



**CLEBER HENRIQUE SILVA JUNIOR**

**TRANSFORMANDO A AUDITORIA INTERNA  
DE GERENCIAMENTO DE CONTRATOS:  
UMA ABORDAGEM ORIENTADA POR DADOS**

**LAVRAS – MG**

**2023**



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Trabalho de Conclusão de Curso apresentado à  
Universidade Federal de Lavras, como parte das  
exigências do Curso de Engenharia de Controle e  
Automação, para a obtenção do título de Bacharel.

Prof. DSc. Arthur de Miranda Neto  
Orientador

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DE CONTRATOS: UMA ABORDAGEM ORIENTADA POR DADOS  
TRANSFORMING CONTRACT MANAGEMENT INTERNAL AUDIT: A  
DATA-DRIVEN APPROACH**

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*A mente que se abre a uma nova ideia jamais volta ao seu tamanho original.*  
*(Albert Einstein)*



## RESUMO

A auditoria interna representa um processo crucial para garantir a integridade, conformidade e transparência das informações financeiras e operacionais dentro das organizações. Na atual era da transformação digital, a adoção de tecnologias emergentes, especialmente a inteligência artificial (IA), introduz tanto desafios quanto oportunidades para as práticas de auditoria. Isso deu origem ao conceito de Auditoria Orientada por Dados (AOD), onde dados e análises avançadas são aproveitados para aprimorar a tomada de decisões e a execução das atividades de auditoria. Este estudo explora a implementação e utilização do DocuSign Agreement Cloud, uma solução abrangente que integra DocuSign eSignature, CLM, CLM+, Analyzer e Insight dentro de uma empresa. O DocuSign CLM surge como um software de gerenciamento de ciclo de vida de contratos, otimizando processos desde as etapas de criação e revisão até a aprovação e assinaturas eletrônicas por meio do DocuSign eSignature. Além disso, o DocuSign Analyzer, uma ferramenta de análise de contratos alimentada por IA, eleva o processo de revisão e negociação, fornecendo análise automatizada de cláusulas e termos, complementada pela pontuação de risco do conteúdo do contrato. O DocuSign Insight, outra solução baseada em IA, facilita a extração, análise e gerenciamento automatizados e inteligentes de informações contratuais. Este estudo adota a metodologia de Pesquisa Ação, centrada em impulsionar melhorias práticas e transformações nos processos de auditoria interna e gestão de contratos dentro de uma empresa. Uma revisão abrangente da literatura sobre o estado da arte da AOD e do processo de transformação digital na auditoria fundamenta este trabalho. O principal objetivo é contribuir para o avanço do conhecimento sobre soluções tecnológicas que capacitam auditores na era digital, com foco nas capacidades integradas do DocuSign Agreement Cloud.

**Palavras-chave:** Auditoria Orientada por Dados, Transformação Digital, Inteligência Artificial, Gestão de Contratos.



## ABSTRACT

Internal auditing stands as a pivotal process, ensuring the integrity, compliance, and transparency of financial and operational information within organizations. In the current era of digital transformation, the adoption of emerging technologies, particularly artificial intelligence (AI), introduces both challenges and opportunities to auditing practices. This has given rise to the concept of Data-Driven Audit (DDA), where data and advanced analytics are harnessed to augment decision-making and the execution of audit activities. This study delves into the implementation and utilization of the DocuSign Agreement Cloud, an all-encompassing solution that integrates DocuSign eSignature, CLM, CLM+, Analyzer, and Insight within a company. DocuSign CLM emerges as a contract lifecycle management software, streamlining processes from the creation and review stages to approval and electronic signatures through DocuSign eSignature. Furthermore, DocuSign Analyzer, an AI-powered contract analytics tool, elevates the review and negotiation process by providing automated clause and term analysis, complemented by risk scoring of contract content. DocuSign Insight, another AI-based solution, facilitates the automated and intelligent extraction, analysis, and management of contract information. This study adopts the Action Research methodology, centered around driving practical improvements and transformations in the internal auditing and contract management processes within a company. A comprehensive literature review on the state of the art of DDA and the digital transformation process in auditing, underpins this work. The primary objective is to contribute to advancing knowledge about technological solutions that empower auditors in the digital age, with a keen focus on the integrated capabilities of the DocuSign Agreement Cloud.

**Keywords:** Data-Driven Audit, Digital Transformation, Artificial Intelligence, Contract Management.



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## 1 INTRODUÇÃO

No cenário em constante evolução dos negócios e da tecnologia, a auditoria interna desempenha um papel fundamental na garantia de transparência, conformidade e gestão de riscos nas organizações. À medida que as empresas adotam a transformação digital, os paradigmas tradicionais de auditoria estão sendo reformulados por tecnologias emergentes. Uma área impactada por essa transformação é a gestão de contratos — um processo que abrange todo o ciclo de vida dos contratos, desde a criação e negociação até a execução e renovação.

Este artigo explora a interseção entre a gestão de contratos, a transformação digital e a auditoria interna. Especificamente, investiga a implementação e utilização do DocuSign Agreement Cloud, uma suíte de aplicativos de software e soluções de plataforma que auxiliam as empresas a gerenciar seus contratos de forma mais eficiente e eficaz, incluindo os softwares DocuSign CLM, Insight, Analyzer e eSignature. Mais especificamente, este estudo abrange o DocuSign CLM+, uma solução que integra DocuSign CLM, DocuSign Analyzer e DocuSign Insight. Cada componente tem um propósito distinto ao aprimorar as práticas de gestão de contratos, otimizar fluxos de trabalho e fornecer insights para os auditores.

O DocuSign CLM, atua como um software de gerenciamento de ciclo de vida de contratos, oferecendo recursos como fluxos de trabalho automatizados, geração de documentos, roteamento de contratos e análises. Por outro lado, o DocuSign Analyzer é uma ferramenta de análise de contratos alimentada por inteligência artificial, projetada para simplificar o processo de revisão e negociação, fornecendo análise automatizada de cláusulas e termos, juntamente com uma pontuação de risco do conteúdo do contrato.

O DocuSign Insight, uma solução dedicada de análise de documentos eletrônicos, utiliza análises avançadas para identificar padrões e tendências em grandes conjuntos de dados, facilitando a tomada de decisões mais informadas. A

integração dessas ferramentas no DocuSign CLM+ representa uma resposta estratégica ao cenário em evolução da gestão de contratos, oferecendo não apenas avanços tecnológicos, mas também uma abordagem holística para lidar com as complexidades do processo de auditoria.

