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THE IMPACT OF ARTIFICIAL INTELLIGENCE ON AUTOMATION OF AUDITS IN COMPLIANCE WITH DATA PROTECTION LAWS

O IMPACTO DA INTELIGÊNCIA ARTIFICIAL NA AUTOMAÇÃO DE AUDITORIAS EM CONFORMIDADE COM AS LEIS DE PROTEÇÃO DE DADOS

EL IMPACTO DE LA INTELIGENCIA ARTIFICIAL EN LA AUTOMATIZACIÓN DE AUDITORÍAS EN CUMPLIMIENTO DE LAS LEYES DE PROTECCIÓN DE DATOS

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ABSTRACT
This paper presents a systematic review of the literature on the use of Artificial Intelligence (AI) in the automation of audits in compliance with data protection laws, such as the General Data Protection Law (LGPD) in Brazil, the General Data Protection Regulation (GDPR) in Europe, and the International Standard for Information Security (ISO/IEC 27001:2022). The study explores the benefits, challenges, and trends in the application of AI in automated audits in the context of Governance, Risk, and Compliance (GRC). The most widely used technologies and success stories are analyzed, pointing to a significant transformation in digital audits. The results indicate that AI improves accuracy and efficiency, enabling a proactive and continuous approach to regulatory compliance management.

KEYWORDS: Artificial Intelligence. Automated Auditing. Compliance. Data Protection. Governance. Risk and Compliance. LGPD. GDPR.

RESUMO
Este artigo apresenta uma revisão sistemática da literatura sobre o uso da Inteligência Artificial (IA) na automação de auditorias em conformidade com as leis de proteção de dados, como a Lei Geral de Proteção de Dados Pessoais (LGPD) no Brasil, o Regulamento Geral de Proteção de Dados (GDPR) na Europa e a Norma Internacional de Segurança da Informação (ISO/IEC 27001:2022). O estudo explora os benefícios, desafios e tendências na aplicação da IA em auditorias automatizadas no contexto de Governança, Risco e Conformidade (GRC). São analisadas as tecnologias mais utilizadas e casos de sucesso, apontando para uma transformação significativa nas auditorias digitais. Os resultados indicam que a IA melhora a precisão e a eficiência, permitindo uma abordagem proativa e contínua na gestão de conformidade regulatória.

PALAVRAS-CHAVE: Inteligência Artificial. Auditoria Automatizada. Conformidade. Proteção de Dados. Governança. Risco e Conformidade. LGPD. GDPR.

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RESUMEN
Este artículo presenta una revisión sistemática de la literatura sobre el uso de la Inteligencia Artificial (IA) en la automatización de auditorías en cumplimiento con las leyes de protección de datos, como la Ley General de Protección de Datos Personales (LGPD) en Brasil, el Reglamento General de Protección de Datos (GDPR) en Europa y la Norma Internacional de Seguridad de la Información (ISO/IEC 27001:2022). El estudio explora los beneficios, desafíos y tendencias en la aplicación de la IA en auditorías automatizadas en el contexto de Gobernanza, Riesgo y Cumplimiento (GRC). Se analizan las tecnologías más utilizadas y casos de éxito, señalando una transformación significativa en las auditorías digitales. Los resultados indican que la IA mejora la precisión y la eficiencia, permitiendo un enfoque proactivo y continuo en la gestión del cumplimiento normativo.

PALABRAS CLAVE: Inteligencia Artificial. Auditoría Automatizada. Cumplimiento. Protección de Datos. Gobernanza. Riesgo y Cumplimiento. LGPD. GDPR.

1. INTRODUCTION

The increasing digitalization of corporate operations and the implementation of stringent data protection regulations, such as the General Data Protection Regulation (GDPR) in the European Union and the General Law on the Protection of Personal Data (LGPD) in Brazil, have required significant changes in corporate and government audit practices. Traditionally, compliance audits were manual, time-consuming processes that were commonly performed at specific intervals, which often resulted in delays in identifying non-conformities and high operational costs (Santos, 2021).

Artificial Intelligence (AI) is emerging as a promising technology to automate these processes, enabling more efficient and accurate analysis of large volumes of data in real time. This study seeks to examine how AI has transformed data protection compliance audits, highlighting the benefits, challenges and impact on business operations.

Objective

The objective of this study is to evaluate the impact of the application of Artificial Intelligence in the automation of compliance audits with data protection standards and laws, such as LGPD, GDPR and ISO 27001.

