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Evaluating key factors for successful continuous auditing implementation: Insights from an energy and electricity company

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Abstract. This study explores the factors influencing the successful implementation of the Continuous Auditing (CA) system at PT PLN (Persero), an energy and electricity company in Indonesia, using the DeLone and McLean Information Systems Success Model. The research aims to understand the impact of System Quality, Information Quality, and Service Quality on System Use, User Satisfaction, and Net Benefits, addressing a gap in understanding CA in large organizations. Data were collected through structured surveys of PT PLN auditors and supplemented by insights from the development team. The findings indicate that Information Quality significantly enhances System Use and User Satisfaction. Accurate, relevant, complete, and current information supports decision-making and builds trust in the system. Service Quality, including training and responsive support, improves User Satisfaction but impacts System Use less. Conversely, System Quality, despite good reliability and usability, does not significantly influence User Satisfaction or System Use, suggesting that technical aspects alone do not drive adoption without meeting user needs. The study concludes that Information Quality and Service Quality are more critical for successful CA implementation. Recommendations include improving data accuracy, training, documentation, and response times. Future research should explore factors such as user perception and traditional audit preferences, to guide CA system development.

Keywords: Continuous auditing, DeLone and McLean, IS success model, auditor, energy and electricity company.

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1. INTRODUCTION

In the current global economy, digital transformation has become a central issue for enhancing operational efficiency. The use of technology-based auditing tools, such as audit software, has become crucial to accommodate the increasing volume and complexity of data, as well as the need for auditing in a digital environment (Widuri et al., 2019). Continuous Auditing (CA) is rapidly becoming a key instrument in this evolution, helping organizations detect anomalies swiftly and improve network infrastructure management (Jandaeng, 2015). CA is an essential part of modern internal auditing, offering near real-time data monitoring and analysis to help organizations respond proactively to risks and anomalies (Gonzalez & Hoffman, 2018). It provides organizations with enhanced capabilities to detect issues early, thereby improving risk management and compliance (Van Hillo & Weigand, 2016; Amin & Mohamed, 2016). CA enables continuous oversight of financial processes, helping to improve the quality of reported information and prevent fraud (Rikhardsson & Dull, 2016; Cangemi, 2010). By integrating CA with business processes, organizations can enhance both operational efficiency and the reliability of their information systems, ultimately achieving strategic objectives (Marques, 2018; Dagilienė & Klovienė, 2019). Recent trends in audit practices have heightened the need for effective CA systems, as they play an important role in maintaining organizational transparency and reliability (Jans & Hosseinpour, 2019; Ezzamouri & Hulstijn, 2018).

Continuous Auditing has become integral to internal audit departments, enhancing risk management and audit efficiency. In 2023, a PwC global study found that 44% of Internal Audit departments now use technology to support Continuous Audit, enabling real-time monitoring, early anomaly detection, and proactive risk identification, offering significant advantages over traditional periodic audits (PricewaterhouseCoopers [PwC], 2023).

However, these rapid changes have had a serious effect on how organizations manage system performance and data quality (Malaescu & Sutton, 2015). The increasing complexity of data, combined with the growing demand for timely, accurate, and relevant information, has necessitated a shift toward Continuous Assurance systems. Continuous Assurance integrates emerging technologies with auditing techniques to provide more reliable and up-to-date information that supports decision-making processes (Vasarhelyi et al., 2012). At PT PLN (Persero), CA has been implemented through the ORCA (Ongoing Risk and Control Assessment) system, which is designed to facilitate continuous auditing by automating data extraction, anomaly analysis, and presenting findings through a user-accessible dashboard. This kind of implementation aligns with the overall trend of using continuous auditing technologies to improve decision quality, reduce errors, and transition from corrective to preventive control measures, as noted in prior studies (Rikhardsson & Dull, 2016; Vasarhelyi et al., 2012).

Despite its potential, the implementation of CA at PT PLN faces several significant challenges. Auditors have reported difficulties accessing the ORCA dashboard, especially when using virtual private networks (VPNs) outside the company's intranet network and with certain incompatible browsers. System performance issues, such as slow response times, system crashes, and errors, frequently hinder the audit process. Furthermore, the quality of information provided by ORCA often suffers from being outdated, inaccurate, or incomplete, thus reducing its effectiveness in supporting audit activities. Limited use cases that do not meet auditors' operational needs have also contributed to an increase in audit anomalies, highlighting areas where CA has not effectively mitigated risks.

While a significant body of literature has examined CA, much of this research has focused on small to medium-sized non-profit organizations (Appelbaum et al., 2016), where challenges are often limited to technical and financial constraints. In contrast, large, state-owned enterprises like PT PLN face more complex operational and organizational hurdles. Previous studies, such as Ridwan et al. (2019) and Vasarhelyi et al. (2012), have touched on CA adoption in larger entities but have not deeply explored the intricate issues related to hierarchical organizational structures, extensive operational networks, and stringent governance requirements inherent in state-owned enterprises (SOEs). This study aims to fill this critical research gap by providing empirical insights into the unique experiences and challenges of CA implementation within PT PLN's complex environment.

This study seeks to address a clear knowledge gap in the literature regarding the implementation of CA in large, state-owned enterprises. The research questions guiding this study are: "What factors influence the successful implementation of Continuous Auditing (CA) at PT PLN (Persero)?" and "How do system quality, information quality, and service quality affect system usage, user satisfaction, and organizational benefits?" Additionally, the study explores the challenges auditors face in utilizing the ORCA system within PT PLN's intricate operational environment. This study aims to identify and analyze the factors influencing the success of CA implementation at PT PLN (Persero), focusing on system quality, information quality, and service quality. The findings are expected to contribute significantly to the auditing field by providing empirical evidence regarding the challenges and success factors of implementing CA in large-scale organizations, particularly in the energy and electricity sector. This study makes a major contribution to research on CA by demonstrating how addressing technical and user-centric challenges can lead to more effective audit processes and better risk management.

This study aims to identify and analyze the factors influencing the success of CA implementation at PT PLN (Persero), focusing on system quality, information quality, and service quality. The findings are expected to contribute significantly to the auditing field by providing empirical evidence regarding the challenges and success factors of implementing CA in large-scale organizations, particularly in the energy and electricity sector. This study makes a major contribution to research on CA by demonstrating how addressing technical and user-centric challenges can lead to more effective audit processes and better risk management.

While this study aims to provide valuable insights, there are certain limitations to consider. Due to practical constraints, this study cannot provide a comprehensive review of all technological and operational factors that may affect CA implementation. It is beyond the scope of this study to examine the long-term impacts of continuous auditing practices, as the research focuses on data collected up to October 2024. Additionally, the study is based on feedback and data from PT PLN (Persero) auditors, which may limit the generalizability of the findings to other organizations or industries (Vasarhelyi et al., 2012; Ridwan et al., 2019).

The approach to empirical research adopted in this study was based on a quantitative method, utilizing structured surveys distributed to auditors at PT PLN (Persero), to capture their experiences and challenges with the ORCA system. Additional insights were gained by engaging with the development team to understand technical perspectives and address the issues identified. This quantitative approach allows the research to capture statistical trends and supplement these findings with technical input from the development team, ensuring a comprehensive understanding of system performance and user challenges (Hassan et al., 2023; Bradford et al., 2020).