Este trabalho aborda uma lacuna na literatura referente à auditoria interna de gestão de contratos por meio de uma Pesquisa-Ação prática realizada no contexto de uma empresa, aqui referida como Empresa Alfa. Devido a considerações éticas, de conformidade e privacidade de dados da empresa, o nome real e dados específicos do contrato da Empresa Alfa não são divulgados neste trabalho. Pseudônimos e dados anonimizados são utilizados para proteger a privacidade e confidencialidade da organização.

Embora haja uma quantidade substancial de pesquisas sobre o impacto da transformação digital na auditoria, observa-se uma escassez notável de investigações semelhantes na auditoria interna no contexto da gestão de contratos. A literatura acadêmica atual nesta área é limitada, e este trabalho visa contribuir para preencher essa lacuna.

Os objetivos específicos deste artigo são os seguintes:

1. Explorar os efeitos de ferramentas digitais como DocuSign CLM, DocuSign Analyzer e DocuSign Insight nas práticas de auditoria interna no âmbito da gestão de contratos, conforme observado por meio da aplicação prática e refinamento iterativo no contexto da Empresa Alfa. Essa exploração visa aprimorar a eficiência dos processos de auditoria, melhorar os fluxos de trabalho de gestão de contratos e alavancar tecnologias para otimizar as operações.
2. Fornecer insights sobre como a transformação digital, incluindo ferramentas e técnicas, impacta os processos de auditoria interna relacionados à gestão de contratos, com base na aplicação prática contínua e adaptação dessas ferramentas no contexto real da Empresa Alfa.

3. Abordar uma lacuna na literatura relacionada à auditoria interna de gestão de contratos, utilizando o contexto da aplicação prática na Empresa Alfa para contribuir para a compreensão da eficácia de ferramentas digitais nessa área específica da auditoria interna.
4. Oferecer uma base para pesquisas futuras no domínio da auditoria interna de gestão de contratos, visando estimular investigações acadêmicas e discussões adicionais nesse campo. Essa base é construída a partir dos insights obtidos a partir da aplicação prática e refinamento iterativo de ferramentas digitais no contexto da Empresa Alfa.

Este estudo estabelece uma conexão entre os temas de práticas de auditoria, transformação digital e tecnologias emergentes, como inteligência artificial. Ele abrange tópicos que exigem uma base teórica sólida e uma revisão abrangente da literatura. As próximas seções apresentarão e discutirão os conceitos e estudos que fundamentam esta pesquisa.



# Transforming Contract Management Internal Audit: A Data-Driven Approach

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**Abstract**—Internal auditing stands as a pivotal process, ensuring the integrity, compliance, and transparency of financial and operational information within organizations. In the current era of digital transformation, the adoption of emerging technologies, particularly artificial intelligence (AI), introduces both challenges and opportunities to auditing practices. This has given rise to the concept of Data-Driven Audit (DDA), where data and advanced analytics are harnessed to augment decision-making and the execution of audit activities. This study delves into the implementation and utilization of the DocuSign Agreement Cloud, an all-encompassing solution that integrates DocuSign eSignature, CLM, CLM+, Analyzer, and Insight within a company. DocuSign CLM emerges as a contract lifecycle management software, streamlining processes from the creation and review stages to approval and electronic signatures through DocuSign eSignature. Furthermore, DocuSign Analyzer, an AI-powered contract analytics tool, elevates the review and negotiation process by providing automated clause and term analysis, complemented by risk scoring of contract content. DocuSign Insight, another AI-based solution, facilitates the automated and intelligent extraction, analysis, and management of contract information. This study adopts the Action Research methodology, centered around driving practical improvements and transformations in the internal auditing and contract management processes within a company. A comprehensive literature review on the state of the art of DDA and the digital transformation process in auditing, underpins this work. The primary objective is to contribute to advancing knowledge about technological solutions that empower auditors in the digital age, with a keen focus on the integrated capabilities of the DocuSign Agreement Cloud.

**Index Terms**—Data-Driven Audit, Digital Transformation, Artificial Intelligence, Contract Management.

## I. INTRODUCTION

**I**N the ever-evolving landscape of business and technology, internal auditing plays a fundamental role in ensuring transparency, compliance, and risk management within organizations. As companies embrace digital transformation, traditional auditing paradigms are being reshaped by emerging technologies. One area impacted by this transformation is contract management—a process that spans the entire lifecycle of contracts, from creation and negotiation to execution and renewal.

This article explores the intersection of contract management, digital transformation, and internal auditing. Specifically, it investigates the implementation and utilization of the DocuSign Agreement Cloud, a suite of software applications

and platform solutions that assist companies in managing their contracts more efficiently and effectively, including the software DocuSign CLM, Insight, Analyzer, and eSignature. More specifically, this study covers DocuSign CLM+, a solution that integrates DocuSign CLM, DocuSign Analyzer, and DocuSign Insight. Each component serves a distinct purpose in enhancing contract management practices, optimizing workflows, and providing insights for auditors.

DocuSign CLM acts as a contract lifecycle management software, offering features such as automated workflows, document generation, contract routing, and analytics. On the other hand, DocuSign Analyzer is an AI-powered contract analytics tool designed to simplify the review and negotiation process by providing automated analysis of clauses and terms, along with a risk score of contract content.

DocuSign Insight, a dedicated eDocument analysis solution, utilizes advanced analytics to identify patterns and trends in large datasets, facilitating more informed decision-making. The integration of these tools into DocuSign CLM+ represents a strategic response to the evolving landscape of contract management, offering not only technological advancements but also a holistic approach to addressing the complexities of the audit process.

This work addresses a gap in the literature regarding internal audit of contract management through a practical Action Research conducted within the context of a company, referred to as Company Alfa. Due to ethical, compliance, and data privacy considerations of the company, the real name and specific contract data of Company Alfa are not disclosed in this work. Pseudonyms and anonymized data are used to protect the privacy and confidentiality of the organization.

While there is a substantial amount of research on the impact of digital transformation on auditing, there has been a noticeable scarcity of similar investigations in internal auditing within the context of contract management. The current academic literature in this area is limited, and this work aims to contribute to filling this gap.

The specific objectives of this article are as follows:

- 1) Explore the effects of digital tools like DocuSign CLM, DocuSign Analyzer, and DocuSign Insight on internal auditing practices within the realm of contract management, as observed through practical application and iterative refinement in the context of Company Alfa.

