

**CONTABILIDADE DIGITAL: UM ESTUDO DA NOVA ERA CONTÁBIL DE
PROCESSOS DIGITAIS E AUTOMATIZADOS**

**DIGITAL ACCOUNTING: A STUDY OF THE NEW ACCOUNTING ERA OF
DIGITAL AND AUTOMATED PROCESSES**

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RESUMO

A contabilidade é fundamental para o funcionamento econômico, atuando no planejamento tributário, controle financeiro e apoio à tomada de decisões. Com a globalização e o avanço tecnológico, os processos contábeis evoluíram de manuais para digitais e automatizados, aumentando a eficiência operacional. Este estudo teve como objetivo analisar a eficácia da digitalização e automação contábil, investigando seus benefícios e desafios. Foi adotada abordagem qualitativa, exploratória e descritiva, por meio de estudo de caso com entrevistas a três contadores experientes da região Nordeste do Brasil. Os resultados mostram que a digitalização melhora a agilidade, precisão e integração das informações, facilitando atividades como fechamento contábil e cumprimento de obrigações fiscais, embora haja limitações como sobrecarga profissional e resistência de clientes. Conclui-se que a contabilidade digital representa um avanço significativo, exigindo investimentos em sistemas, qualificação e automação.

Palavras-chave: Automatização; Contabilidade digital; Contabilista; Evolução. Tecnologia.

ABSTRACT

Accounting is fundamental to economic functioning, playing a key role in tax planning, financial control, and decision-making support. With globalization and technological advancement, accounting processes have evolved from manual to digital and automated, increasing operational efficiency. This study aimed to analyze the effectiveness of accounting digitalization and automation, investigating their benefits and challenges. A qualitative, exploratory, and descriptive approach was adopted through a case study with interviews of three experienced accountants from the Northeast region of Brazil. The results show that digitalization improves agility, accuracy, and information integration, facilitating activities such as financial closing and compliance with tax obligations, although limitations such as professional overload and client resistance remain. It is concluded that digital accounting

represents a significant advancement, requiring investments in systems, professional training, and process automation.

Keywords: Accountant. Automation. Digital accounting. Evolution. Technology.

1 INTRODUCTION

Accounting is known to be a broad and essential field across all contexts due to its crucial role in a country's economy. This relevance stems from the accountant's responsibilities, which include corporate tax planning, submission of ancillary obligations that support tax collection, and other managerial duties. Therefore, accountants are among the primary agents influencing whether companies experience gradual growth or stagnation. Consequently, when businesses thrive, more jobs are created, poverty levels decline, and the national economy benefits overall (Mendes, 2020).

In this context, accounting like many other areas initially relied on highly manual and time-consuming processes due to the limited availability of technology. Over time, however, globalization and technological advancement have transformed most activities into digital operations, and accounting has followed this same trajectory (Oliveira, 2014).

The main objective of this study is to analyze the effectiveness of contemporary digitalization and automation in accounting, examining how these processes have contributed to operational efficiency.

According to Lopes and Buriola (2019), the origins of accounting date back to 2000 BC, when it was primarily used to count herds and measure goods. Centuries later, the double-entry bookkeeping method developed by Luca Pacioli emerged a system that remains in use today. In 2007, Brazil adopted international accounting standards aligned with major global economies, marking another milestone in the profession's modernization. This evolution has also been propelled by technology, replacing paper-based records with digital accounting systems.

Given this background, a central question arises: *What is the impact of the digital era on accounting, and what concrete benefits does it bring to professionals in the field?* The study is justified based on Gularte's (2022) perspective, which highlights the importance of digital accounting in enhancing professional services by using technology to optimize processes and ensure agility and security for both companies and accountants. Technological evolution, driven by globalization, facilitates the work of accounting professionals who continually seek to improve their processes to meet client needs. Thus, the era of digital accounting emerges as a pivotal tool that benefits both accountants and their clients.