This study includes an introduction to the background and objectives, a literature review identifying research gaps, a methodology section detailing the approach, a results and discussion section focusing on key findings, and a conclusion, with recommendations for future research and improvements.

2. THEORETICAL BACKGROUND

2.1. Continuous auditing system implementation

Continuous Auditing (CA) is an advanced audit methodology that leverages information technology to enable continuous monitoring and analysis of data, allowing audits to almost be carried out in real-time or at very short intervals. The concept of CA emerged in the 1970s, alongside the need to automate auditing processes due to advancements in electronic data processing (Groomer & Murthy, 2018; Amin & Mohamed, 2016). CA involves utilizing embedded audit modules and continuous monitoring tools to ensure the reliability and integrity of financial information (Groomer & Murthy, 2018). In recent years, CA has evolved into a more sophisticated methodology, incorporating tools for monitoring the compliance and security of complex database environments (Vasarhelyi et al., 2012; Widuri et al., 2019).

Traditional audit models often involve periodic reviews—typically conducted annually or semi-annually—whereby risks and anomalies might only be detected after the fact. This approach, which relies on backward-looking audits, is increasingly viewed as being outdated, given the advancements in real-time business operations and the need for more proactive monitoring (Cangemi, 2010). In contrast, CA offers a more proactive and preventive approach compared to traditional auditing, allowing organizations to identify and respond to risks and anomalies as they emerge. By leveraging continuous monitoring and real-time data analysis, CA enhances the ability to detect deviations promptly, rather than after significant issues have already occurred (Ezzamouri & Hulstijn, 2018). Techniques such as data mining and process mining are often integrated into CA, to streamline the auditing process and support more effective internal control assessments (Jans & Hosseinpour, 2019). This approach not only provides comprehensive coverage of transactions but also strengthens internal controls and boosts the reliability of audit outcomes (Van Hillo & Weigand, 2016).

The concept of CA involves automating data collection, analysis, and reporting processes so that auditors can access data directly from the organization's information systems. This continuous approach allows companies to monitor financial activities, compliance with policies, and internal controls on an ongoing basis. Additionally, CA uses data analytics to help auditors identify patterns or anomalies that may signal risks, such as fraud or asset misappropriation (Dagilienė & Klovienė, 2019). CA also plays a significant role in ensuring the quality of the financial information reported on the Internet, as it can help mitigate the challenges associated with such disclosures (Amin & Mohamed, 2016). Furthermore, CA's use of advanced analytical tools, including NoSQL databases, enhances the efficiency of real-time audit log analysis, facilitating faster and more accurate anomaly detection (Jandaeng, 2015). This methodology contributes significantly to organizational transparency and accountability (Malaescu & Sutton, 2015).

At PT PLN (Persero), CA has been implemented through the ORCA (Ongoing Risk and Control Assessment) system, specifically designed to facilitate continuous auditing by automating data extraction, anomaly analysis, and presenting findings through a user-accessible dashboard. The ORCA system is intended to enhance both audit efficiency and effectiveness by enabling real-time risk identification and improving the reliability of financial information for decision-making (Malaescu & Sutton, 2015). The implementation of CA at PT PLN encompasses several key stages:

1. Data Extraction: ORCA automates the collection of data from various internal systems, providing auditors with comprehensive access to operational data. This data includes financial transactions, activity logs, and compliance information, structured in a format that allows for further analysis. Automating data gathering not only reduces the need for manual inspection but also speeds up the data collection process (Duque, 2016).

2. Anomaly Management: ORCA is designed to detect suspicious patterns or anomalies within the data, which may indicate risks or control violations. The system alerts auditors to potential issues, enabling them to take immediate action before the risks escalate. ORCA also provides regular

updates to auditors regarding new findings, making the audit process more responsive and agile (Weins et al., 2017).

3. Reporting and Follow-up: The findings are displayed through a dashboard which is accessible to stakeholders, allowing them to quickly interpret and respond to emerging risks. This dashboard presents information in visual formats, such as charts and tables, facilitating auditors in tracking trends and managing follow-up actions on identified findings. This feature enables effective communication between the audit team and management regarding ongoing risk status (Appelbaum et al., 2016).

The adoption of CA through ORCA offers PT PLN significant benefits, including improved audit efficiency, continuous monitoring of risks and internal controls, and early detection of fraud or irregularities. By integrating data analytics and automation, the system supports a more proactive auditing approach, providing PT PLN with a strategic advantage in risk management and compliance.

However, implementing CA also presents several challenges, such as the need for a robust IT infrastructure, specialized auditor training to operate the system, and potential resistance from traditional audit practices. At PT PLN, these challenges include remote access barriers and system performance issues that sometimes hinder the smooth conduct of audits. While ORCA addresses some of these barriers, there remains room for improvement to ensure optimal CA implementation.

The adoption of Continuous Auditing (CA) at PT PLN (Persero) underscores the strategic importance of embracing digital transformation in the auditing field, particularly for large, complex organizations with extensive operations (Federicco & Tandiono, 2023; Cangemi, 2010). By adopting continuous auditing, PT PLN aims to enhance transparency, operational reliability, and responsiveness to changes in the business environment, ultimately supporting the company's goals of maintaining public trust and improving accountability.

2.2. DeLone and McLean's (2003) information systems success model

The DeLone and McLean Information Systems (IS) Success Model, developed in 2003, provides a comprehensive framework for assessing the success of information systems. This model identifies six critical dimensions for IS success: system quality, information quality, service quality, use, user satisfaction, and net benefits. According to the model, system quality, information quality, and service quality are essential factors that influence user satisfaction and the extent of system use. In turn, these factors impact the net benefits achieved, such as increased organizational efficiency, improved decision-making, and enhanced performance (DeLone & McLean, 2003).

The model is widely recognized for its multi-dimensional approach, integrating various aspects of system quality and user interaction to capture the overall impact of IS on organizational goals. Numerous studies have validated the model across different systems and contexts, demonstrating its applicability and adaptability (Petter et al., 2008).

Figure 1 illustrates the DeLone and McLean IS Success Model, depicting the relationships among the six dimensions and showing how system, information, and service quality contribute to use and satisfaction, ultimately leading to net benefits. The interconnected paths highlight how improvements in system quality aspects can drive usage and satisfaction, thus enhancing the system's effectiveness within an organization.