This exploration aims to enhance the efficiency of audit processes, improve contract management workflows, and leverage technologies to optimize operations.

- 2) Provide insights into how digital transformation, including tools and techniques, impacts internal auditing processes related to contract management, based on the continuous practical application and adaptation of these tools in the real context of Company Alfa.
- 3) Address a gap in the literature related to internal audit of contract management, utilizing the context of practical application in Company Alfa to contribute to the understanding of the effectiveness of digital tools in this specific area of internal auditing.
- 4) Provide a foundation for future research in the domain of internal audit of contract management, aiming to stimulate academic investigations and further discussions in this field. This foundation is built upon insights obtained from the practical application and iterative refinement of digital tools in the context of Company Alfa.

This study establishes a connection between the themes of audit practices, digital transformation, and emerging technologies such as artificial intelligence. It covers topics that require a solid theoretical background and a comprehensive literature review. The next sections will present and discuss the concepts and studies that inform this research.

## II. INTERNAL AUDITING

Internal auditing plays a pivotal role in the world of modern organizations. It serves as the guardian of integrity, providing an independent and objective assessment of an organization's operations, risk management, and compliance with laws and regulations. [1]

As it is mentioned in [2], the basic objectives of internal auditing are:

- assuring integrity of financial and operational information and reports;
- the determination that the organization is complying with laws, statutes, policies, procedures, and financial instruments;
- an examination to determine that the organization is operating efficiently and economically;
- the determination that the organization is accomplishing the goals and objectives for which resources have been provided; and
- the determination that organization assets are safe-guarded.

The Institute of Internal Auditors (IIA) offers the "International Professional Practices Framework (IPPF)," a guide that outlines standards, code of ethics, and practice advisories for internal auditors. According to this guide, [3] and [4], the audit cycle is a structured framework that internal auditors follow to carry out their responsibilities effectively. This cycle typically consists of several phases, each serving a distinct purpose:

- **Audit Planning and Risk Assessment:** During this phase, internal auditors identify areas to be audited and assess the associated risks. Audit plans are developed to address these risks and guide the audit process.

- **Fieldwork and Data Collection:** Internal auditors conduct fieldwork to gather relevant data and evidence. This may involve examining financial records, conducting interviews, and assessing processes and controls.
- **Data Analysis and Evaluation:** Collected data is analyzed to evaluate the organization's compliance with laws, regulations, and internal policies. Auditors assess the efficiency and effectiveness of operations.
- **Reporting and Communication:** Once the audit is complete, auditors prepare comprehensive reports that document their findings, conclusions, and recommendations. These reports are shared with management and stakeholders.
- **Follow-up and Monitoring:** The final phase involves tracking the implementation of audit recommendations and ensuring that corrective actions are taken to address identified issues.

## III. CONTRACT LIFECYCLE MANAGEMENT

Contract management is a structured process that ensures a clear understanding of obligations for all parties involved, leading to the efficient and effective fulfillment of these obligations to maximize value for money [5]. This process encompasses the entire contract lifecycle, from identifying the needs of the purchaser to the contract's completion. Two primary characteristics define contract management: first, the identification, allocation, and management of risks related to contract performance, and second, the management of the relationship between the purchaser and the supplier. At its core, a contract is an agreement between two parties, each with specific obligations to fulfill, often involving a payment, and it serves as the foundation for the relationship between these parties [6].

Contract management covers the entire contract lifecycle, offering a comprehensive view of the corporation's contracting activities. In this capacity, contract management has the potential to drive the transformation of business processes and persuade the corporation's senior leadership to authorize the necessary changes in their contracting procedures. When the contract management organization operates at the highest level of maturity, the financial impact is likely to manifest in the company's financial performance. Effective strategic planning and improvements in operational contracting during the pre-contract phase lead to smoother execution during the post-contract phase, fostering stronger relationships among the parties involved. This, in turn, can result in enhanced market reputation and brand image, as well as increased shareholder value, which aligns with the goals of contract management [7].

According to [7] and different companies that provide Contract Lifecycle Management solutions, the main five stages of Contract Management are:

- 1) Request and Generate: This stage involves the creation of a contract request and the gathering of crucial details associated with a new contract, an amendment, or a renewal.
- 2) Negotiate and Approve: In this stage, contract parties negotiate the framework of specifications drafted when



creating contracts. After back-and-forth redlining and collaboration, agreed-upon terms and conditions provide clear insight into the expectations of contract parties.

- 3) Execute and Organize: Once everyone involved is comfortable with the negotiations made, the contract goes through a second draft and is reviewed by the parties.
- 4) Compliance, Report, and Audit: This stage involves ensuring that the contract is being followed and that all parties are meeting their obligations. It also includes the creation of reports and audits to track the progress of the contract.
- 5) Review and Renewal: This stage involves reviewing the contract to ensure that it is still relevant and meets the needs of all parties. If necessary, the contract can be renewed or renegotiated.

One of the challenges of contract management is to ensure that the contract is up to date and reflects the current needs and expectations of both parties. This may require modifying the contract or adding amendments as the situation changes. Another challenge is to ensure that the contract is compliant with relevant laws, regulations, standards, and best practices. This may require conducting audits, reviews, or assessments of the contract performance and compliance.

#### IV. CLM AUDITING

As per the last section, Contract Lifecycle Management (CLM) is a vital process that requires internal audit to ensure its effectiveness and efficiency. The audit covers the whole process of contract management, from the initiation and execution of contracts to their monitoring and termination. The audit verifies the data accuracy, compliance with contractual terms and conditions, and the adequacy of controls in place. Contract data refers to the information in the contracts, such as obligations, milestones, terms, and risks. The audit aims to detect and address any potential risks or issues that could affect the organization's financial performance or reputation. This process is essential for ensuring transparency, risk mitigation, and value for money in contracts.