This article is organized into five sections. Following this introduction, the second section presents the theoretical framework, addressing key milestones in the evolution of accounting and the technological influences that have shaped the transition to digital accounting and current automation processes. The third section describes the study's methodology and related research on the topic. The fourth section presents the results and discusses them in light of relevant theories. Finally, the fifth section concludes the study and offers suggestions for future research on similar themes.

2 ACCOUNTING

Accounting is deeply embedded in everyday human life, although few people perceive it from this perspective largely due to the fast pace of modern society. A clear example of this presence can be observed when an individual decides to make an investment, keep money in a savings account to earn interest, or purchase a car or property. Whenever there is a movement of money or other resources, accounting is inherently involved, even if indirectly (Rosa et al., 2021).

Over time, accounting has been defined in various ways. As Araújo (2017) points out, numerous authors have proposed different conceptualizations of the field. In summary, accounting can be understood as the science that studies an entity's assets and employs systematic methods to select, record, summarize, interpret, and disclose events that may cause changes in an organization's financial position.

However, for such control to be possible, the accountant must have access to the entity's financial information in order to prepare essential financial statements. According to Bächtold (2018), these include the Balance Sheet (BP), Income Statement (DRE), Statement of Retained Earnings (DLPA), and Statement of Cash Flows (DFC). Once these reports are prepared, they serve as crucial tools for decision-making within an organization, supporting the development of strategic, financial, economic, and tax planning aimed at ensuring business success.

2.1 EVOLUTION OF ACCOUNTING

The evolution of accounting has directly influenced and been influenced by economic growth and legislation, both in Brazil and worldwide. Accounting has accompanied human civilization for centuries, continuously shaped and improved through major historical milestones that sustain its relevance to the present day (Padoveze, 2017).

One of the earliest milestones that propelled the development of accounting in Brazil, according to Schmidt (2000), was the enactment of the *Brazilian Commercial Code* in 1850. This code represented one of the first legal manifestations of its kind and served as a driving force behind the advancement of accounting practices in the country. A decade later, in August 1860, Law No. 1,083 was enacted recognized as Brazil's first *Corporations Law* (Brasil, 1860).

More than a century later, on December 15, 1976, the *National Congress* approved and President Ernesto Geisel promulgated Law No. 6,404/76, widely known as the *Corporations Law* (*Lei das Sociedades por Ações* or *Lei das S.A.*). This legislation regulates joint-stock companies and the capital market. It was created strategically, as such entities were typically used by entrepreneurs seeking to attract investments particularly at a time when Brazil was still facing the repercussions of the 1971 stock market collapse (Brasil, 1976).

Another major milestone in Brazil's accounting history was the enactment of *Complementary Law No. 123/2006*, commonly known as the *Simples Nacional Law*. Its primary purpose was to promote the development of micro and small enterprises by establishing a differentiated treatment in several areas, including the assessment and collection of federal, state, and municipal taxes through a unified payment document. It also facilitated access to credit and markets and created a national unified taxpayer registry (Brasil, 2006). This law also defined tax rates and bases of calculation and introduced five annexes that classify businesses according to their activities. Based on each company's activity and gross revenue, the corresponding tax rate (*alíquota*) would be determined.

Subsequently, *Decree No. 6,022*, issued on January 22, 2007, established the *Public Digital Bookkeeping System (SPED)*. Its purpose was to strengthen mechanisms for combating tax evasion, enhance transparency in declarations, and simplify and modernize compliance with ancillary obligations through the standardization and digital sharing of accounting and tax information (Brasil, 2007).

Finally, another landmark was the enactment of *Law No. 11,638* on December 28, 2007, approved by the *National Congress* and sanctioned by President Luiz Inácio Lula da Silva. According to its preamble, the law “amends and repeals provisions of Law No. 6,404 of December 15, 1976, and Law No. 6,385 of December 7, 1976, and extends to large companies the requirements concerning the preparation and disclosure of financial statements” (Brasil, 2007).

