance ($p < 0.05$) and explained 73.7% variation in purchasing performance → means purchasing costs & resources were used more economically. The remaining 26.3% were influenced by other factors).</p>	<p>Conclusion:</p> <ol style="list-style-type: none"> 1. Efficiency: Efficiency audits have been proven to improve purchasing performance ($\beta_1=0.334$). 2. Effectiveness: Effectiveness audits have even greater influence ($\beta_2 = 0.408$). 3. Economy: The synergy of these two audits explains a 73.7% improvement in purchasing performance, meaning that the company has achieved significant savings in purchasing costs. <p>Suggestion:</p> <ol style="list-style-type: none"> 1. Strengthen efficiency audits (Selection of suppliers & order quantities to reduce the purchase cost). 2. Deepen the effectiveness audit (Ensure quality & delivery time

Research Title	Performance Audit Objects	Sector	Implementation of the 3E Principle	Conclusions and Suggestions
				<p>according to operational needs). 3. Identification of other factors (26.3 %) (Trace and optimize supporting processes (e.g., IT systems, staff training) to further add to the economy).</p>
<p>THE APPLICATION OF MANAGEMENT AUDIT TO ASSESS THE ECONOMY, EFFICIENCY AND EFFECTIVENESS OF THE PROCUREMENT FUNCTION OF GOODS AND SERVICES (CASE STUDY ON PT. PLN ULP RUTENG, EAST NUSA TENGGARA) (Beata Sakristi Sarni & Tries Ellia Sandari , 2023)</p>	<p>PT. PLN ULP RUTENG</p>	<p>AUDIENCE</p>	<p>EFFICIENCY : – Finding 1 shows inefficiencies in the process of receiving goods: without re-checking, the wrong or damaged goods often come, which forces delays in work and replacement. EFFECTIVENESS : – Findings 2 & 3 reveal the failure to make procurement reports on time and in accordance with regulations. Late or non-compliant reports break down the consistency of handovers and open up manipulation loopholes. ECONOMICALIZATION : – Accumulated inefficiencies (wrong/damaged goods) and ineffectiveness (inappropriate reports) lead to additional costs—replacement of goods, late fines, and even potential regulatory sanctions.</p>	<p>Conclusion: 1. EFFICIENCY: set mandatory receipt checklist, mark and return defective goods immediately, and train warehouse staff for quantity and quality inspection before storage. 2. EFFECTIVENESS Schedule deadlines for reports and format compliance audits—for example, weekly reviews by the oversight team—to ensure that each report is complete, accurate, and meets legal standards. 3. ECONOMY: by improving receipt efficiency and reporting effectiveness, companies reduce operational waste and minimize the risk of unexpected costs, so that procurement budgets are used as optimally as possible. The procurement function of PT PLN ULP Ruteng is already running but is not yet fully efficient, effective, and economical—due to weaknesses in goods inspection and procurement reporting.</p>

Research Title	Performance Audit Objects	Sector	Implementation of the 3E Principle	Conclusions and Suggestions
				<p>Suggestion:</p> <ol style="list-style-type: none"> 1. Apply SOP check-in goods: quality & quantity inspection before storage. 2. Set a reporting calendar with clear deadlines and regular format audits. 3. Monitor and report additional costs due to defective goods or problematic reports for continuous repair.
<p>OPERATIONAL AUDIT AND INTERNAL CONTROL DURING THE PANDEMIC ON THE EFFECTIVENESS AND EFFICIENCY OF MANAGEMENT PERFORMANCE CONTROL AT PT BELVAMAS MARITIM INDONTAMA (Anathasya Angelia Zeta Junus1, Amelia Vernanda2), Vanessa Gabriella3), Carmel Meiden4), 2022)</p>	<p>PT. BELVAMAS MARITIM INDONTAMA</p>	<p>SWASTA</p>	<p>EFFICIENCY: Not yet efficient. Manual processes, overlapping tasks, and slow stock checks/arrival of goods lead to waste of time and effort.</p> <p>EFFECTIVENESS: Quite effective, but not consistent. Sales and cash reports are routinely created, but they are often late or the format is not uniform so decision-making is disrupted.</p> <p>ECONOMICALIZATION: Not yet economical. The above inefficiencies and ineffectiveness incur overtime costs, late compensation, and unexpected overheads that erode margins.</p>	<p>Conclusion:</p> <ol style="list-style-type: none"> 1. EFFICIENCY: By restructuring tasks (job descriptions focus on a function basis), as well as implementing automation and checklist inspections, PT Belvamas can cut waste of time and effort—preventing duplication of tasks and ensuring that crew supplies or spare parts are always available exactly when needed. 2. EFFECTIVENESS: By setting SLA reports and order acceptance form standards, companies ensure outputs (sales reports, cash reconciliation, order confirmations) are always appropriately formatted and on time—supporting quick decision-making and reducing customer complaints. 3. ECONOMY: The synergy of improving efficiency and effectiveness directly reduces overtime