Despite the lack of existing literature, there are several sources on the market that address the steps and benefits of auditing contract management processes. For example, the websites of organizations specializing in contract auditing, Contract Logix, Juro, Gatekeeper and Formstack, offer tips and guidance on how to conduct this audit efficiently and effectively. According to these sources, the contract management process audit involves the following stages:

- 1) Reviewing the contract accessibility and security
- 2) Assessing the contract creation and approval workflow
- 3) Evaluating the contract performance and compliance
- 4) Identifying the contract risks and opportunities
- 5) Implementing the corrective actions and improvements

To conduct a reliable and comprehensive audit of the contract management process, internal auditors need to use various sources of evidence, such as:

- Contract documents and records
- Interviews and surveys with the contract stakeholders
- Observations and inspections of the contract activities

#### V. DIGITAL TRANSFORMATION & DATA-DRIVEN AUDIT

In recent years, the impact of the Digital Transformation era has reverberated across industries, reshaping traditional processes and introducing innovative tools and techniques. The realm of contract management has been significantly influenced by this technological revolution, as organizations have integrated various digital solutions, including templates, automation, workflows, dashboards, reporting, analytics, and artificial intelligence. These transformative tools offer a multitude of benefits for internal audit professionals engaged in contract management, enhancing their capacity to streamline and expedite the contract creation and negotiation process, monitor contract performance and compliance, identify and mitigate risks and issues, and generate valuable insights and recommendations for continuous improvement. [8]

Moreover, the advent of Natural Language Processing (NLP) and Machine Learning (ML) has revolutionized the field of internal audit. NLP techniques enable auditors to extract and analyze textual data from contracts, agreements, and other documents with unprecedented accuracy and speed. By leveraging NLP, auditors can efficiently review and categorize contract clauses, terms, and obligations, identify potential anomalies or discrepancies, and ensure that contracts align with regulatory requirements and internal policies. ML algorithms, on the other hand, provide auditors with the ability to detect patterns, trends, and anomalies within vast datasets, allowing for a more comprehensive and data-driven audit approach. These innovations empower auditors to proactively uncover insights, assess risk, and improve the overall effectiveness of contract management audits [9].

NLP is a rapidly evolving field situated at the intersection of artificial intelligence and linguistics. It is dedicated to enabling machines to understand, interpret, and generate human language in a meaningful and contextually relevant manner. NLP techniques have a profound impact on various applications, from machine translation and sentiment analysis to chatbots and speech recognition. The power of NLP is its capacity to process and extract valuable insights from extensive volumes of unstructured text data, a capability that holds significant relevance in the auditing field. By employing NLP, auditors can enhance their ability to extract essential information from contracts, agreements, and textual documents, a critical aspect of contract management and internal auditing.

The potential of NLP has been explored in numerous books and articles, showcasing its diverse applications and advancements. "Speech and Language Processing" by Jurafsky and Martin is a fundamental textbook offering a comprehensive introduction to NLP, covering core concepts and techniques [10]. In the context of auditing and finance, articles such as "Natural Language Processing in Accounting, Auditing, and Finance: A Synthesis of the Literature with a Roadmap for Future Research" by Fisher et al. provide valuable insights into the use of NLP for enhancing financial data analysis and audit procedures [9]. A deep understanding of the role of NLP in internal auditing and contract management is essential, as it opens the door to automated data extraction, semantic analysis, and informed decision support for auditors.

In the context of this technological evolution, it is important to assess the available solutions on the market, such as Contract Lifecycle Management Software and other intelligent solutions. Therefore, this work introduces two remarkable software — DocuSign CLM and DocuSign Insight — that have the potential to revolutionize the landscape of contract management and internal auditing. The next sections bring valuable information about the mentioned solutions.

## VI. DOCUSIGN CLM+

DocuSign CLM+ represents a pivotal component within the broader DocuSign Agreement Cloud, seamlessly. It also provides over 100 pre-trained AI models to extract, analyze, and report on key contract data points and legal topics. This amalgamation creates a cohesive platform that not only manages contracts throughout their lifecycle but also harnesses the analytical prowess of artificial intelligence (AI). By combining these elements, organizations gain a holistic solution that fuses contract management processes with advanced analytics within a unified platform.

### A. DocuSign CLM

CLM software, as defined by Gartner, is "an application that proactively manages contracts from the initiation stage through the award, compliance, and renewal stages." Traditionally, organizations conducted contract administration tasks manually, involving printing, physical signatures, scanning, and emailing. However, advanced CLM solutions have revolutionized contract management by enabling digital contract administration. Digital management enhances transparency across the organization and streamlines every stage of the contract management process.

Contract Lifecycle Management systems are software applications designed to help organizations and departments manage contracts more efficiently. These systems simplify the storage and retrieval of agreements, supplier information, standard contract terms, and templates, ultimately reducing the workload and improving contract management. A CLM system integrates and centralizes all contract-related activities, providing a seamless end-to-end agreement management experience.

DocuSign CLM Software is a cloud-based solution that automates and streamlines the entire contract lifecycle, from creation and review to approval and electronic signatures. It allows users to create contracts from templates, collaborate with internal and external parties, track changes and versions, manage workflows and approvals, and sign contracts electronically. DocuSign CLM also integrates with other systems, such as CRM, ERP, and HR platforms, to ensure data consistency and compliance across the organization. By using DocuSign CLM, auditors can access and verify contract information more efficiently and effectively, reducing errors, risks, and costs.

DocuSign CLM solution works in five different stages:

- 1) **Document Generation:** This is the initial step in every contract management process, involving the creation of contracts from templates or existing versions. It includes drafting and information-sourcing procedures required when creating a new document.
- 2) **Routing and Negotiation:** After the initial preparation, the contract enters the routing and negotiation stage, which involves internal and external stakeholders. This stage encompasses workflows for sending, editing, and negotiating the agreement, and it often consumes a significant portion of a contract's lifecycle.
- 3) **Document Signing:** Document signing is a critical step in the contract management process, as the legality of a contract relies on secure, verifiable signatures. Electronic signatures have become essential in the digital age, allowing for quick and remote document execution.
- 4) **Integration with Systems of Record:** Integrating the CLM solution with other Systems of Record is a crucial step that saves time and reduces the amount of contract administration needed to move contracts forward. It allows automatic pre-filling of contracts with information from existing data sources.
- 5) **Search and Analysis:** Once a contract is signed, it needs to be stored in a centralized, searchable location. This is where modern CLM solutions with contract analytics and artificial intelligence (AI) capabilities come into play, making contracts easier to find, access, and analyze.