In summary, the main purpose of this legislation was to modernize the *Corporations Law (Law No. 6,404/76)* and update its accounting standards, thereby establishing a new milestone in the evolution of accounting practices in Brazil.

2.2 DIGITAL ACCOUNTING

As previously discussed, accounting has undergone numerous transformations, particularly in the technological sphere. As a field responsible for generating internal and external data and information, it has progressively evolved toward digitalization. It is worth emphasizing that information technology has brought significant benefits to humanity across various domains, especially in the fields of information and communication, and its advantages extend well beyond these areas (Oliveira, 2014).

In the context of accounting, the integration of information technology is undeniable. As highlighted by Arruda, Gomes, and Santos (2013), the accountant’s daily routine has been profoundly transformed by the increasing presence of technology. In the past, accounting processes were carried out manually; however, with the advent of specialized systems, these activities became digitalized and optimized, allowing accounting and business management tasks to be performed more efficiently.

In 2007, the creation of the *Public Digital Bookkeeping System (SPED)* marked a turning point for digital accounting in Brazil. Beyond technological innovation, the use of the internet was crucial in guiding the profession toward digital transformation. This initiative represented a major evolution for accounting professionals, as it simplified the submission of ancillary obligations. Tasks that had previously been performed manually were now processed electronically, enabling more detailed and accurate data transmission (Oliveira, 2014). As a result, the delivery of these obligations became faster and more efficient, eliminating the need for handwritten and paper-based documentation.

SPED also enabled companies to transmit detailed financial and operational data to government oversight agencies through digital means. Consequently, the omission of information and tax evasion were expected to decrease an outcome that, from the government’s perspective, represented one of the system’s primary goals (Padoveze, 2017). Another key aspect to highlight is that accounting, by nature, relies heavily on company data and requires constant communication between accountants and clients to perform routine tasks. With the expansion of the internet and information technology, this interaction became significantly more agile and simplified (Padoveze, 2017).

Furthermore, digital accounting demonstrates great potential to improve and optimize processes. However, according to Santos, Paes, and Lima (2021), its effective implementation depends on aligning the objectives and expectations between clients and accountants. When such alignment is lacking, divergences and challenges may arise, hindering both the adoption and the full integration of digital accounting practices.

2.3 AUTOMATION OF ACCOUNTING PROCESSES

Following the implementation of the Public Digital Bookkeeping System (SPED) and the onset of accounting digitalization, information technology introduced a new era of accounting systems and software. Information technology has become not only essential but also indispensable to the accounting field, as virtually all accounting obligations now revolve around digital platforms and technological systems. In other words, the proper execution of accounting procedures depends directly on these tools (Franco, 2021).

Moreover, as noted by Fonseca and Moura (2019), Enterprise Resource Planning (ERP) systems also emerged during this technological evolution. Originating in the United States, ERPs were initially developed to support inventory control and production management. Over time, these systems underwent significant technological advancement, becoming increasingly comprehensive and integrated with other corporate and financial systems.

There are numerous advantages to automating accounting processes. As Moreira (2022), The potential benefits of automating accounting processes are diverse and can be categorized as quantitative and qualitative. On the qualitative side, automation increases data reliability, as the likelihood of an automated process failing is considerably lower than that of human error. Another advantage is the speed with which information is processed and made available, significantly reducing task completion time. Quantitatively, personnel reduction is also a tangible outcome, since systems can, to some extent, perform tasks previously carried out by humans. Thus, the fundamental goal of accounting automation is cost reduction.

Therefore, it is evident that accounting process automation emerged to reduce costs, save time, and enhance operational efficiency. In summary, it provides accountants with greater agility and productivity, allowing them to focus on higher-value analytical and strategic activities while routine tasks are efficiently managed by technology.