Problem Question

How can the application of Artificial Intelligence improve the automation of audits in compliance with data protection standards and laws, such as LGPD, GDPR and ISO 27001?

2. LITERATURE REVIEW

2.1. Artificial Intelligence and Audit Automation

The use of AI in audit automation has stood out in recent years due to its ability to handle large volumes of data and perform accurate and rapid analyses. Silva (2020) notes that AI can detect anomalies and unusual patterns with greater accuracy than manual audits, reducing the margin of human error and making the process more agile.

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Automation also transforms compliance audits into continuous processes, allowing companies to maintain compliance constantly and proactively. Kagermann (2018) points out that the application of AI allows audits to be carried out in an automated manner, instead of relying on one-off manual audits that are often expensive and time-consuming.

2.2. Data Protection Laws and Audits

With the entry into force of laws such as GDPR and LGPD, companies face the challenge of adapting their audit practices to ensure they comply with complex and constantly evolving requirements (Barreto; Oliveira, 2019). Audit automation, supported by AI, is seen as an efficient solution to deal with the increasing complexity and compliance requirements, helping companies better manage regulatory risks.

2.3. Benefits of AI in Audits

Key benefits of AI-powered audit automation include:

Table 1 – Benefits of AI in Computer Audits

Improved accuracy	AI analyzes large volumes of data with high accuracy, reducing the likelihood of human error (Santos, 2021).
Time reduction	Manual audits can take months, while AI allows completion in weeks or even days (Silva, 2020).
Continuous efficiency	AI enables continuous and automatic audits, allowing real-time monitoring (Kagermann, 2018).
Cost reduction	With automation, companies can reduce costs related to intensive labor and the management of large audit teams (Barreto; Oliveira, 2019).

Source: Survey Data (2024)

2.4. Challenges in Implementing AI

Although AI offers several benefits, its implementation also presents challenges. One of the main obstacles is the integration of AI technologies with existing legacy systems in companies, which may require substantial investments in infrastructure and training (Borges, 2021). In addition, data security during the automated audit process is a concern, since audits deal with sensitive and confidential information (Souza; Ferreira, 2020).

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3. METHODOLOGY

The methodology adopted for this study was the Systematic Literature Review (SLR). The choice of SLR is justified by its ability to offer a detailed synthesis of existing evidence, allowing the identification of gaps and trends in the use of AI for audit automation. According to Kitchenham *et al.*, (2009), SLR is a fundamental tool in emerging areas, such as Artificial Intelligence applied to Governance, Risk and Compliance (GRC), where the rapid evolution of technology requires a critical review of sources.

Research Procedures

The research was conducted in the Scopus, Web of Science and Google Scholar databases, using terms such as "Artificial Intelligence", "Automated Auditing", "Regulatory Compliance", "Data Protection", "LGPD" and "GDPR". The inclusion criteria selected articles published between 2010 and 2021, focusing on studies that discussed the application of AI in automated audits, with an emphasis on regulatory compliance.

Selection and Analysis Process

The selected articles underwent a detailed analysis, focusing on the following aspects: a) AI technologies applied in audits; b) Benefits reported in audit automation ; c) Challenges and limitations observed during implementation .

4. RESULTS AND DISCUSSION

The analysis of the results obtained from the Systematic Literature Review (SLR) indicates that Artificial Intelligence (AI) represents a game changer in the field of audit automation aimed at regulatory compliance, especially in complex and robust legislation such as the General Data Protection Law (LGPD), the General Data Protection Regulation (GDPR) and the ISO/IEC 27001:2022 standard. This chapter explores in depth the impacts observed, contextualizing the benefits, challenges and future trends, aligned with the scientific evidence in the literature. A comparison between the characteristics observed during the research is presented in Table 2 below:

Table 2: Comparison between Manual and Automated Audits with AI

Aspect	**Before AI (Manual)**	**After AI (Automated)**
Audit Time	3 to 6 months	1 to 2 weeks
Detection Accuracy	High margin of human error	Automatic anomaly detection with high accuracy
Audit Frequency	Fixed intervals (usually annual)	Continuous and real-time auditing

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Operating Cost	High due to intensive labor and prolonged time	Significant cost reduction with automation
Scalability	Limited by human capacity	High scalability, applicable to large volumes of data
Regulatory Compliance	Time consuming and error prone	Constant monitoring, lower risk of sanctions

Source: Survey Data (2024)

4.1. Benefits of Audit Automation with AI

The incorporation of AI into audit processes has brought significant advances in terms of accuracy, efficiency, cost, and scalability. Authors such as Silva (2020), Kagermann (2018), and Liu *et al.,* (2019) highlight that AI enables the analysis of large volumes of data in real time, detecting anomalies and nonconformities with an accuracy that far exceeds manual audits. Liu *et al.,* (2019) emphasize that machine learning algorithms can identify suspicious behavior patterns in large data sets, contributing to proactive risk detection.