### B. DocuSign Insight

DocuSign Insight is an AI-based solution that enables automated and intelligent extraction, analysis, and management of contract information. It uses natural language processing (NLP) and machine learning (ML), latent semantic indexing (LSI), optical character recognition (OCR) and rules-based logic techniques to identify and extract key terms, clauses, and provisions from contracts, such as obligations, liabilities, risks, opportunities, and anomalies, side-by-side comparisons and interactive dashboards. It also provides insights and recommendations based on the contract data, such as risk scores, compliance gaps, optimization opportunities, and best practices. DocuSign Insight can analyze contracts from various sources, such as DocuSign CLM, email attachments, or cloud storage. By using DocuSign Insight, auditors can gain a deeper understanding of the contract portfolio and its implications for business performance and strategy.

The introduction of artificial intelligence in DocuSign Insight is a game-changer for auditors. By harnessing the power of AI, auditors can now perform more sophisticated analyses of contracts, leading to more accurate risk assessment and issue detection. Machine learning algorithms in Insight can recognize patterns and anomalies, enabling auditors to focus their attention on high-risk areas. The advanced analytics capabilities also provide auditors with the means to generate predictive insights, allowing for proactive risk mitigation and strategic decision-making. In essence, AI in DocuSign Insight complements auditors' efforts by enhancing their analytical capabilities and facilitating a more data-driven approach to contract management internal audit.

### C. DocuSign Analyzer

The DocuSign Analyzer stands as a pivotal tool within the realm of contract management, leveraging artificial intelligence (AI) to empower users in scrutinizing and negotiating inbound contracts before affixing their signatures. As an integral component of the DocuSign Agreement Cloud, it extends the functionalities of the DocuSign Insight solution, designed for contract analytics pertaining to existing agreements. This integration seamlessly interfaces with DocuSign CLM (Contract Lifecycle Management) and DocuSign eSignature, crafting a cohesive workstream that encompasses contract preparation, signing, implementation, and overall agreement administration.

Making adept use of natural language processing (NLP) and machine learning (ML), the Analyzer discerns critical terms and clauses from contracts, evaluating their risk level in accordance with the organization's legal and business policies. Beyond this, it offers interactive scorecards, facilitates side-by-side comparisons, grants access to a comprehensive clause library, and seamlessly integrates with Microsoft Word, thereby enabling users to edit and redline contracts using pre-approved language. The multifaceted capabilities of the Analyzer serve to expedite the contract review and negotiation process, mitigate risk, optimize outcomes, and enhance overall compliance.

The subsequent sections of this paper delve into the current debate surrounding digital transformation in auditing, describe the methodology employed in the case study conducted at company Alfa, present the main findings, discuss implications, and conclude with final remarks.

## VII. APPLICATION TO THE PROJECT IMPLEMENTATION

The theoretical foundations outlined in the preceding sections serve as the conceptual framework guiding the practical implementation of the project. Delving into the intricacies of DocuSign CLM+, the aim is to understand how these technologies align with broader themes of internal auditing, digital transformation, and AI.

In the forthcoming methodology sections, the paper bridges the gap between theory and application by detailing the step-by-step process of implementing DocuSign CLM+ within the context of Company Alfa. This implementation goes beyond being a mere technological upgrade; it represents a strategic response to the challenges faced in contract management and internal auditing.

The methodology employed is rooted in Action Research, emphasizing a participatory and iterative approach. This methodology is particularly suited for situations where there is a need for immediate problem-solving and continuous improvement within the organizational context. By actively involving stakeholders, including auditors and end-users, throughout the project lifecycle, this approach ensures a more contextually relevant and effective implementation.

The application of Action Research involves a cyclic process of planning, acting, observing, and reflecting. As the project unfolds, feedback from stakeholders is gathered, and adjustments are made in real-time, fostering an adaptive and responsive implementation. This aligns with the agile methodologies,

specifically the SCRUM framework, ensuring flexibility and responsiveness to evolving requirements.

Simultaneously, the approach involves leveraging the capabilities of DocuSign CLM to streamline contract workflows, enhance compliance, and establish a centralized repository for contracts. The integration with DocuSign Insight and Analyzer brings AI-powered insights, enabling auditors to intelligently analyze contracts, identify risks, and draw valuable data-driven conclusions.

The connection between theory and practice is further strengthened by adherence to agile methodologies, specifically the SCRUM framework, ensuring a dynamic and iterative approach to project implementation. The subsequent sections provide a detailed account of the methodology, outlining how each stage—from requirements gathering to system integration—aligns with the theoretical foundations discussed earlier in the paper.

## VIII. PROJECT IMPLEMENTATION

### A. Project Overview

The implementation project of the DocuSign CLM system, in conjunction with the DocuSign Analyzer and DocuSign Insight software, was conducted in alignment with standard software engineering practices. The primary objective was to address the existing challenges within the contract management processes at company Alfa, where the SAP Ariba system was previously employed. It is also important to mention that DocuSign Analyzer is an extension of DocuSign Insight. Therefore, the implementation of DocuSign Insight also enables DocuSign Analyzer.

### B. Implementation Phases

The project followed a structured implementation process with the following phases:

- 1) **Requirements Gathering:** The project initiation involved extensive discussions and requirements gathering from clients, primarily the procurement team and contract managers within company Alfa. The key focus was to understand the existing issues, user requirements, and organizational goals.
- 2) **Workflow Design:** The project team designed comprehensive workflows for DocuSign CLM+ systems. This phase included the creation of detailed flowcharts outlining how contract management processes would transition from the existing SAP Ariba to the new systems. Particular attention was given to addressing challenges related to compliance and data tracking.
- 3) **Implementation:** The implementation phase comprised the actual deployment of the DocuSign CLM and DocuSign Insight and Analyzer. The project team utilized the Agile SCRUM methodology and worked in iterative sprints to ensure the efficient setup of these systems.
- 4) **Validation and Testing:** Extensive testing and validation procedures were carried out to guarantee the effective functioning of both systems. This phase was

critical in identifying and rectifying any issues or discrepancies that might hinder the seamless integration of the software.

- 5) **Adjustments:** In this phase, adjustments were made based on the feedback and findings from the validation and testing phase. The project team focused on addressing challenges related to data and document integration between Ariba, DocuSign CLM, Insight and Analyzer.
- 6) **Migration to Production:** Once the systems were validated and tested to meet the organizational requirements and compliance standards, they were migrated from the test environment to the production environment for everyday use.

### C. Challenges in Implementation

The implementation project encountered several challenges, particularly in terms of integration. The difficulties arose from the need to seamlessly integrate data and documents between SAP Ariba, DocuSign CLM, and DocuSign Insight. These challenges were further exacerbated due to the size and complexity of the existing data repositories and documents. Overcoming these hurdles required meticulous planning, substantial testing, and extensive collaboration among the project teams.