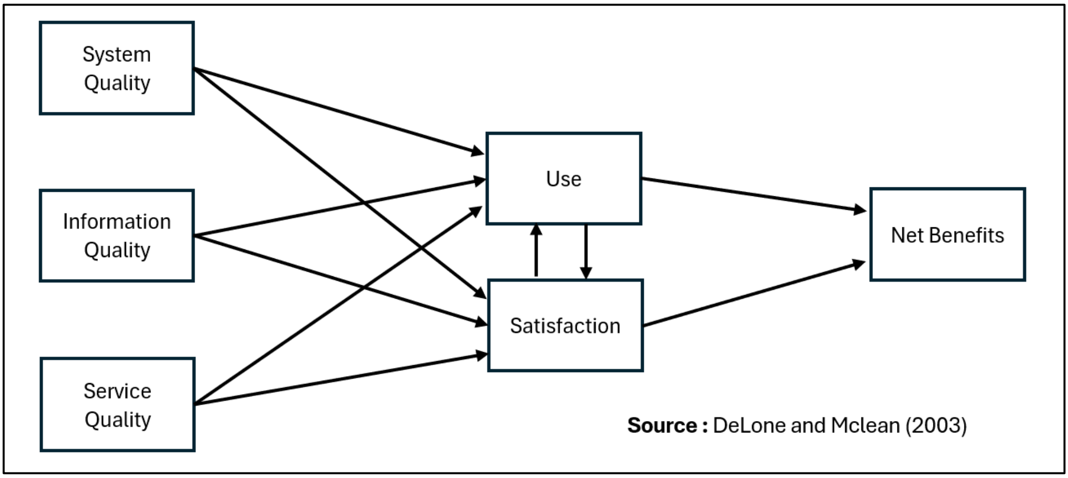

Figure 1. Delone and McLean IS Success Model
Source: Author's elaboration

3. METHODOLOGY

3.1. D&M model adaptation for continuous auditing success and hypotheses development

The adaptation of the DeLone and McLean (D&M) Information Systems Success Model (2003) aimed to assess factors influencing the success of Continuous

Auditing (CA) implementation at PT PLN (Persero). Given CA's reliance on high-quality information, effective systems, and responsive services, the D&M model provides a robust structure to evaluate these dimensions (DeLone & McLean, 2003). By adapting the model, this study sought to identify how system quality, information quality, and service quality impacted user satisfaction and system usage, which, in turn, determined net benefits for the organization. The purpose of this was to provide empirical insights specific to CA, highlighting both the technical and user-centric aspects that contributed to a successful implementation. This adaptation allowed for the investigation of CA-specific metrics and user feedback in the unique context of a large, state-owned enterprise like PT PLN, which has complex operational demands and a large-scale audit scope (Bradford et al., 2020; Vasarhelyi et al., 2012).

The adaptation of the D&M model in this study retained the original six dimensions: System Quality, Information Quality, Service Quality, Intention to Use, User Satisfaction, and Net Benefits. The adjustments focused on specific indicators within each dimension, rather than altering the model's structure. These indicators were selectively chosen, based on relevant literature reviews, to ensure their alignment within the context of Continuous Auditing (CA) and maintain the theoretical integrity of the original model.

Key indicators were selected through comprehensive literature reviews, to ensure alignment with CA's real-time monitoring needs and technical support demands. The adaptation highlighted the unique importance of information quality and service quality in driving user satisfaction and system usage, with the technical aspects of system quality playing a supportive, yet less dominant, role.

For system quality, the indicators included availability, ease of use, system reliability, and response time, measuring the system's accessibility, user-friendliness, operational reliability, and data processing speed. Information quality was assessed through relevance, understandability, completeness, accuracy, and currency, reflecting data suitability, clarity, comprehensiveness, correctness, and timeliness. Service quality covered training, documentation and user guidance, support reliability, and responsiveness, focusing on technical support and user assistance. System use was measured through the nature of use, frequency of use, and extent of use, capturing how, how often, and to what extent ORCA was utilized. User satisfaction was evaluated through satisfaction with system functionality, satisfaction with information quality, and satisfaction with support services. Finally, net benefits were gauged via audit efficiency, improved decision-making, audit effectiveness, and reduced anomalies. These indicators were adapted from the existing literature, including works by Hassan et al. (2023), Federicco and Tandiono (2023), and Tronto and Killingsworth (2021), ensuring their relevance to PT PLN's CA environment.

The D&M model, as adapted for CA, assumed that system quality, information quality, and service quality were significant contributors to user satisfaction and system usage. Each dimension supported auditors' needs, in terms of data accuracy, usability, and support, which were critical for efficient and effective CA (DeLone & McLean, 2003; Petter et al., 2008). In this adaptation, indicators from the CA system, specifically the ORCA system at PT PLN, were evaluated to see how they aligned with the model's categories and their overall influence on CA outcomes. A positive relationship was anticipated between the quality dimensions and both user satisfaction and system usage, consistent with the original D&M model assumptions.

Figure 2 illustrates the adapted IS Success Model for Continuous Auditing, showing the hypothesized relationships between system quality, information quality, service quality, system use, user satisfaction, and net benefits. The arrows represent the directional influences that each variable is expected to have on the others, as indicated by hypotheses H1 through H9. This model helps to visualize how different quality dimensions impact system use and user satisfaction, which ultimately leads to net benefits for PT PLN's auditing processes.

System quality, in the context of CA implementation refers, to the attributes of the ORCA system that facilitate its usability, reliability, and efficiency. Indicators for system quality include availability, ease of use, system reliability, and response time (Hassan et al., 2023; Federicco & Tandiono, 2023). Availability ensures that the ORCA system remains accessible to auditors whenever needed, supporting ongoing data retrieval and analysis across PT PLN's operations (Hassan et al., 2023). Ease of use emphasizes the importance of intuitive design, allowing auditors to interact with the system without confusion or excessive training (Federicco & Tandiono, 2023).

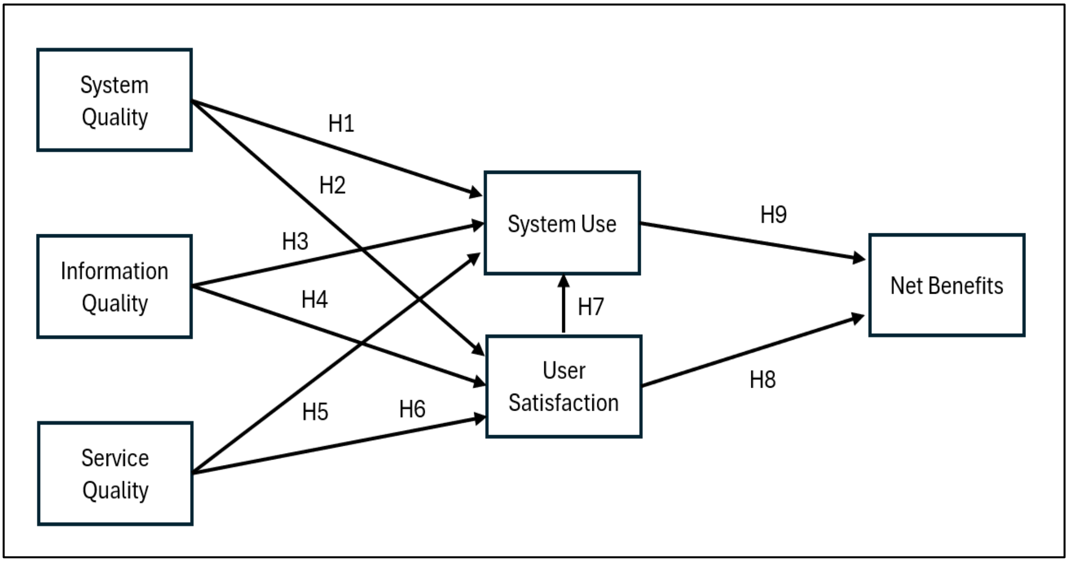

Figure 2. IS success model adapted for CA success
Source: Author's elaboration

System reliability denotes the system's consistency and ability to perform without frequent errors or downtime, which could otherwise impede auditors' workflows (Hassan et al., 2023). Lastly, response time reflects how quickly the system processes data and delivers insights, allowing timely decision-making during audits (Federicco & Tandiono, 2023). The hypotheses regarding system quality are as follows:

H1: System quality positively influences CA system usage.