Research Title	Performance Audit Objects	Sector	Implementation of the 3E Principle	Conclusions and Suggestions
				<p>costs, late compensation, and overhead overhead; thus the procurement and distribution budget can be reallocated to system improvement investments, so that every rupiah spent provides maximum value for the company.</p> <p>PT Belvamas already has an internal control framework (regular meetings, written policies, periodic reconciliation), but there is still a waste of resources and imprecise processes that undermine effectiveness.</p> <p>Suggestion:</p> <ol style="list-style-type: none"> EFFICIENCY: task restructuring & automation of warehouse/ordering workflows. EFFECTIVENESS: set standard report deadlines & forms for each customer process. ECONOMY: monitor operational costs through variance analysis, then reallocate savings to system improvement.
OPERATIONAL AUDIT IN IMPROVING THE EFFECTIVENESS, EFFICIENCY, AND ECONOMY	PT. ANEKA KARYA FARMA	SWASTA	<p>EFFICIENCY:</p> <ol style="list-style-type: none"> Turnover Ratio: <ul style="list-style-type: none"> - 2018: 11,06× vs target $\geq 12\times$ (-0,94) - 2019: 13,90× vs target $\geq 12\times$ (+1,90) Days on Hand: <ul style="list-style-type: none"> - 2018: 33 days vs ≤ 30 days (+3) - 2019: 26 days vs ≤ 30 days (-4) Frequency of Stock Withdrawal: <ul style="list-style-type: none"> - Target: quarterly (4×/yr) 	<p>Conclusion:</p> <ol style="list-style-type: none"> Efficiency: <ul style="list-style-type: none"> - 2018 has not reached the target; 2019 is already efficient Effectiveness: <ul style="list-style-type: none"> - Good management procedures; Stock

Research Title	Performance Audit Objects	S e c t o r	Implementation of the 3E Principle	Conclusions and Suggestions
OF MERCHANDISE INVENTORY (A STUDY ON PT. (Peggy Rumenser, 2022)			- Realization: 1x/yr (ad-hoc) EFFECTIVENESS 1. POB Compliance: - Procurement–Distribution: 100% - Stock Withdrawal: 0% 2. Stock Accuracy: - 2018: 98% vs target $\geq 99\%$ - 2019: 99% vs $\geq 99\%$ ECONOMICALIZATION 1. HPP/Sales: - 2018: 76.8% vs target $\leq 75\%$ (-1.8%) - 2019: 75.1% vs $\leq 75\%$ (-0.1%) 2. Percentage of Damaged Goods: - 2018: 0.8% vs target $< 1\%$ - 2019: 0.5% vs $< 1\%$	Taking Is Not Consistent 3. Economical:- 2018 there was a small waste; 2019 was close to economical. Suggestion: Efficiency : 1. Schedule regular quarterly stock taking. 2. Barcode/RFID implementation. 3. Set lead time & stock accuracy KPIs. Effectiveness : 1. Socialization of POB stock taking. 2. Form an admin & field team. 3. Quarterly internal audit. Economization : 1. Negotiate volume prices & discounts. 2. Apply JIT. 3. Monitor the monthly spoilage rate.