### D. Integration Workflow

A critical component of the implementation was the integration workflow. When a Contract Workspace was created in SAP Ariba, data was automatically migrated to the DocuSign CLM system via an API integration, in Microsoft Azure. Subsequently, the integration workflow commenced, encompassing data generation based on selected parameters, approval, review, signature, and the integration of updated data back into SAP Ariba. This closed the integration cycle, streamlining data and document tracking throughout the contract lifecycle.

### E. DocuSign Insight Integration

DocuSign Insight's implementation, running in parallel with DocuSign CLM, was initiated to leverage artificial intelligence for insights into the contracts. All contract files, including the primary documents and addenda, were migrated from SAP Ariba to Insight. A vital element of this phase was the establishment of an integration workflow programmed within CLM to facilitate data exchange. This integration allowed seamless access to contracts executed in CLM directly from Insight and the generation of valuable insights.

### F. User and Administrator Tools

The configuration of user and administrator tools was pivotal to the success of the implementation. These tools enabled users and administrators to provide auditors with customized contract clause searches, term searches, bulk document comparisons, and reviews. The integration between CLM and Insight also facilitated the extraction of risk analyses and valuable insights from contracts.

### G. Data Accessibility and Reporting

The project emphasized making valuable information easily accessible to both users and auditors. Users and administrators can provide auditors with extensive contract data, conduct thorough analyses, and generate reports. The standardization of workflows reduced the risk of errors and enhanced the ability to report and rectify issues.

### H. Training and Support

A comprehensive training program was implemented to familiarize users, administrators, and auditors with the functionalities of DocuSign CLM, Insight, and Analyzer. Training sessions were conducted to ensure that all stakeholders could effectively utilize the systems for their respective roles. Additionally, ongoing support mechanisms, including documentation and a helpdesk, were established to address queries and challenges post-implementation.

### I. Monitoring and Continuous Improvement

Post-implementation, a robust monitoring system was instituted to track system performance, user interactions, and any potential issues. Regular feedback sessions and continuous improvement initiatives were integrated to refine and enhance the systems based on user experiences and emerging needs.

## IX. DATA COLLECTION AND ANALYSIS

Upon the successful implementation of both systems, it is imperative to delve into the intricacies of the data collection process. Fundamentally, data collection is an ongoing process embedded in the routine usage of both DocuSign CLM and DocuSign Insight. As users initiate the contract creation process, input clauses, descriptions, and contract attributes, they actively contribute to the system's repository. Additionally, the AI algorithms, pre-trained by the software provider through an extensive process involving substantial data, testing, supervision, and result feedback, play a pivotal role in facilitating the system's implementation. This was particularly evident in the case of company Alfa, where configuring the AI tools and other system features, including dashboards and user preferences, was essential.

Moreover, with each new contract created and uploaded to the systems, the AI algorithm is further enriched, enhancing its efficiency and precision. Over time, the system becomes adept at providing valuable insights, uncovering trends and patterns within vast datasets. Importantly, this capability empowers the company to identify inefficiencies in its business processes, allowing for timely adjustments and continuous improvements.

The data collection process initiates with the creation of a contract within SAP Ariba, serving as the primary contract repository for company Alfa. As users input data and a Contract Workspace is established, the data seamlessly migrates from Ariba to DocuSign CLM. The integration workflow simplifies the data, triggering the commencement of the document generation process. During this stage, users fine-tune the contract generation clauses and attributes. Throughout

the entire process, documents, evidence, and comments from reviewers and approvers are systematically collected.

Upon the complete execution of the contract, the final workflow step involves sending the executed document and its attributes to DocuSign Insight via DocuSign Analyzer. This integrated approach ensures that data from all contracts is collected and interconnected within the DocuSign Agreement Cloud. Additionally, previous contracts within the organization are uploaded to further enrich the systems.

DocuSign Analyzer enables a granular analysis of each agreement, allowing for risk assessment and supplier evaluation in a dedicated section. Simultaneously, DocuSign Insight is harnessed to analyze massive datasets encompassing multiple contracts, facilitating a detailed examination of clauses and patterns. Configuring search tools and AI features within DocuSign Insight lays the foundation for creating dashboards that streamline the data analysis process for auditors.

Furthermore, various reports are generated to assess specific cases, such as identifying missing contract clauses across multiple contracts. This involves running searches in DocuSign Insight and generating reports to cross-verify attributes in CLM. In essence, this comprehensive process epitomizes the systematic approach to data collection and analysis, underscoring the effectiveness of the implemented systems in streamlining and enhancing these critical aspects of contract management and internal auditing.

## X. EVALUATION AND RESULTS

The implementation of DocuSign CLM, Insight, and Analyzer at company Alfa marked a significant advancement in contract management and internal auditing processes. Key outcomes and evaluations include:

- **Streamlined Workflows:** The implementation resulted in more efficient and streamlined contract management workflows. Automation features significantly reduced manual interventions, leading to time and cost savings.
- **Enhanced Data Accuracy:** The integration workflows and automated data exchange processes contributed to improved data accuracy and consistency across systems.
- **Improved Compliance:** The systems enhanced compliance by providing real-time tracking of contract statuses, approval processes, and adherence to organizational policies.
- **AI-Driven Insights:** DocuSign Insight's integration provided auditors with AI-driven insights, enabling them to identify risks, analyze contract clauses, and make data-driven decisions.
- **User Satisfaction:** Training programs and user-friendly interfaces contributed to high user satisfaction, ensuring that stakeholders could effectively utilize the systems in their daily activities.