H2: System quality positively influences user satisfaction with the CA system.

Information quality is a critical factor for CA, emphasizing relevance, understandability, completeness, accuracy, and currency. Relevance ensures that the information provided by ORCA aligns with the audit's specific objectives and requirements (Hassan et al., 2023). Understandability highlights the need for data presentation that is clear and interpretable by users, reducing potential misinterpretations in the audit process (Federicco & Tandiono, 2023). Completeness refers to the inclusion of all necessary data, enabling auditors to conduct thorough analyses without gaps (Federicco & Tandiono, 2023). Accuracy ensures that data reflects the real state of financial transactions, which is essential for maintaining trust in ORCA's outputs (Hassan et al., 2023). Lastly, currency indicates the up-to-date nature of the information, ensuring that decisions are based on the latest available data, thus enhancing audit relevance and timeliness (Federicco & Tandiono, 2023). The hypotheses regarding information quality are as follows:

H3: Information quality positively influences CA system usage.

H4: Information quality positively influences user satisfaction with the CA system.

Service quality in the D&M model adaptation evaluates the support and training provided to CA users. For ORCA, service quality indicators include training (tangibles), documentation and user guides (tangibles), support team reliability, and support responsiveness. Training provides users with the technical skills necessary to operate the system proficiently, thereby enhancing their ability to effectively utilize ORCA (Hassan et al., 2023; Tronto & Killingsworth, 2021). Documentation and user guides serve as vital resources, offering users step-by-step instructions and reference materials that support continued learning and troubleshooting (Federicco & Tandiono, 2023). The reliability of the support team underscores the importance of dependable service, ensuring that technical issues do not disrupt audit processes (Laghmouch et al., 2020). Lastly, responsiveness in support addresses the speed at which the support team responds to user inquiries and issues, directly impacting user satisfaction (Tronto & Killingsworth, 2021). The hypotheses regarding service quality are as follows:

H5: Service quality positively influences CA system usage.

H6: Service quality positively influences user satisfaction with the CA system.

User satisfaction captures the auditors' contentment with ORCA, reflecting how well the system meets their needs. Indicators for user satisfaction include satisfaction with system functionality, satisfaction with information quality, and satisfaction with support services. Satisfaction with system functionality encompasses users' positive perceptions of the system's operational features and ease of use, enhancing overall audit productivity (Hassan et al., 2023). Satisfaction with information quality depends on the relevance, accuracy, and timeliness of the data that ORCA delivers to auditors, ensuring that it supports audit objectives effectively (Federicco & Tandiono, 2023). Satisfaction with support services captures the impact of reliable and responsive support in enabling users to resolve issues quickly, thus maintaining workflow efficiency (Laghmouch et al., 2020). The hypotheses regarding user satisfaction are as follows:

H7: User satisfaction positively influences CA system usage.

H8: User satisfaction positively influences net benefits derived from the CA system.

System usage is measured by the nature of use, frequency of use, and extent of use. The nature of use highlights ORCA's role in data analysis, enhancing audit precision by enabling in-depth evaluations of transactional data (Hassan et al., 2023; Federicco & Tandiono, 2023). Frequency of use reflects how often auditors interact with ORCA, with high usage rates indicating a successful system integration into regular audit tasks (Laghmouch et al., 2020). Extent of use measures the range of functionalities utilized by auditors, showing ORCA's flexibility and adaptability to diverse audit needs and scenarios (Tronto & Killingsworth, 2021). The hypothesis regarding system usage is as follows:

H9: System usage positively influences the net benefits derived from the CA system.

Net benefits refer to the overall positive impact of CA on PT PLN's audit processes and decision-making. The indicators include improved decision-making, audit efficiency, audit effectiveness, and reduced anomalies. Improved decision-making is achieved through ORCA's timely anomaly detection and reliable data insights, facilitating strategic choices in the audit process (Hassan et al., 2023). Audit efficiency is measured by reduced time and resource costs in the audit process, due to ORCA's automated features and streamlined data analysis (Federicco & Tandiono, 2023). Audit effectiveness reflects ORCA's contribution to more accurate audit outcomes through dependable data, enhancing PT PLN's compliance and control environment (Tronto & Killingsworth, 2021; Laghmouch et al., 2020). Lastly, reduced anomalies indicate ORCA's ability to detect irregularities promptly, thereby minimizing risks and supporting proactive organizational governance (Hassan et al., 2023).

3.2. Questionnaire design

The development of a questionnaire followed a structured approach consisting of multiple phases to ensure its validity and reliability. The first phase focused on defining constructs through an extensive literature review, to establish valid definitions for each construct. In the next phase, items were developed based on prior research, with new items created when gaps were identified. The preliminary questionnaire was reviewed by senior auditors specializing in information technology, to refine the items and clarify instructions. To further ensure clarity and relevance, pilot testing was conducted by ten auditors and senior auditors. Feedback from both the expert review and pilot testing was integrated, to enhance the questionnaire's quality.

Reliability was assessed through a rigorous process aimed at measuring the internal consistency of the constructs, ensuring that the items within each construct produced consistent and stable results. In this study, reliability testing utilized two key indicators: Cronbach’s Alpha and Composite Reliability (rho_A and rho_C). A construct is considered to be reliable if these values exceed 0.7, indicating high internal consistency among the items.

All constructs were measured using a five-point Likert scale, where 1 = "Strongly Disagree," 2 = "Disagree," 3 = "Neutral," 4 = "Agree," and 5 = "Strongly Agree." The questionnaire was designed to assess auditors’ perceptions of system quality, information quality, service quality, system usage, user satisfaction, and the net benefits derived from the Continuous Auditing (CA) system. Additional demographic questions captured respondents' background information to contextualize the analysis.

Examples of questionnaire items include statements such as *"Using the Continuous Auditing system improves the overall effectiveness of internal audits"* to measure net benefits and *"The system is easy to use"* to evaluate system quality. These items were carefully crafted, to align with the study's objectives, ensuring content validity and measurement accuracy. A full list of questionnaire items is provided in the Appendix.

3.3. Sample and data collection procedure

This study was conducted at PT PLN (Persero), a state-owned energy and electricity company in Indonesia, targeting 115 internal auditors from the Internal Audit Unit (Satuan Pengawasan Internal or SPI) who utilized the Continuous Auditing (CA) system known as ORCA (Ongoing Risk and Control Assessment). The questionnaire was distributed to the entire population of ORCA users, eliminating the need for specific sampling techniques. Out of 115 distributed questionnaires, 102 responses were received. After excluding 13 respondents who had not used the

ORCA Dashboard, 89 valid responses remained for analysis. According to Isaac and Michael's formula, this number of respondents is sufficient for statistical analysis with a 95% confidence level and a 5% margin of error (Isaac & Michael, 1995).

Data collection was conducted through an online survey, distributed directly via email to each internal auditor of PT PLN. Internal corporate communication channels were also utilized, to remind participants to complete the survey. To encourage participation, a token of appreciation, worth IDR 1,000,000, was provided to one lucky respondent. The winner was selected at random after the survey period concluded and they were notified via the email address provided. The data collection period was from August 5 to August 16, 2024.