3 METHODOLOGY

This study adopts a case study design, classified as qualitative, exploratory, and descriptive research. In simplified terms, the methodology used in this research is based on the case study approach, defined as follows. The case study is a research method widely applied in the biomedical and social sciences. It consists of an in-depth and exhaustive investigation of one or a few objects, allowing for a comprehensive and detailed understanding that would be virtually impossible to achieve through other research designs (Gil, 2022).

According to Gil (2022), a case study may pursue several objectives, such as describing a situation within its contextual environment, formulating hypotheses, or developing theories related to a given subject.

Thus, this work is structured as a case study grounded in qualitative research methods. As Gil (2021) explains, qualitative research generates results that cannot be achieved through statistical or quantitative techniques, as it does not rely on numerical data for conclusions.

Instead, it focuses on understanding more subjective aspects, such as ideas, perceptions, and viewpoints.

Additionally, the present research also assumes a descriptive nature. As Gil (2022) defines, descriptive research aims to analyze and portray the characteristics of a given phenomenon, group, or variable. It employs data collection techniques such as questionnaires and observation, and it often includes studies designed to gather opinions to serve as a basis for interpreting and formulating results.

To apply these methodological approaches to the study at hand, the first stage consisted of examining the evolution of accounting in Brazil, from its origins to the present day, highlighting major historical milestones. Subsequently, the research explored earlier accounting processes that have evolved over time through technological innovation and examined how these processes are currently carried out.

For data collection, specific criteria were established for selecting participants. Interviewees had to (i) hold a degree in Accounting, (ii) be practicing professionals, (iii) have more than ten years of experience in the field, (iv) have prior experience working in an accounting office, and (v) reside in the Northeast region of Brazil. Based on these criteria, three accounting professionals from the states of Ceará and Bahia were selected, each with more than ten years of professional experience.

Interviewee 1: A male accountant practicing since 2011, owner of an accounting consulting and advisory firm based in Fortaleza, Ceará. He specializes in accounting auditing, is a member of the CRC-CE and CRC Jovem CE committees, and is currently pursuing a law degree. Interviewee 2: A female accountant with 14 years of experience in the accounting field, currently practicing in Salvador, Bahia. Interviewee 3: A female accountant and co-owner of an accounting, tax, personnel, and labor advisory firm located in Tianguá, Ceará, with professional experience dating back to 1988.

The professionals participated voluntarily and were interviewed through online and in-person sessions, according to their preference. Two interviews were conducted via Microsoft Teams videoconference, and one was conducted in person. The interviews followed a semi-structured questionnaire consisting of nine open-ended questions, serving as the sole data collection instrument. All interviews were recorded to ensure accuracy and to allow participants to share their experiences regarding the evolution of accounting throughout their professional careers, thereby enriching the study's findings.

The research period spanned just over one month, beginning on October 27 and concluding on November 30. Ethical considerations were observed, and the identities of the interviewees were withheld to ensure confidentiality this limitation, however, does not compromise the quality or validity of the study's analyses and results.

Regarding data collection procedures, information was gathered through a questionnaire administered to the three selected accountants, consisting of ten open-ended questions. The interview questions were adapted from the studies of Arruda, Gomes, and Santos (2013); Franco et al. (2021); and Santos, Cunha, and Batista (2023). The questionnaire was distributed to respondents via Google Forms.

According to Fonseca (2002), the questionnaire is a research instrument composed of a series of organized questions designed to be answered without the researcher's direct assistance. The instrument used in this study is presented below in Table 1.

Table 1: Interview Questions

Questions	Author/Framework
Do you have an accounting office? How long have you been working in the accounting field?	Santos; Cunha e Batista (2023)
What was accounting like when you started working, and how were the processes carried out at that time?	Franco et al. (2021)
What was the most time-consuming process you have ever performed? How long did it take?	
How were ancillary obligations submitted when you started in the field?	
In your view, how has accounting evolved over the last ten years?	
What is the greatest benefit that digital accounting has brought to accountants? And what is the greatest challenge?	
Throughout your experience in the field, have you ever faced a problem that automation could have solved?	
Which day-to-day activities as an accountant have become more efficient with digital accounting?	
In your opinion, what can still be improved in digital accounting to make professionals' work easier?	
How do you see the future of accounting in the face of technological and automation advances?	

