The role of the accountant in the digital transformation of accounting through the application of Artificial Intelligence

El rol del contador en la transformación digital de la contabilidad a través de la aplicación de la Inteligencia Artificial

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Abstract

The study analyzes how artificial intelligence is revolutionizing accounting and the role of the accountant in the digital context. Based on an online literature review, based on up-to-date academic sources, different points of view about the effect of Artificial Intelligence on accounting functions were examined. The objective is to identify the importance of accountants obtaining new digital skills and adjusting to technological platforms. The findings indicate that, although most recognize the advantages of Artificial Intelligence in the efficiency and accuracy of accounting work, there is also limited preparation. It is concluded that constant training is crucial to keep professionals up to date and have a strategic impact on decision-making. Instead of replacing the accountant, Artificial Intelligence emerges as an ally that enhances their skills, and creates new possibilities for the profession.

Resumen

El estudio analiza la manera en que la inteligencia artificial está revolucionando la contabilidad y la función del contador en el contexto digital. Basándose en una revisión bibliográfica en línea, fundamentada en fuentes académicas actualizadas, se examinaron diferentes puntos de vista acerca del efecto de la Inteligencia Artificial en las funciones de contabilidad. El objetivo es identificar la importancia de que los contadores obtengan nuevas competencias digitales y se ajusten a plataformas tecnológicas. Los hallazgos indican que, a pesar de que la mayoría reconoce las ventajas de la Inteligencia Artificial en la eficacia y exactitud del trabajo contable, también se nota una preparación limitada. Se concluye que la formación constante es crucial para mantener profesionales actualizados y tener un impacto estratégico en la toma de decisiones. En lugar de sustituir al contador, la Inteligencia Artificial emerge como un aliado que potencia sus habilidades, y crea nuevas posibilidades para la profesión.

The Role of the Accountant in the Digital Transformation of Accounting Through the Application of Artificial Intelligence

Methodologies

- Online academic literature review.
- Survey using a Google forms.

Objectives

- Analyze how AI transforms the role of the accountant.
- Identify the new responsibilities that the accountant assumes.

Finds

- The use of AI tools is not predominant.
- Limited professional preparation

Conclusions

- AI is not a substitute for the counter.
- Ongoing training is required,
- AI is a strategic ally.

El Rol del Contador en la Transformación Digital de la Contabilidad a Través de la Aplicación de la Inteligencia Artificial

Metodologías

- Revisión bibliográfica académica en línea.
- Encuesta mediante un Google forms.

Objetivos

- Analizar como la IA transforma el rol del contador.
- Identificar las nuevas responsabilidades que asume el contador.

Hallazgos

- La utilización de herramientas de IA no es predominante.
- Preparación profesional limitada

Conclusiones

- La IA no sustituye al contador.
- Se requiere formación continua,
- La IA es aliada estratégica

Artificial Intelligence, Accounting, Digital Transformation

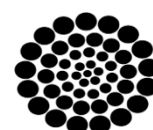**Inteligencia artificial, Contabilidad, Transformación digital**

Area: Development of strategic leading-edge technologies and open innovation for social transformation

Article

1. Introduction

Digital transformation is profoundly impacting the accounting sector, with artificial intelligence [AI] playing a leading role in optimizing processes, reducing errors and strengthening data-driven financial decisions. This technology allows automating routine tasks, applying predictive models on financial information and significantly improving fraud and anomaly detection. [Appelbaum, Vasarhelyi, M.A., & Yan, Z, 2022].

Unlike other automated tools, AI has the ability to learn and evolve, making accounting processes increasingly efficient and accurate. In this sense, it does not replace the accountant, but rather expands his role, allowing him to focus on strategic activities such as tax planning, financial analysis and consulting. Far from representing a threat, AI becomes a powerful ally that strengthens the work of the professional accountant. [IFAC, 2021].

These technological innovations require a profound change in the accountant's profile. It is no longer enough to master basic digital tools; a combination of technical knowledge, advanced digital skills and strong professional ethics is required. [Gartner, 2022]. In this new context, the accountant must not only act as a user of the technology, but also as an active player in its implementation, ensuring a transition aligned with the strategic objectives of the organizations.

However, one of the main challenges to achieving a true digital transformation is the lack of preparation. This gap is not limited to the technical aspect, but also encompasses scarce continuing education, limited investment in technology and the persistence of outdated academic programs. As they warn, this situation is aggravated by the fear of being replaced by technology, which prevents taking full advantage of the potential offered by artificial intelligence.