Participation in the survey was voluntary, with clear explanations provided regarding the survey's purpose, implicitly indicating informed consent. Respondent confidentiality was strictly maintained, with no personal information (such as names or personal contacts) being collected. The only identifying information gathered were the respondents' email addresses, solely for participation validation and prize draw purposes. All collected data were used exclusively for research purposes, ensuring strict confidentiality.

In addition to the questionnaire, the study utilized an open-ended questionnaire to gather supplementary information, aiming to explore the reasons behind research findings that did not align with the DeLone and McLean Information System Success Model. This was anonymously distributed to ten individuals involved in the development of the Continuous Auditing System at PT PLN, including Audit Managers, Senior Auditors, and system development officers. The questions were designed to explore the factors influencing variable relationships. Data from the open-ended questionnaire were integrated with the survey results, to enhance interpretation of the findings. The integration process involved analyzing quantitative data first, followed by qualitative data, to provide additional context and support for the survey results.

4. RESULTS

4.1. Demographics and characteristics

A total of 115 respondents completed the survey; however, 26 respondents were excluded from the analysis as they were familiar with the Continuous Auditing

(CA) system but had not actually used it, resulting in 89 valid responses. These respondents represented various demographics and professional characteristics, which are summarized in Table 1. A majority of the 89 participants (82%) were male, while 18% were female. Most respondents were aged between 30 and 40 years (79%), followed by 20% aged 40 to 50, and only 1% above 50 years.

In terms of Audit Roles, the respondents included 66% Internal Auditors, 8% Senior Internal Auditors, 22% Internal Auditor Managers, and 3% Heads of Internal Audit, indicating a strong concentration at the operational and managerial levels.

The audit division at PT PLN is organized into specific Areas of Expertise, which address both operational business processes and specialized organizational needs. Auditors responsible for operational processes oversee activities spanning the entire business flow, from upstream to downstream, including Construction Auditing (evaluating infrastructure and project management), Primary Energy Auditing (managing energy resources like coal and gas), Generation and Renewable Energy Auditing (ensuring efficiency and sustainability in electricity production), Transmission Auditing (maintaining reliability in power transmission networks), Distribution Auditing (monitoring the efficiency and compliance of electricity distribution), and Commercial Operations Auditing (focusing on sales, marketing, and customer engagement).

	n	(%)
Demographics		
Gender		
Male	73	82%
Female	16	18%
Age Group		
30 to 40 Years	70	79%
40 to 50 Years	18	20%
Above 50 Years	1	1%
Audit Roles		
Internal Auditor	59	66%
Senior Internal Auditor	7	8%
Internal Auditor Manager	20	22%
Head of Internal Audit	3	3%
Area of Expertise		
Distribution Auditing	25	28%
Information Technology Auditing	17	19%
Generation and Renewable Energy Auditing	13	15%

Support and Enabler Auditing	7	8%
Strategic Policy Auditing	7	8%
Construction Auditing	4	4%
Commercial Operations Auditing	4	4%
Audit Consultation Services	4	4%
Investigative Auditing	3	3%
Transmission Auditing	3	3%
Primary Energy Auditing	1	1%
External Coordination Auditing	1	1%
Characteristics		
Length of Time in Audit Profession		
Less than 2 years	5	6%
2 to 4 Years	6	7%
5 to 8 Years	69	78%
9 to 12 Years	7	8%
More than 12 Years	2	2%
Length of Time Using ORCA		
Less than 1 Month	21	24%
Between 1 and 3 Months	24	27%
Between 3 and 6 Months	17	19%
Between 6 and 12 Months	18	20%
More than 12 Months	9	10%

Table 1. Demographics and characteristics

Meanwhile, specialized auditors handle distinct areas of expertise, such as Information Technology Auditing (ensuring IT systems' reliability and security), Support and Enabler Auditing (reviewing foundational functions like HR and finance), Strategic Policy Auditing (developing audit policies and frameworks), Audit Consultation Services (providing consultative advice to auditees), Investigative Auditing (conducting fraud investigations), and External Coordination Auditing (aligning internal audits with external auditor requirements).

The Areas of Expertise are diverse, with Distribution Auditing (28%) and Information Technology Auditing (19%) being the most represented fields. Other areas include Generation and Renewable Energy Auditing (15%), Support and Enabler Auditing (8%), Strategic Policy Auditing (8%), and smaller percentages in specialized fields, such as Construction Auditing, Commercial Operations Auditing, Audit Consultation Services, Investigative Auditing, Transmission Auditing, Primary Energy Auditing, and External Coordination Auditing.

Regarding experience, 78% of respondents had been auditors for 5-8 years, with fewer respondents in other ranges, including 6% with less than 2 years' experience, 7% with 2-4 years, 8% with 9-12 years, and 2% with more than 12 years of experience. Lastly, the duration of ORCA dashboard usage varied, with 27% using it for 1-3 months, 24% for less than a month, 19% for 3-6 months, 20% for 6-12 months, and 10% for more than 12 months.

This data highlights a mix of experience levels, audit roles, and areas of expertise among respondents, emphasizing diversity in both professional backgrounds and familiarity with the ORCA system.

4.2. Measurement model results

Table 2 provides descriptive statistics for the constructs in the research model. The mean scores for most indicators are about four, indicating general agreement among respondents, regarding the quality and benefits of the ORCA system. Measures of system quality, such as availability and reliability, show consistent scores slightly below four, reflecting a positive perception but with some room for improvement.

Information quality indicators, including relevance and accuracy, exhibit slightly lower averages, suggesting moderate agreement on the quality of data provided by the system. Meanwhile, service quality scores vary significantly, with training receiving notably lower scores, highlighting potential areas for improvement in user support and training resources.

Overall, measures of user satisfaction and net benefits fall within the mid-range, indicating a generally favorable response towards the ORCA system's contribution to audit efficiency and effectiveness. However, the variation across different constructs suggests opportunities to further optimize the system's performance and user experience.

Construct	Indicator	Mean	SD
System Quality (SYSQUAL)	Availability	4.07	0.82
	Ease of Use	3.92	0.79
	System Reliability	3.94	0.79
	Response Time	3.91	0.78
Information Quality (INFQUAL)	Relevance	3.76	0.88
	Understandability	3.91	0.76
	Completeness	3.73	0.82
	Accuracy	3.71	0.77

	Currency	3.87	0.83
Service Quality (SERQUAL)	Training	3.37	0.99
	Documentation & User Guidelines	3.72	1.04
	Service Reliability	4.08	0.80
	Service Responsiveness	4.07	0.86
System Use (SYSUSE)	Nature of Use	3.99	1.12
	Frequency of Use	3.37	1.08
	Extent of Use	3.45	1.15
User Satisfaction (USERSAT)	Satisfaction with the System	3.89	0.65
	Satisfaction with Information	3.85	0.68
	Satisfaction with Service	3.98	0.72
Net Benefits (NETBEN)	Improved Decision	3.90	0.93
	Audit Efficiency	3.92	0.88
	Audit Effectiveness	3.84	0.87
	Reduced Anomalies	3.73	0.79

Table 2. Measurement properties, means and standard deviations

To ensure the accuracy and consistency of the measurement model, this study performed construct reliability and validity tests using Partial Least Squares Structural Equation Modeling (PLS-SEM). Validity was evaluated using the Average Variance Extracted (AVE) value, where an AVE value above 0.5 indicates that a construct explains more than half of the variance of its indicators, thus meeting the criteria for convergent validity. Reliability was assessed through Cronbach's Alpha and Composite Reliability (rho_A and rho_C), with values above 0.7 considered to be acceptable.