Moreover, the implementation of DocuSign CLM+ and its seamless integration with DocuSign Analyzer and DocuSign Insight have significantly enhanced each stage of the audit cycle, promoting efficiency, precision, and comprehensive insights. The impact on each phase is detailed below:

- **Audit Planning and Risk Assessment:** The implementation of the systems revolutionizes audit planning and risk assessment by providing auditors with a centralized platform to access contract data and related insights. With DocuSign CLM+, auditors can identify areas for audit with greater precision, leveraging AI-driven analytics and risk scoring. The system aids in developing comprehensive audit plans that address specific risks detected through automated analysis.
- **Fieldwork and Data Collection:** DocuSign CLM+ streamlines fieldwork and data collection by offering a unified repository for contracts and associated documents. Auditors can efficiently gather relevant data, examine financial records, and assess processes and controls within a single platform. The automated data collection capabilities of the system reduce manual efforts, ensuring auditors have access to a comprehensive dataset for analysis.
- **Data Analysis and Evaluation:** The systems significantly enhance data analysis and evaluation during the audit process. DocuSign Insight, powered by AI and machine learning, enables auditors to extract key terms, assess risks, and evaluate compliance efficiently. The integration of analytics tools within DocuSign CLM allows auditors to assess the efficiency and effectiveness of operations more accurately. The systems facilitate a more sophisticated and data-driven approach to audit evaluation.
- **Reporting and Communication:** The reporting and communication phase benefits from the streamlined data and insights provided by DocuSign CLM+. Auditors can generate comprehensive reports documenting their findings, conclusions, and recommendations with greater ease. The integration of DocuSign Analyzer ensures that auditors can access automated clause and term analysis, enhancing the depth and quality of reporting. The system also facilitates efficient communication with management and stakeholders by providing a centralized platform for sharing audit reports.
- **Follow-up and Monitoring:** The final phase of follow-up and monitoring is greatly facilitated by DocuSign CLM+. Auditors can track the implementation of audit recommendations with precision, ensuring corrective actions are taken promptly. The system provides visibility into the status of recommendations and facilitates ongoing monitoring of compliance. This proactive approach to follow-up enhances the overall effectiveness of the audit cycle.

In essence, the implementation of DocuSign CLM+ transforms the audit cycle into a more streamlined, data-driven, and efficient process. Auditors benefit from advanced analytics, AI-driven insights, and a unified platform, enabling them to navigate each phase with heightened precision and effectiveness. The integrated approach of DocuSign CLM+ represents a significant advancement in internal audit practices within the realm of contract management.

Before the system's implementation, the internal audit process for contracts at Company Alfa operated as follows:

auditors selected a certain number of contracts and conducted analyses using Microsoft Excel. This manual comparison, relying on formulas, was deemed largely inaccurate by the auditors themselves and took over a month to complete the entire process, including analyzing which contracts to review, separating them, and examining the data and contract clauses. According to a former internal auditor at Company Alfa, this process had low reliability and demanded a significant amount of time. However, this can now be done using Insight in less than 5 minutes. Insight provides dashboards, as seen in the images [1], [2], indicating contract quality, key clauses and their presence in contracts, as well as contract categorization, as shown in the image [3]. Therefore, auditors can perform advanced searches and analyze which contracts in the entire database contain specific information or clauses, even if there are thousands of contracts.

The main outcome is a significant improvement in the time required for analyses, which previously took over a month and can now be completed in less than 5 minutes. Additionally, the analyses are precise and reliable because the system's intelligence, through the mentioned technologies, can review all contracts and identify those that do or do not contain the desired information.

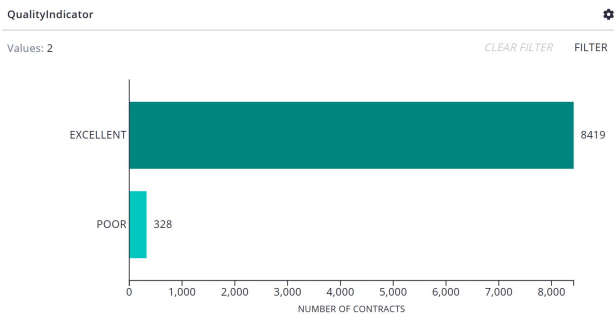


Fig. 1: Contract Quality Indicator

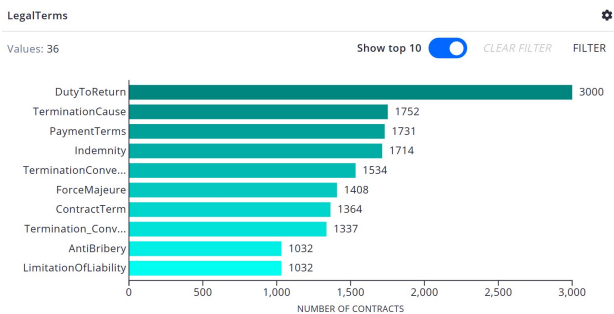


Fig. 2: Legal Terms in Contracts

Another extremely relevant factor is the analyses that can be performed with DocuSign Analyzer. Risk analyses bring precision and agility to auditors. For example, the compliance team in a region defines that if a contract contains certain clauses or data, they are high, low, or medium-risk contracts. This is adjusted in the system, and for all contracts, this risk analysis can be conducted, along with identifying which specific clause, section, or data in the contract corresponds to the analysis. This

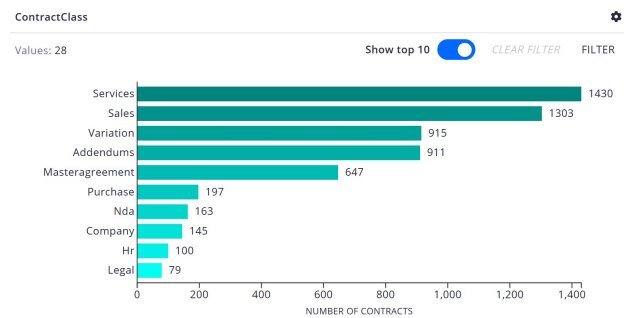


Fig. 3: All main Contract Classes

works by analyzing various labels when running an Analyzer execution. Each label represents a different analysis of a term, section, or topic in contracts. The Analyzer then constructs a scorecard containing a report of risk results. A final result is issued for that contract, and each label can be analyzed individually. Attached image [4] show the results of a scorecard for a test contract from Company Alfa.

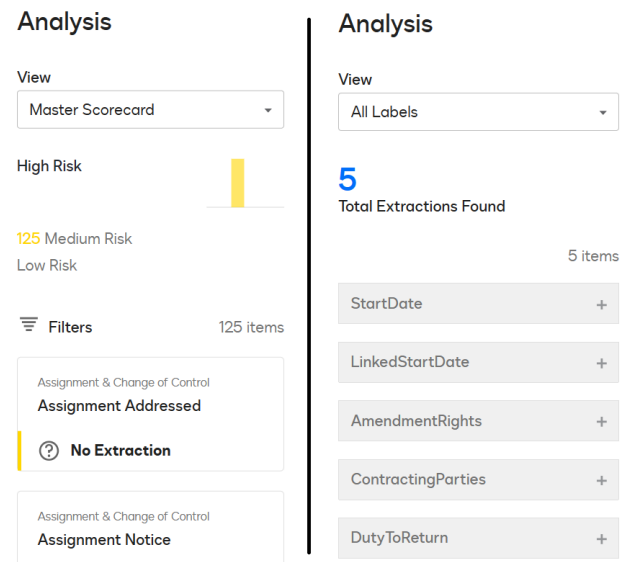


Fig. 4: Analyser result example

In summary, these are the key results benefiting auditors: quick searches can be performed to check, for example, if contracts contain mandatory information or clauses. Analyses are conducted reliably and rapidly. Dashboards provide visualizations of contract details, and customization of additional dashboards is possible. Risk analysis is conducted for each contract with specific clauses.