This lack of digital skills is observed even in areas such as accounting, auditing, law and taxation, where, despite advances, there is still a significant gap between technological development and professional training. [IFAC, 2021].

However, those who choose to adapt find that Artificial Intelligence does not represent a threat, but an opportunity to reinvent their role and generate greater value. As Susskind and Susskind [2015] argue, accounting professionals will not disappear, but they will need to evolve to maintain their relevance in an era marked by collaboration between human knowledge and artificial intelligence.

At the organizational level, this resistance to change is particularly visible in small and medium-sized companies, which continue to use traditional methods due to fear, inertia or the perception that emerging technologies are costly, complex or of uncertain benefit. This situation is intensified by the shortage of personnel trained in the implementation of AI, which significantly limits the adoption of innovations in the accounting field.

In the Ecuadorian context, this reality represents a contradiction with the provisions of Article 385 of the Ecuadorian Constitution. [Constitución de la República del Ecuador, 2008], which establishes the State's commitment to promote equitable access to science, technology and innovation as instruments for development and improvement of the quality of life.

Against this backdrop, this study emphasizes a key aspect: the role of the accountant is crucial for the successful integration of artificial intelligence in accounting. It is not only a matter of managing technological systems, but of assuming an active role as an agent of change that articulates accounting knowledge with technology, without neglecting the ethical dimension of their professional practice. When accountants assume this role with leadership, adequate training and strategic vision, many of the obstacles begin to disappear, and investment in technology ceases to be perceived as an expense, becoming a firm commitment to sustainable development.

1.1 Objective of the study

The objective of this research is to analyze how digitalization is modifying the functions and skills linked to the professional performance of accountants.

In a context characterized by technological progress, not only have new tools been incorporated, but also the profile required by different sectors to perform accounting tasks has been reconfigured.

To understand this transformation process, it is crucial to begin with a description of the most relevant technological advances that are impacting accounting practice, with special emphasis on artificial intelligence as a revolutionary element. Therefore, the objective is to analyze how the traditional duties of the accountant are being redefined within the framework of digitalization, in addition to recognizing the new technical, digital and analytical competencies required by the contemporary work environment.

In addition, we seek to examine the degree of preparation and ability of accountants to adapt to the challenges posed by digital transformation. In this study, it is important to investigate the strategic role played by the accountant in corporate decision-making processes, in contexts driven by intelligent technologies.

In this context, artificial intelligence is presented as a main agent of transformation, gradually adopting reiterative operational functions and contributing to increase the accuracy and quality of accounting decision-making processes. [Kokina, J., & Davenport, T. H., 2017].

In addition, the contribution of neuroscience is relevant, as it facilitates the understanding of the cognitive processes involved in learning, adaptation and decision making. This insight is valuable in describing why accountants should enhance skills such as critical reasoning, cognitive adaptability and emotional intelligence.

These skills become essential in a work environment increasingly marked by the fast pace of technological innovation, where the human gains a new role. Nowadays, the practice of public accounting goes beyond the pure handling of normative and quantitative elements. The increasing automation of technical tasks requires accounting experts to acquire interpersonal, communication and strategic thinking skills, which are becoming key factors in professional performance.

Modern accounting is not restricted to compliance with tax or regulatory responsibilities, but also focuses on active participation in important decision-making processes for organizations, consolidating bonds of trust and offering a global perspective that automated systems are not yet able to emulate.

Therefore, preparing for the future means not only renewing technical knowledge, but also fostering personal skills that facilitate building meaningful relationships, generating added value and practicing the profession holistically and ethically.

In this context, although technical skills continue to be the mainstay of accounting practice, the real professional trait lies in human skills: ethics, empathy, clarity in communication and critical judgment. It is this combination of technical knowledge and soft skills that makes the accountant an essential professional in today's landscape.

2. Methodology

This analysis opted for a combined method, merging qualitative and quantitative instruments to gain a deeper understanding of the role that the accountant is playing in the process of digitalization of accounting, particularly with the inclusion of AI.

On the one hand, a bibliographic analysis was conducted, based on modern digital sources such as scientific publications, digital books and specialized research. This phase made it possible to understand the current status of the academic debate on Artificial Intelligence in areas closely linked to accounting, such as auditing, finance, law and taxation.