The results, summarized in Table 3, confirm that all constructs are valid and reliable. AVE values exceed 0.5, indicating that the constructs effectively explain the variance in their indicators. Additionally, Cronbach's Alpha and Composite Reliability values surpass the threshold of 0.7, demonstrating high internal consistency and stability across all constructs. These findings ensure the robustness of the measurement model, providing a reliable foundation for subsequent analysis.

Construct	**Cronbach's Alpha**	**Composite Reliability (rho_A)**	**Composite Reliability (rho_C)**	**AVE**
SYSQUAL	0.93	0.93	0.95	0.83
INFQUAL	0.94	0.95	0.96	0.82
SERQUAL	0.89	0.89	0.92	0.75
USERSAT	0.92	0.93	0.95	0.87

SYSUSE	0.89	0.89	0.93	0.81
NETBEN	0.95	0.96	0.97	0.88

Table 3. Construct reliability and validity

The outer model evaluation assesses the relationship between latent constructs and their observed indicators, determining how well the indicators reflect their respective constructs. Validity was evaluated using Outer Loadings, which represent the contribution of each indicator to its latent construct. Indicators with Outer Loadings greater than 0.7 are generally considered valid, although slightly lower values may be acceptable, depending on the context.

As summarized in Table 4, all indicators in this study exhibit strong loadings, exceeding the threshold of 0.7. This demonstrates that the indicators are valid measures of their respective constructs. For instance, indicators for System Quality, such as ease of use and system reliability, show high loadings, confirming their significant contribution to the construct. Similarly, indicators for Information Quality, including relevance and accuracy, and Service Quality, such as training and responsiveness, also display robust loadings, validating their effectiveness in measuring these constructs.

Hypothesis	Path	Path Coefficients	t-Statistics	p-Values
H1	SYSQUAL → SYSUSE	-0.06	0.43	0.67
H2	SYSQUAL → USERSAT	0.09	0.98	0.33
H3	INFQUAL → SYSUSE	0.61	5.09	0.00
H4	INFQUAL → USERSAT	0.55	5.52	0.00
H5	SERQUAL → SYSUSE	0.20	1.57	0.12
H6	SERQUAL → USERSAT	0.29	3.51	0.00
H7	USERSAT → SYSUSE	0.10	0.81	0.42
H8	USERSAT → NETBEN	0.44	5.22	0.00
H9	SYSUSE → NETBEN	0.49	5.77	0.00

Table 4. Structural model result

Indicators for User Satisfaction, System Use, and Net Benefits similarly show strong contributions to their respective constructs, with loadings consistently above 0.7. These results validate the outer model and confirm that the latent constructs are well represented by their indicators, ensuring the measurement model's suitability for further structural analysis.

4.3. Structural model results

The structural model analysis revealed varying levels of significance for the hypothesized relationships. Significant positive relationships were identified for five hypotheses: H3 (Information Quality → System Use), H4 (Information Quality → User Satisfaction), H6 (Service Quality → User Satisfaction), H8 (User Satisfaction → Net Benefits), and H9 (System Use → Net Benefits). These relationships were supported by high t-statistics and low p-values, indicating strong statistical significance. Conversely, four hypotheses—H1 (System Quality → System Use), H2 (System Quality → User Satisfaction), H5 (Service Quality → System Use), and H7 (User Satisfaction → System Use)—were not significant, as indicated by low t-statistics and p-values above 0.05. This shows that these relationships were not supported in this study.

Table 5 provides detailed metrics, including path coefficients, t-statistics, and p-values, highlighting the specific strengths and significance levels of each tested relationship. Overall, the data reveal that, while System Use and User Satisfaction are significantly impacted by Information Quality and Service Quality, the influence of System Quality and User Satisfaction on System Use was not evident. Additionally, the study highlighted that both System Use and User Satisfaction positively contribute to perceived Net Benefits, underscoring their importance in achieving favorable organizational outcomes.

Indicator	SYSQUAL	INFQUAL	SERQUAL	USERSAT	SYSUSE	NETBEN
Availability	0.88					
Ease of Use	0.93					
System Reliability	0.93					
Response Time	0.90					
Relevance		0.93				
Understandability		0.94				
Completeness		0.88				
Accuracy		0.87				
Currency		0.90				
Training			0.81			
Documentation & User Guidelines			0.89			
Service Reliability			0.87			
Service Responsiveness			0.90			

Nature of Use	0.94		
Frequency of Use	0.94		
Extent of Use	0.91		
Satisfaction with the System		0.88	
Satisfaction with Information		0.91	
Satisfaction with Service		0.91	
Improved Decision			0.96
Audit Efficiency			0.96
Audit Effectiveness			0.94
Reduced Anomalies			0.88

Table 5. Outer Loadings

As shown in Figure 3, the R^2 value for System Use is 67%, indicating that System Quality, Information Quality, and Service Quality collectively explain 67% of its variance. The R^2 value for User Satisfaction is 77%, meaning that 77% of its variance is explained by the same factors. Finally, the R^2 value for Net Benefits is 75%, showing that System Use and User Satisfaction together account for 75% of the variance in Net Benefits. These results demonstrate the strong predictive power of the model in explaining the dynamics of System Use, User Satisfaction, and Perceived Net Benefits, reinforcing the robustness and relevance of the proposed structural model for understanding how these factors interact.

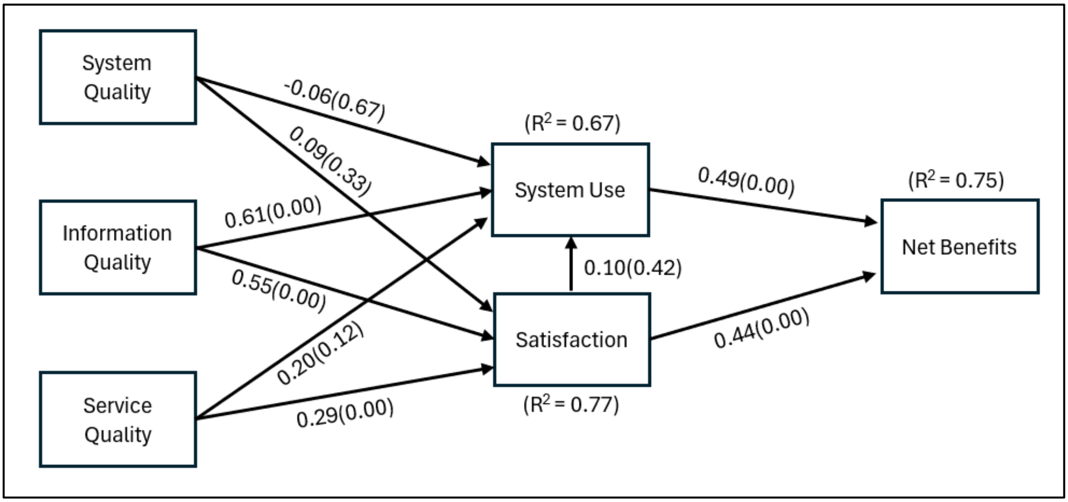

Figure 3. Structured model result with hypotheses testing results

5. DISCUSSION

The findings of this study strongly align with the DeLone and McLean IS Success Model (2003) for the accepted hypotheses, emphasizing the interplay between Information Quality, Service Quality, System Use, User Satisfaction, and Net Benefits. Information Quality significantly influences both System Use (H3) and User Satisfaction (H4), demonstrating that accurate, relevant, complete, and timely information motivates users to engage with the ORCA system while also enhancing their satisfaction. Auditors at PT PLN noted that high-quality information directly supported their decision-making processes and increased their trust in the system, consistent with the DeLone and McLean model, which identifies Information Quality as a critical determinant of system success. Similarly, Service Quality positively impacted User Satisfaction (H6). Indicators like training, documentation, responsiveness, and reliable support played a crucial role in shaping users' experiences, addressing technical needs, and fostering confidence in the system. These findings reinforce the model's emphasis on the role of quality support in enhancing User Satisfaction.