Furthermore, operational efficiency is one of the most celebrated benefits in the literature. Studies by Kagermann (2018) show that automation can reduce audit time from months to weeks or even days. Barreto and Oliveira (2019) corroborate this, highlighting that previously time-consuming audits can be performed in shorter cycles, allowing organizations to remain continuously compliant.

Another crucial aspect is cost reduction. Organizations that adopt AI-based solutions can drastically reduce the costs associated with large teams and time spent on manual audits, as pointed out by Silva (2020) and corroborated by Zhang *et al.,* (2020). This cost reduction is particularly relevant for organizations operating in highly regulated sectors, such as finance and healthcare, where the compliance burden is high.

The scalability offered by AI is also noteworthy. According to Kagermann (2018), the ability to process large volumes of data in different regulatory contexts is a competitive advantage, especially in global business environments that need to align with the legislation of multiple jurisdictions.

4.2. Challenges in Implementing AI in Audits

Despite the significant benefits, the adoption of AI in audits also presents substantial challenges. Borges (2021) and Souza and Ferreira (2020) point out that the integration of AI technologies with legacy systems is one of the main obstacles. Many organizations still use outdated infrastructures that are not compatible with modern AI solutions, requiring high investments in technological updates and staff training.

Another challenge is related to data security. As highlighted by Zhang *et al.,* (2020), automated audits often deal with sensitive information, such as personal and financial data. Protection

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against cyberattacks and unauthorized access is a central concern for companies wishing to adopt this technology.

Cultural resistance has also been identified as an obstacle. According to Liu *et al.,* (2019), many audit professionals fear that AI-based automation will replace the human role, creating barriers to the acceptance of emerging technologies.

4.3. Comparison between Manual and Automated Audits

A central point of the discussion is the comparison between manual audits and those that use AI. As illustrated in Table 2, the gains in efficiency and accuracy with automation are evident. While manual audits have a high margin of error due to human intervention, automated audits with AI present high accuracy, as observed by Zhang *et al.,* (2020) and Santos (2021).

Another aspect is the frequency of audits. In the traditional method, audits occur at fixed intervals, usually annually, while automation enables real-time audits. This allows constant monitoring of regulatory compliance, reducing risks and avoiding regulatory sanctions (Liu *et al.,* 2019).

4.4. Future Trends

Recent studies suggest that the evolution of explainable AI (XAI) is one of the most promising areas for the future of automated audits. Zhang *et al.*, (2020) highlight that greater transparency of automated systems can increase the trust of regulators and human auditors, facilitating collaboration between the parties involved.

Another trend identified is the use of blockchain-based solutions to audit data in an immutable way, ensuring greater reliability in the audit process. Studies such as those by Barreto and Oliveira (2019) suggest that the combination of AI and blockchain can revolutionize data governance in audits.

Finally, the need for research focused on the impact of AI on small and medium-sized enterprises remains an important gap. Borges (2021) argues that most existing solutions are designed for large corporations, leaving a significant portion of the market without viable options.

4.5. Practical Implications

The adoption of AI in audits has practical implications that go beyond regulatory compliance. Companies that implement these technologies not only ensure compliance but also position themselves competitively in the global marketplace. Additionally, organizations can leverage the insights generated by automated audits to improve their internal processes and mitigate operational risks more effectively.

5. CONSIDERATIONS

Audit automation using AI represents a significant evolution in the field of Governance, Risk and Compliance, especially in relation to data protection standards such as LGPD and GDPR. AI's ability to process large volumes of data, identify anomalies and generate accurate reports in real time

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transforms the way audits are conducted, making them faster, more efficient and less prone to human error.

Although challenges related to infrastructure and data security still represent obstacles, the trend is that AI will become an increasingly essential tool in audits, providing more efficient and effective management of regulatory compliance. The adoption of AI in audits brings a new paradigm for Governance, Risk and Compliance, allowing companies to navigate more safely through today's complex regulatory landscape.

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