The second stage, of a quantitative nature, an online survey was developed and implemented, distributed with a Google form. The questionnaire was completed by accounting experts, which facilitated the collection of authentic views and experiences of the work environment. The questionnaire included 10 questions, focusing on two key elements of the study:

Variable 1:

Level of knowledge and use of artificial intelligence by accountants.

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Variable 2:

Perception of the impact of AI on their professional role.

The results achieved were examined through descriptive statistics [such as frequencies and percentages], which facilitated the identification of patterns and trends about how accountants are approaching technological transformations and how empowered they perceive themselves in the face of the progress of artificial intelligence in their field of work.

In the accounting field, artificial intelligence is automating monotonous tasks, enabling accountants to focus on more strategic and analytical functions, demanding new competencies such as data analysis and interpretation [Appelbaum et al., 2017].

In the field of auditing, artificial intelligence is revolutionizing financial valuation by enabling more accurate identification of anomalies and fraud, enabling constant and proactive monitoring. [Yoon, Hoogduin y Zhang, 2015].

In the economic sector, artificial intelligence enhances analysis, risk assessment and investment management by handling data in real time and creating predictive models that improve decisions and boost efficiency and profitability.

In business and taxation, Artificial Intelligence automates tasks such as contract review and regulatory analysis, optimizing the interpretation of the law, although it raises questions about entrusting legal judgments to algorithms. [Surden, 2014].

In the tax field, the implementation of intelligent technologies is optimizing both taxpayer compliance procedures and the supervision procedures of public entities.

Studies such as the one conducted by Beretta, Demartini and Trucco [2020] show that algorithms are able to identify inconsistencies in tax returns, simplify digital audits and foresee tax risk behaviors. However, this technological progress requires continuous updating of the accounting expert's skills.

Research such as that conducted by Beretta, Demartini and Trucco [2020] evidences how algorithms can identify irregularities in returns, conduct digital audits and anticipate risky tax behaviors.

Undoubtedly, this increases the efficiency of the tax system, although it also requires constant updating of the accountant's skills to face new regulatory and technological challenges.

In all situations, preference was given to current, reliable and academically backed documents, which facilitated the construction of a complete perspective of how artificial intelligence is revolutionizing the accounting profession from various perspectives. This research modality not only facilitated the grouping of different points of view, whether theoretical or practical, but also made it possible to analyze trends endorsed by the global scientific community.

The literature review [in exploratory research such as this] is essential for understanding the phenomenon under analysis, as it facilitates the formation of links between previous studies and the present context. [Hernández-Sampieri, Fernández-Collado & Baptista-Lucio, 2014].

3. Results

This analysis adopted a combined methodology, merging a literature review with data collection through an online survey of experts in the accounting field. The mix of methods made it possible to understand both the theoretical-academic context and the perceptions and practical experiences of the experts.

3.1 Results by variable

Variable 1: Level of knowledge and use of AI.

A question related to this variable was:

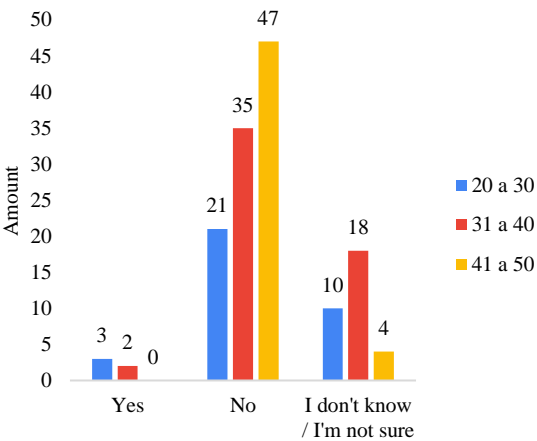| Box 1			
Table 1			
Do you currently use artificial intelligence tools in your accounting work?			
Age	**Yes**	**No**	**I do not know / I am not sure[a].**
20 to 30	3	21	10
31 to 40	2	35	18
41 to 50	0	47	4

Box 2

Figure 1

Do you currently use artificial intelligence tools in your accounting work?

Principal findings:

A considerable percentage of the participants in the survey expressed a general or average understanding of Artificial Intelligence, although not all of them implement it directly in their professional work.

The use of Artificial Intelligence tools is not yet predominant, indicating a gap between theoretical knowledge and its practical application.

The majority indicated that they had not obtained specific education in Artificial Intelligence during their university studies or job training, which underlines the urgency of a professional update.