Furthermore, the study confirmed the importance of System Use as a driver of Net Benefits (H9). Increased use of the ORCA system directly translated into improved audit efficiency, better decision-making, and reduced risks. This aligns with the theory's principle that effective system utilization generates tangible organizational and individual benefits. User Satisfaction also significantly contributed to Net Benefits (H8), indicating that when users are satisfied with the system's features, information, and services, they derive greater value from its implementation. At PT PLN, satisfied auditors reported enhanced productivity, more accurate audits, and faster decision-making, which underscores the role of satisfaction in realizing system benefits. Collectively, these findings highlight the interconnected nature of the DeLone and McLean model's dimensions, demonstrating that high-quality information and services drive System Use and User Satisfaction, which, in turn, lead to meaningful organizational benefits. The study reinforces the importance of addressing both technical and user-centric factors to maximize the success of Continuous Auditing systems in complex organizational contexts.

However, the study also produced results that challenge some of the relationships proposed by the DeLone and McLean IS Success Model (2003). Specifically, the hypotheses concerning the influence of System Quality on User Satisfaction (H2) and System Use (H1), the impact of Service Quality on System Use (H5), and the relationship between User Satisfaction and System Use (H7) were not supported. These findings suggest that, in the context of PT PLN's Continuous Auditing system, ORCA, other factors may play a more significant role than the dimensions hypothesized in the model.

The hypothesis that System Quality positively influences User Satisfaction (H2) was not supported. While indicators like availability, reliability, and ease of use were moderately rated, these attributes did not result in higher satisfaction. According to the DeLone and McLean model, System Quality is expected to enhance User Satisfaction by providing efficient and reliable interactions. However, at PT PLN, satisfaction was more closely tied to the system's ability to address practical needs and provide relevant features. This aligns with the findings in Hassan et al. (2023), which emphasized that users prioritize actionable outputs over technical reliability. The lack of tailored functionalities and insufficient user understanding of the system's potential benefits further contributed to this gap. Similarly, Ridwan et al. (2019) highlighted the importance of aligning system features with user-specific requirements and ensuring robust organizational support to foster satisfaction.

Similarly, the hypothesis that System Quality positively influences System Use (H1) was not supported. Although System Quality indicators, such as reliability, usability, and response time, were rated relatively highly, they did not drive higher system usage. This finding diverges from the DeLone and McLean model, which posits that System Quality directly affects usage intent and frequency. At PT PLN, limited socialization, insufficient alignment between the ORCA system's features and auditors' tasks, and system complexity were significant barriers to System Use. Petter et al. (2008) acknowledged that System Quality might not always translate into increased use, particularly when factors such as lack of training, resistance to change, or misaligned features outweigh technical attributes. Ridwan et al. (2019) further emphasized the role of organizational support and regulatory enforcement as critical enablers of system adoption, which were found lacking in this context.

The hypothesis that Service Quality positively influences System Use (H5) was, also, not supported. Despite favorable ratings for responsiveness, reliability, and documentation, these factors did not significantly encourage system usage. This finding contradicts the DeLone and McLean model, which positions Service

Quality as a key determinant of system adoption. However, at PT PLN, users appeared to prioritize the functional relevance of the ORCA system over service-related factors. Bradford et al. (2020) similarly observed that auditors often value a system's ability to deliver meaningful outcomes, such as identifying anomalies or improving compliance, over the quality of service provided. The lack of essential features for audit tasks diminished the perceived utility of the ORCA system, indicating that Service Quality alone cannot compensate for gaps in functionality or relevance to users' specific requirements.

Finally, the hypothesis that User Satisfaction positively influences System Use (H7) was not supported. Although users reported moderate satisfaction with the ORCA system, this did not translate into frequent or extensive System Use. The DeLone and McLean model posits that satisfied users are more likely to engage with a system due to trust and positive experiences. However, at PT PLN, System Use was more strongly influenced by operational needs, task relevance, and external mandates rather than satisfaction. Studies such as Petter et al. (2008) and Vasarhelyi et al. (2012) supported the notion that System Use is often driven by contextual factors, such as mandatory requirements or alignment with daily tasks, rather than subjective satisfaction. The limited alignment of ORCA's functionalities with daily audit activities and the non-routine nature of its use further diminished the influence of satisfaction on usage patterns. This underscores the importance of operational and contextual factors in driving system adoption beyond the subjective experiences of users.

5.1. Implications

This study contributes to the theoretical understanding of Information Systems Success by refining the DeLone and McLean Information Systems Success Model (2003), in the context of Continuous Auditing (CA) implementation at PT PLN (Persero). The findings highlight the significant roles of Information Quality and Service Quality in influencing User Satisfaction and System Use, which subsequently drive organizational benefits. High-quality information—characterized by accuracy, relevance, and timeliness—proved essential in fostering trust and engagement between users, while comprehensive training and responsive technical support enhance satisfaction and system effectiveness. However, the study also identifies gaps, with System Quality having no significant impact on User Satisfaction or System Use. This suggests that technical reliability alone is insufficient; instead, the practical alignment of system features with the specific needs of auditors is crucial for encouraging adoption and satisfaction.

From a managerial perspective, these findings underscore the need for strategic improvements to Information Quality and user support systems. Management should prioritize enhancing data accuracy, timeliness, and completeness, to ensure that the CA system effectively supports decision-making processes and audit efficiency. Concurrently, investments in robust training programs, clear documentation, and responsive support services are critical for fostering user confidence and satisfaction. While System Quality's direct influence may be limited, optimizing usability, availability, and response time remains essential for creating a seamless user experience. By addressing these technical and user-centric factors, organizations can drive greater adoption of CA systems, maximize their operational benefits, and better align with the evolving needs of auditors in complex organizational environments.

5.2. Limitations

This study acknowledges several limitations that may affect the generalizability of its findings. First, the research focuses exclusively on PT PLN (Persero), a single state-owned enterprise in Indonesia, which may limit the applicability of results to other industries or organizational contexts. Additionally, the study relies on self-reported data from auditors, which could introduce response bias and may not fully capture the objective performance of the Continuous Auditing (CA) system. The analysis is also constrained to data collected up to October 2024, leaving the long-term impacts of the CA system implementation unexplored. Furthermore, while the study adapts the DeLone and McLean IS Success Model, it does not account for external factors such as organizational culture or regulatory pressures, which may significantly influence system adoption and effectiveness. These limitations highlight the need for broader studies across diverse organizations and extended timelines to validate and expand upon the findings presented here.