Currently, in the CLM system, 680 agreements have been executed in the past 6 months and in Insight, there are 8,749 documents since all contracts, ensuring a vast database for analysis.

## XI. CONCLUSION

This study presents a digital transformation project in the realm of internal auditing and contract management, focusing on the implementation of DocuSign CLM+ at Company



Alfa. Navigating through the key findings, it is important to acknowledge the inherent limitations of this study, offering valuable insights for future research endeavors.

The study faced limitations due to the recent implementation of the project, resulting in ongoing audits and feedback collected from a single auditor. Additionally, data restrictions imposed by compliance and ethical considerations within the company hindered the disclosure of extensive results, such as dashboards and system data demonstrating the efficiency of the tools. A future agenda involves more in-depth analyses and the potential release of additional company data, offering a more comprehensive understanding of the implemented systems.

Given more time for future work, there exists an opportunity to collect additional feedback and data. Furthermore, improved organization and negotiation with Company Alfa could facilitate the release of more comprehensive data, providing a clearer and more detailed demonstration of the implementation and the results obtained.

Despite these limitations, the research contributes methodologically by adopting an Action Research approach, emphasizing a participatory and iterative methodology. This approach, rooted in real-world problem-solving and continuous improvement, aligns with agile methodologies, specifically the SCRUM framework, ensuring adaptability and responsiveness to evolving requirements.

From a managerial perspective, the study highlights the strategic implications of the implemented systems, extending beyond the internal audit function. Company Alfa now boasts a sophisticated contract management ecosystem, enhancing compliance, operational efficiency, and risk mitigation. The AI-driven insights provided by DocuSign Insight contribute to a proactive and predictive approach to risk management.

Critically analyzing the work, it is evident that the transformative impact on internal audit practices and contract management is unfolding, with ongoing audits and future releases of additional data poised to provide a more comprehensive picture.

Contributing to the literature, this research addresses a gap in academic research related to digital transformation applied to internal audit of contract management, particularly within specific organizational contexts like Company Alfa. The study provides a foundation for future research in the domain, stimulating scholarly investigations and discussions in the field.

Looking ahead, the research paves the way for a future agenda, emphasizing the need for more extensive analyses, the release of additional data, and ongoing participatory research practices. The iterative nature of the implemented systems allows for continuous improvement, adapting to the evolving landscape of internal auditing, technological advancements, and organizational requirements.

In essence, this research not only captures the present state of internal audit practices but sets the stage for future advancements, ensuring that the contributions made resonate beyond the confines of this study.

## XII. ACKNOWLEDGMENTS

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### 3 CONCLUSÃO

Este estudo apresenta um projeto de transformação digital no âmbito da auditoria interna e gestão de contratos, com foco na implementação do DocuSign CLM+ na Empresa Alfa. Navegando pelos principais resultados, é importante reconhecer as limitações inerentes a este estudo, oferecendo percepções valiosas para futuros empreendimentos de pesquisa.

O estudo enfrentou limitações devido à recente implementação do projeto, resultando em auditorias em andamento e feedback coletado de um único auditor. Além disso, restrições de dados impostas por considerações de conformidade e ética dentro da empresa dificultaram a divulgação de resultados extensivos, como painéis e dados do sistema que demonstram a eficiência das ferramentas. Uma agenda futura envolve análises mais aprofundadas e a potencial liberação de dados adicionais da empresa, oferecendo uma compreensão mais abrangente dos sistemas implementados.

Com mais tempo para trabalhos futuros, existe a oportunidade de coletar feedback e dados adicionais. Além disso, uma melhor organização e negociação com a Empresa Alfa poderiam facilitar a liberação de dados mais abrangentes, proporcionando uma demonstração mais clara e detalhada da implementação e dos resultados obtidos.

Apesar dessas limitações, a pesquisa contribui metodologicamente ao adotar uma abordagem de Pesquisa-Ação, enfatizando uma metodologia participativa e iterativa. Essa abordagem, enraizada na resolução de problemas do mundo real e na melhoria contínua, alinha-se com as metodologias ágeis, especificamente o framework SCRUM, garantindo adaptabilidade e responsividade a requisitos em constante evolução.

Do ponto de vista gerencial, o estudo destaca as implicações estratégicas dos sistemas implementados, estendendo-se além da função de auditoria interna. A Empresa Alfa agora conta com um ecossistema sofisticado de gestão de contratos,

aprimorando a conformidade, eficiência operacional e mitigação de riscos. As análises orientadas por IA fornecidas pelo DocuSign Insight contribuem para uma abordagem proativa e preditiva à gestão de riscos.

Ao analisar criticamente o trabalho, fica evidente que o impacto transformador nas práticas de auditoria interna e gestão de contratos está se desdobrando, com auditorias em andamento e futuras liberações de dados adicionais destinadas a proporcionar uma visão mais abrangente.

Contribuindo para a literatura, esta pesquisa aborda uma lacuna na pesquisa acadêmica relacionada à transformação digital aplicada à auditoria interna de gestão de contratos, especialmente dentro de contextos organizacionais específicos, como o da Empresa Alfa. O estudo fornece uma base para futuras pesquisas no domínio, estimulando investigações acadêmicas e discussões no campo.

A pesquisa abre caminho para uma agenda futura, enfatizando a necessidade de análises mais extensivas, a divulgação de dados adicionais e práticas contínuas de pesquisa participativa. A natureza iterativa dos sistemas implementados permite uma melhoria contínua, adaptando-se ao cenário em evolução da auditoria interna, avanços tecnológicos e requisitos organizacionais.

Em essência, esta pesquisa não apenas captura o estado atual das práticas de auditoria interna, mas prepara o ambiente para avanços futuros, garantindo que as contribuições feitas ressoem além dos limites deste estudo.

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