Variable 2: Perception of the impact of AI on the accountant's professional role.

A question associated with this variable was:

Box 3

Table 2

Do you consider that AI is transforming the accountant's professional practice?

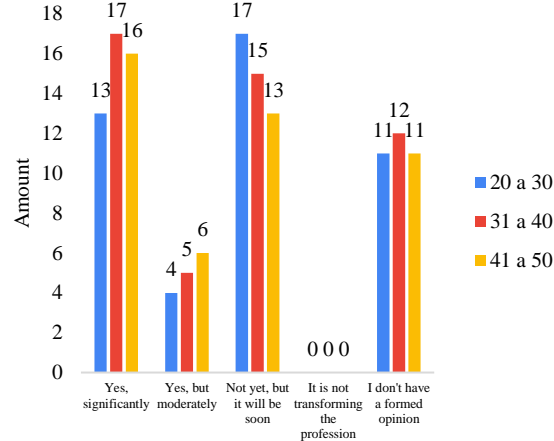| Age	Yes, significantly	Yes, but moderately	Not yet, but will soon	It is not transforming the profession	I do not have a formed opinion
20 a 30	13	4	17	0	11
31 a 40	17	5	15	0	12
41 a 50	16	6	13	0	11

Box 4

Figure 2

Do you consider that AI is transforming the accountant's professional practice?

Principal findings:

There is a very common perception that Artificial Intelligence will not fully replace the accountant, but will be an additional resource. It is also clear that the education provided by universities is considered insufficient, indicating a gap between academic education and the demands of the labor market.

Numerous participants in the survey expressed that the responsibility for failures made by Artificial Intelligence systems should be shared between developers, users and organizations.

In the short and medium term, a transformation of the accountant's role towards a more analytical, strategic profile focused on informed decision making is anticipated.

Although some experts consider themselves prepared, many admit that they require more training to face the technological challenges of the digital era.

3.2 Analysis overview

Based on data collected through the survey, a favorable attitude towards the adoption of technologies was observed, although this is intensified by an uncertainty resulting from poor preparation. This finding underscores the imperative need to review and renew both university-level educational programs and continuing education projects to include digital skills and knowledge in artificial intelligence [AI].

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The current implementation of AI-based technologies by accounting experts is still in its infancy, indicating that technology adoption in this sector is still at an early stage of evolution.

3.3 Interpretation of data

The data shows that AI is bringing about a relevant change in accounting practice, although its effective implementation depends largely on the professional's training and ability to adapt. Not only do accountants need to understand the operational elements of AI; they must also develop critical and ethical competencies that will enable them to properly oversee its implementation.

This analysis highlights a disparity between the rapid progress of technology and the current training of those practicing the profession, which poses a significant challenge for both educational institutions and accounting regulatory authorities. Digitalization is not an ephemeral phenomenon, but a structural transformation that is significantly changing the dynamics of organizations. It is a cross-cutting combination of digital solutions focused on improving processes, increasing efficiency in operations and generating added value.

In the field of accounting, this change has been driven by the emergence of technologies such as Big Data analysis, cloud computing and, especially, artificial intelligence.

When AI is mentioned, it refers to the ability of technological systems to replicate some cognitive functions characteristic of human beings, such as learning, data processing, problem solving and decision making.

In the field of accounting, this involves the application of resources such as machine learning, natural language processing and specialized systems. These solutions make it possible to automate reiterative processes, identify anomalies or potential scams, and examine large volumes of data more quickly and accurately than conventional procedures.

This scenario is drastically changing the traditional perspective of accounting. The task is no longer restricted solely to the implementation of accounting rules and principles, but requires a more strategic perspective, focused on the analysis and projection of future situations.

Today, the accounting expert has extended his or her role beyond the pure recording of operations, becoming a crucial agent in the interpretation of real-time data and in assisting in decision-making within the entity. Faced with this new scenario, the accountant's profile is built on three fundamental dimensions:

3.3.1 Technical dimension. - Detailed understanding of accounting principles, current regulations and accuracy in financial records remains essential.

3.3.2 Technological dimension. - Functional management of digital tools and intelligent systems, which are transforming working methods in accounting practice, is essential.

3.3.3 Ethical dimension. - A solid commitment to the responsible and clear use of Artificial Intelligence is necessary, preserving respect for the principles of privacy, professional integrity and ethics in decision making.