6. CONCLUSIONS

This study provides a comprehensive evaluation of the factors influencing the successful implementation of the Continuous Auditing (CA) system at PT PLN (Persero), utilizing the DeLone and McLean Information Systems Success Model. The findings emphasize the significant role of Information Quality and Service

Quality in driving User Satisfaction and System Use, which subsequently translate into Net Benefits. High-quality information, characterized by accuracy, relevance, completeness, and timeliness, emerged as a critical enabler, fostering trust in the system and supporting auditors' decision-making processes. Similarly, Service Quality, encompassing training, documentation, and responsiveness, positively impacted User Satisfaction by addressing technical needs and enhancing user experience. These results confirm the model's assertion that quality dimensions are integral to the success of information systems.

Interestingly, the study revealed that System Quality, while rated moderately high, did not significantly influence User Satisfaction or System Use. This finding suggests that technical reliability alone is insufficient to drive adoption and satisfaction in a complex organizational context. Instead, users prioritized features that aligned closely with their audit tasks and provided actionable insights. This aligns with prior research, such as Vasarhelyi et al. (2012), which highlighted the limited role of technical infrastructure without sufficient organizational support and user engagement. The lack of significant influence in this case may be attributed to PT PLN's bureaucratic culture and hierarchical structure, where decision-making is more dependent on information quality than system features, a divergence also noted by Petter et al. (2008).

The study's findings confirm, refute, and extend existing theories on the implementation of information systems, particularly within the audit context. Confirming the DeLone and McLean model, Information Quality significantly influenced both System Use and User Satisfaction, supporting the idea that high-quality, relevant, and timely information fosters greater system engagement and trust among users. This aligns with the studies by Hassan et al. (2023) and Li et al. (2020), which emphasized the critical role of accurate and complete data in driving audit effectiveness. Conversely, the results refute the model's assumption that System Quality is a key driver of User Satisfaction and System Use, highlighting the variability in its impact across different organizational settings.

From a managerial perspective, this study highlights several actionable insights for enhancing CA systems' effectiveness. Organizations must prioritize improving Information Quality by ensuring data accuracy, timeliness, and relevance in order to meet auditors' needs. Investments in user-centric support services, including tailored training programs, comprehensive documentation, and responsive technical support, are also essential for fostering user confidence and satisfaction. While System Quality may not directly impact satisfaction or usage, ensuring the system's availability, reliability, and ease of use remains crucial for creating a seamless user experience. Furthermore, the successful implementation of CA systems depends on addressing both technical and user-centric challenges, highlighting the need for an integrated approach that combines robust technical infrastructure with targeted user support.

Finally, this study contributes to the theoretical understanding of Information Systems Success by validating, refining, and extending the DeLone and McLean model in the context of CA. It underscores the importance of considering contextual factors and user perceptions when evaluating information systems, offering a nuanced perspective on the interplay between System Quality, Information Quality, Service Quality, and their outcomes.

Future research should employ mixed-method designs to gain a comprehensive understanding of CA system implementation. Quantitative approaches, such as Structural Equation Modeling (SEM), can be used to analyze complex relationships between variables such as system quality, management support, and user satisfaction, while logistic regression can assess factors influencing the adoption of technologies. Complementary qualitative methods, including in-depth interviews, focus group discussions (FGD), and case studies, could provide insights into the contextual factors behind quantitative findings, particularly regarding organizational culture, resistance to change, and system integration challenges. Longitudinal studies could track changes in CA adoption over time, and comparative studies can explore differences in implementation across state-owned enterprises and private organizations. Additionally, quasi-experimental designs may evaluate the effectiveness of interventions, such as targeted training programs, to enhance CA adoption and utilization.

Author contributions:

Musa Paultje Andris Mailoor: Conceptualization, Methodology, Formal Analysis, Investigation, Writing – Original Draft.

Viany Utami Tjhin: Supervision, Project administration, Funding acquisition, Writing – Review & Editing.

Open Data Availability Statement:

The data that support the findings of this study are available from the corresponding author, Musa Paultje Andris Mailoor, upon reasonable request.

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Appendix

Survey Item	Indicator	Source
The ORCA Dashboard is easy to access.	Availability	Hassan et al. (2023)
Features in the ORCA Dashboard (such as View, Filtering, Graphs, Tables, Summary Data, Detailed Data, and Download) are easy to use and not confusing.	Ease of Use	Hassan et al. (2023); Federicco & Tandiono (2023)
When using the ORCA Dashboard, there are not many disruptions that cause the Dashboard to not display or encounter errors.	System Reliability	Hassan et al. (2023); Federicco & Tandiono (2023)
The ORCA Dashboard can process and display data quickly.	Response Time	Federicco & Tandiono (2023)
The ORCA Dashboard provides the information I need for my audit work.	Relevance	Hassan et al. (2023)
The information presented in the ORCA Dashboard (including Map, Diagram, Graph, and Table) is easy to understand and not confusing.	Understandability	Hassan et al. (2023); Federicco & Tandiono (2023)
The information available in the ORCA Dashboard is complete according to my audit needs.	Completeness	Federicco & Tandiono (2023)
The information available in the ORCA Dashboard is accurate and reflects the reality in the field.	Accuracy	Hassan et al. (2023); Federicco & Tandiono (2023)
The information presented by the ORCA Dashboard is always updated (up-to-date).	Currency	Federicco & Tandiono (2023)
I have received adequate training to operate the ORCA Dashboard.	Training	Hassan et al. (2023); Tronto & Killingsworth (2021)
I have received sufficient documentation and user guidelines to operate the ORCA Dashboard.	Documentation & User Guidelines	Hassan et al. (2023); Federicco & Tandiono (2023)
The DACA team is easy to contact when I encounter issues/problems in operating the ORCA Dashboard.	Service Reliability	Laghmouch et al. (2020); Hassan et al. (2023)
The DACA team provides a quick response to any issues/problems I encounter in operating the ORCA Dashboard.	Service Responsiveness	Laghmouch et al. (2020); Tronto & Killingsworth (2021)
I use ORCA to perform data analysis in my audit assignments.	Nature of Use	Hassan et al. (2023); Federicco & Tandiono (2023)
I always use ORCA in every audit assignment.	Frequency of Use	Hassan et al. (2023); Laghmouch et al. (2020)
I use more than one Usecase in ORCA (not just one Usecase) for various audit tasks.	Extent of Use	Tronto & Killingsworth (2021)
Overall, I feel ________ about the quality of the ORCA dashboard.	Satisfaction with the System	Hassan et al. (2023)

Overall, I feel ________ about the quality of information provided by the ORCA dashboard.	Satisfaction with Information	Federicco & Tandiono (2023)
Overall, I feel ________ about the service provided by the DACA team.	Satisfaction with Service	Tronto & Killingsworth (2021); Laghmouch et al. (2020)
Using ORCA helps me identify anomalies.	Improved Decision	Hassan et al. (2023)
Using ORCA helps accelerate the data analysis process in my audit assignments.	Audit Efficiency	Federicco & Tandiono (2023); Hassan et al. (2023)
Using ORCA improves the quality of my audit results.	Audit Effectiveness	Tronto & Killingsworth (2021); Laghmouch et al. (2020)
With ORCA, the frequency of anomalies found in Auditees has decreased.	Reduced Anomalies	Hassan et al. (2023)