Researcher Source (Data processed 2025)

DISCUSSION

The discussion of the findings that have been presented in the table is as follows:

1. PT. Semen Gresik (Public)

Title: Operational Audit Analysis in an Effort to Improve Efficiency, Effectiveness, and Economical Production

- a) Performance Audit Objective: Assess the performance of the production part in terms of resource use efficiency, production yield effectiveness, and cost economy.
- b) Criteria: Raw material productivity target, labor, machine capacity, production achievement rate (AR), product economic value (PVE).
- c) Findings:
 - 1) Raw materials are not yet efficient.
 - 2) High idle capacity in 2012.
 - 3) Effectiveness was only achieved in 2013.
 - 4) PVE shows waste in 2012–2013.
- d) Analysis:

- 1) Efficiency: Efficient workforce; Raw materials & idle capacity are still problematic.
 - 2) Effectiveness: Not consistent, only effective in 2013.
 - 3) Economicalization: In 2011 it was economical, the rest was waste.
- e) Recommendations:
- 1) Implement stock taking and sanctions for late raw materials.
 - 2) Synchronize the supply of raw materials with the capacity of the machine.
 - 3) Monitor overhead cost and energy efficiency.
 - 4) Use real-time dashboard to monitor AR & PTK.

1. PT. Envirolab Nusantara (Private)

Title: The Influence of Operational Audits in Improving Efficiency and Effectiveness on Purchasing Performance

- a) Performance Audit Objectives: Analyze the influence of audit on purchasing efficiency and effectiveness as well as cost saving implications.
- b) Criteria: Purchase efficiency and effectiveness score based on regression statistical results.
- c) Findings:
 - 1) Efficiency had a significant effect ($\beta_1 = 0.334$).
 - 2) Stronger effectiveness ($\beta_2 = 0.408$).
 - 3) The combination of efficiency & effectiveness explains 73.7% of the variation in performance.
- d) Analysis:
 - 1) Efficiency : Audits improve purchasing efficiency significantly.
 - 2) Effectiveness: The influence is stronger than efficiency.
 - 3) Economical: Purchasing performance is more cost- and resource-efficient.
- e) Recommendations:
 - 1) Strengthen supplier selection and order quantity.
 - 2) Ensure the quality & timeliness of delivery.
 - 3) Explore other factors outside of the audit for further optimization.

2. PT. PLN ULP Ruteng (Public)

Title: Application of Management Audit to Assess the Economy, Efficiency and Effectiveness of the Procurement Function of Goods and Services

- a) Performance Audit Objective: Evaluate the function of procurement of goods and services.
- b) Criteria: Procedure for receiving goods, accuracy of reports, compliance with regulations.
- c) Findings:
 - 1) Receipt of goods is often not double-checked.
 - 2) Late procurement reports and non-compliance with regulations.
 - 3) Additional costs arise due to replacement of damaged goods and fines.
- d) Analysis:
 - 1) Efficiency: Weak in the process of receiving goods.
 - 2) Effectiveness: Reporting is not in accordance with the rules.
 - 3) Economy: Accumulated inefficiencies and inefficiencies add to costs.