This analytical approach facilitates understanding how artificial intelligence is changing the professional profile of the accountant and what skills he/she must cultivate to lead this transformation process efficiently and responsibly.

3.4 Evolution of the accountant's professional profile

Historically, the accountant has been recognized as the person responsible for financial control in entities, with responsibilities focused on manual recording of transactions, creation of accounting records, reconciliation of bank accounts and reporting. While these tasks remain critical, the work environment has undergone a significant transformation with the implementation of emerging technologies.

The incorporation of solutions such as automated accounting software, enterprise resource planning [ERP] systems and innovations based on artificial intelligence [AI] has transformed the skills expected of the accountant. No longer restricted to recording data, he or she is expected to be able to analyze complex financial information, provide strategic guidance and forecast economic situations through the use of predictive tools.

This transformation has redefined the accounting practice, giving it a more analytical, strategic and information-driven decision-making perspective. Some of the most significant changes include:

From recorder to analyst: AI gradually automates day-to-day tasks, allowing the accountant to focus on understanding results, identifying patterns and formulating projections.

From strategy compliance: The accounting expert, in addition to fulfilling legal responsibilities, is actively involved in financial planning and optimizing the use of resources.

From technical to digital: The management of technological platforms and intelligent tools has become a crucial skill for today's accountant.

From the personal to the community: Increasingly, accounting practice is carried out in multidisciplinary contexts, with specialists in data science, information technology and business analytics.

Rather than diminishing in importance, the accountant is taking on a more strategic and cross-cutting role in organizations. Their ability to adapt, constant education and the acquisition of new competencies are becoming crucial elements to remain active in a constantly changing environment.

3.5 Current implementations of Artificial Intelligence in Accounting

AI no longer represents an encouraging future, but a tool that is palpably revolutionizing contemporary accounting practice. Through its implementation, financial processes are becoming faster, more accurate and more efficient.

Among the most notable implementations are:

Automating daily processes: activities such as invoice classification, bank reconciliations and reporting are managed by intelligent systems, allowing the accountant to focus on tasks of greater complexity and significantly reduce the incidence of human error.

Machine learning-based financial projections: AI has the ability to examine large amounts of historical data to detect patterns and formulate financial projections, simplifying the organization of cash flows and more accurate decision making.

Assisted auditing and early anomaly identification: Some algorithms make it easier to identify atypical behavior or inconsistencies in accounting records, improving fraud identification and increasing audit accuracy.

Natural Language Processing [NLP]: This technology allows the study of unstructured documents, such as agreements or emails, obtaining relevant information for accounting procedures.

Digital assistants and chatbots: Several companies have implemented solutions that facilitate the response to common queries, the creation of real-time reports and immediate access to financial information through conversational interfaces.

Automated regulatory updates: Artificial Intelligence also has the ability to monitor changes in tax and accounting regulations, ensuring that returns and reports conform to current regulations.

These features not only increase efficiency, but also enable accountants to take on a more strategic role, focusing on analysis, data interpretation and decision support for the organization.

3.6 Challenges and possibilities in the age of Artificial Intelligence

The use of artificial intelligence in the accounting field is an important opportunity to update the profession, but it also presents several challenges that demand preparation, readiness for change and a vision for the future.

3.6.1 Main Challenges

Lack of digital skills: Many experts still lack the technical competencies required to handle AI-based tools, which restricts their effective application.

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Resistance to transformation: The misconception that artificial intelligence could replace the accountant generates many fears, hindering the technology adoption process. However, it is important to emphasize that AI is not intended to replace the professional accountant, but to enhance his or her capabilities, allowing him or her to focus on strategic tasks and decision making with human judgment.

Ethical and legal issues: The implementation of algorithms raises questions about transparency, the safeguarding of personal information and the distribution of responsibilities in the event of automated failures. For this reason, clear and ethical regulations are needed to guide these practices.

3.6.2 Emerging opportunities

Greater efficiency and reduction of errors: The automation of tasks considerably reduces the risk of errors and increases the quality of the work, facilitating a more effective accounting administration.

Transformation of the professional profile: Accountants, instead of becoming outdated, have the possibility of moving towards more strategic roles, based on analysis and specialized consulting.

Transformation of the professional profile: Accountants, instead of becoming old-fashioned, have the possibility of moving towards more strategic roles, based on analysis and specialized consulting.

Protagonism in the digital transformation: Accountants trained in technology have the ability to lead innovation processes in organizations, establishing themselves as protagonists of the transformation..

4. Conclusions y recommendations

Conclusiones

Technological progress, especially the advance of artificial intelligence, has radically transformed the accounting process. Actions that previously required manual intervention and were performed systematically can now be automated, enabling the accounting expert to devote his or her time to tasks of greater strategic and analytical relevance.

The accountant's role has progressed beyond conventional duties such as documenting transactions or complying with regulations. Today, it is anticipated that they will become actively involved in data analysis, valuable knowledge creation and strategic decision making with the help of technological tools.

Today, total control of accounting principles is not enough. Technological skills, the ability to sift through large amounts of information, and interpersonal skills such as ethics, effective communication and complicated problem solving are also needed.

Despite attempts by accountants to adjust to the new digital environment, there are still significant differences in terms of access to training and technological resources. This restricts the full integration of innovative tools in professional practice.

The accountant stands out as a crucial participant in the organization's decision making, due to his specialized knowledge and his ability to efficiently employ intelligent technologies. This mix gives them a significant role in the elaboration of business strategies.

The progress of digital transformation in accounting is not based solely on the adoption of cutting-edge technologies. Its real triumph is based on the attitude and willingness of the experts leading this transformation. It is the accountant's ability to adjust, acquire knowledge and lead that will define his or her importance in this new era. In this context, artificial intelligence does not replace, but enhances the value that humans can provide.

Recommendations

It is vital for accounting experts to keep abreast of the use of emerging technologies. It is essential to acquire knowledge about the operation and practical use of these tools in order to maintain their importance in the work environment and provide considerable added value. Both educational institutions and entities must modernize their methods in relation to the accountant's profile. It is essential to educate and attract professionals with a more complete perspective, able to play more strategic roles in organizations.

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It is advisable to invest in training processes that merge the use of digital technologies with the strengthening of soft skills. This mix of technical skills and human skills is essential to face the challenges of the current labor market.

It is crucial to create opportunities for constant updating. Companies, professional unions and educational institutions must take a proactive role in the training of accounting staff, fostering a culture of constant learning.

It is necessary to encourage the accountant's involvement in strategic areas of the company. Their holistic perspective and career path can contribute significantly beyond the economic, enhancing the decision-making process in various sectors of the organization.

Declarations

Conflict of interest

The authors declare that there is no conflict of interest related to the preparation and publication of this scientific article. They have no financial interests or personal relationships that could have influenced the development, content, or results of the study presented.

Authors' contribution

This article was prepared in collaboration between Loayza Pereira, Walter Arturo, who developed the methodological framework, data analysis and recommendations; and Dr. Herrera Freire, Alexander Geovanny, who formulated the theoretical-critical analysis, interpreted the results from a strategic perspective and wrote the academic conclusions. Both authors approved the final version of the article.

Loayza-Pereira, Walter Arturo: Responsible for Introduction, Objective of the study, Methodology, Variable 1: Level of knowledge and use of AI, Descriptive results and data analysis, Current implementations of Artificial Intelligence in accounting, Recommendations.

The author Loayza Pereira, Walter Arturo, contributed to the development of this article by preparing the introductory framework, formulating the general objective and structuring the methodology used.

He also led the collection and analysis of data on the current use of artificial intelligence in the accounting field, with special emphasis on its practical application, as well as the development of strategic recommendations for strengthening the professional profile of the accountant.

Herrera-Freire, Alexander Geovanny: Responsible for Review of the theoretical framework [AI, digital accounting, digital transformation, professional ethics], Variable 2: Perception of the impact of AI on the professional role of the accountant, Interpretative and prospective analysis of the accountant's profile, Challenges and possibilities in the era of AI, Conclusions, Critical and academic view on the strategic role of the accountant.

Dr. Herrera Freire, Alexander Geovanny, has contributed with the theoretical and analytical development of the article, providing a critical review on the impact of artificial intelligence on the accounting profession. He also elaborated the analysis of the change in the accountant's profile, identifying the main ethical, professional and technological challenges, and actively collaborated in the construction of the conclusions that support the need for strategic adaptation in the digital environment.

Abbreviations

IA	Intelligence Artificial
IFAC	International Federation of Accountants
ERP	Enterprise Resource Planning
NLP	Natural Language Processing
Big Data	Conjunto de datos masivos o análisis de datos en masa [No es una sigla tradicional, pero se considera una abreviatura común]

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5.1 Antecedents

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