- e) Recommendations:
 - 1) Apply SOPs for inspection of goods.
 - 2) Create a weekly format report schedule and audit.
 - 3) Monitor additional costs due to procurement issues.
- 3. PT. Belvamas Maritim Indotama (Private)
Title: Operational Audit and Internal Control during the Pandemic on the Effectiveness and Efficiency of Management Performance Control
 - a) Performance Audit Objectives: Assess the influence of internal audit and control on management efficiency and effectiveness.
 - b) Criteria: Clarity of tasks, order process, accuracy of reports.
 - c) Findings:
 - 1) Overlapping tasks, the system is still manual.
 - 2) Reports are inconsistent and often late.
 - 3) High overhead and overtime costs arise.
 - d) Analysis:
 - 1) Efficiency : Weak due to manual and overlapping workflows.
 - 2) Effectiveness : The output is quite good but unstable.
 - 3) Economicalization: Uncontrolled costs due to inefficient and effective processes.
 - e) Recommendations:
 - 1) Task restructuring and workflow automation.
 - 2) Standardization of format & SLA reports.
 - 3) Monitor costs with variance analysis.
- 4. PT. Various Works of Pharmacy (Private)
Title: Operational Audit in Improving the Effectiveness, Efficiency, and Economy of Merchandise Inventory
 - a) Performance Audit Objective: Evaluate inventory management based on 3E.
 - b) Criteria: Turnover ratio, stock accuracy, POB, HPP, spoilage.
 - c) Findings:
 - 1) The turnover ratio increased from 2018 to 2019.
 - 2) High POB compliance except stock taking.
 - 3) HPP decreases, the defective goods remain below standard.
 - d) Analysis:
 - 1) Efficiency : Improvements are seen in 2019.
 - 2) Effectiveness : The procedure is good, but the frequency of inspection is minimal.
 - 3) Economy: Better in 2019, but can still be improved.
 - e) Recommendations:
 - 1) Schedule regular stock taking.
 - 2) Use barcodes/RFID.
 - 3) Implement KPIs and periodic internal audits.
 - 4) Negotiate prices & implement JIT.

CONCLUSIONS AND RECOMMENDATIONS

(Effective Performance Audit in Identifying Operational Weaknesses)

Performance audits are proven to be able to uncover hidden inefficiencies, process inefficiencies, and cost wastage in various organizational functions, both in the public and private sectors. Each study highlighted a different area of improvement—from raw material management, to purchasing functions, to distribution and reporting.

(Uneven Efficiency, Still Constrained by Manual Process and Weak Control)

Although several companies such as PT. Envirolab Nusantara and PT. Aneka Karya Farma shows an increase in efficiency through audits, there are still many entities such as PT. Belvamas and PLN Ruteng face challenges in the form of manual workflows, overlapping tasks, and the absence of systematic audit SOPs. This leads to a waste of time and resources.

(Effectiveness Affected by Reporting Regularity and Compliance Procedures)

Operational effectiveness tends to be achieved when organizations have consistent reporting standards, periodic monitoring, and clear SLAs (Service Level Agreements). Ineffectiveness often arises due to reports that are late, not in accordance with the format, or do not comply with regulations—as seen in PT. PLN Ruteng and Belvamas.

(Economicalization Depends on Synergy of Efficiency and Effectiveness)

The degree of economization directly depends on the success of efficiency and effectiveness. When both are achieved simultaneously, companies can reduce overtime costs, fines, and waste—as happened with PT. Envirolab Nusantara, where 73.7% of the increase in purchasing performance was explained by the results of efficiency and effectiveness audits.

(Audits in the Private Sector are More Responsive to Operational Improvements)

From the comparison between the public and private sectors, the private sector appears to be faster to respond to audit results with the application of technology (automation, barcodes, JIT) and restructuring of work processes. In contrast, the public sector tends to face structural and regulatory barriers that slow down improvement.

Recommendations:

- a. Institutions perform performance audits regularly, not just when problems arise.
- b. Use real-time data and digital technology to monitor efficiency and effectiveness directly.
- c. Increase human resource capacity through internal control training, reporting, and quality inspection.
- d. Apply the principle of audit integration: one improvement should touch on the aspects of efficiency, effectiveness, and economy at the same time.

ADVANCED RESEARCH

This study emphasizes the importance of integrating efficiency, effectiveness, and economy in performance audits to drive sustainable operational improvements. Findings show that the private sector is more responsive to audit results through technology adoption and workflow restructuring, while the public sector remains constrained by regulations and manual processes. Case studies from PT. Envirolab Nusantara to PLN Ruteng demonstrate that regular audits, real-time data, and human resource capacity building play a key role in reducing waste, penalties, and overtime. Proactive and integrated performance audits are proven to be strategic tools for organizational transformation.

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