Source: Prepared by the authors (2024)

Following the presentation of the interview script, the collected data were analyzed using qualitative content analysis, enabling the identification of recurring themes and patterns in the professionals' narratives. This analytical approach allowed for an interpretive understanding of how accounting practices have transformed over time, particularly with respect to technological progress. The answers provided by the interviewees were carefully examined and categorized according to their relevance to the research objectives, emphasizing convergences and divergences in perceptions. This process ensured that the interpretations remained grounded in the empirical evidence obtained during the interviews, thus supporting a more comprehensive and contextualized discussion of the results.

4 RESULTS AND DISCUSSION

4.1 INTERVIEWEES' PERCEPTIONS OF THE NEW ACCOUNTING ERA AND OF DIGITAL AND AUTOMATED PROCESSES

AT FIRST, IT WAS OBSERVED THAT THE INTERVIEWEES WERE HIGHLY WILLING TO PARTICIPATE IN THE STUDY AND TO SHARE THEIR PROFESSIONAL EXPERIENCES. WITH REGARD TO THE INTERVIEWS, THE FIRST QUESTION SOUGHT TO DETERMINE WHETHER THE RESPONDENT OWNED AN ACCOUNTING FIRM AND HOW LONG THEY HAD BEEN WORKING IN THE ACCOUNTING FIELD. THE FOLLOWING ANSWERS WERE OBTAINED:

“Yes, yes. I have been working in accounting since 2011, which makes approximately 13 or 14 years of experience, and I own *TR Consult e Assessoria Contábil*, which is our accounting firm” (Interviewee 1).

“I do not own a firm. I have been working in accounting as a self-employed professional

for 13 years” (Interviewee 2).

“I do own a firm. I have a business partner, and I have worked in the accounting field for 34 years” (Interviewee 3).

In this regard, it is evident that the accounting profession offers multiple avenues for entering the job market, whether through private accounting firms, independent service provision, or employment within an organization. According to Santos, Cunha, and Batista (2023), the accountant is an essential professional within any organization and may operate in various contexts, such as an employee, an independent service provider, or through an accounting firm.

Concerning the second question which asked how accounting practices were when the interviewees first entered the field and what the work processes were like the following statements were provided by each participant:

“In my early years, we recorded almost everything by hand. For example, in the tax department, we manually entered all invoices, and only later did we start using a small device to scan them. There was a positive side to this, because you physically handled the invoice, checked the product, the CFOP, the CST. Nowadays, everything is in XML format, and you cannot visualize as much; it depends on the type of transaction. Back then, everything was extremely manual accounting entries, payroll and today processes operate much more in real time” (Interviewee 1).

“When I joined the field, many processes were already automated. I worked with accounts payable and receivable, fully integrated with the accounting system. But I did experience a short period in an office where documents arrived in envelopes, the client had to send their monthly transactions, and entries were made manually, document by document. If an error occurred, we had to search through each document to locate the problem. Over time, I realized that today we can import all this information from a spreadsheet, and we no longer need to be physically present with the client we can access all documentation from wherever we are” (Interviewee 2).

“In fact, I entered the accounting field 35 years ago, and everything was done completely manually. All bookkeeping was handwritten in ledgers. We performed tax assessments in the same way the system does today, except everything was recorded in books full manual bookkeeping. We used CFOP codes and other tax classifications, and all the information that is now processed electronically was done by hand, including an ICMS assessment ledger. There was no *Simples Nacional* at the time; only microenterprises existed, and most were practically exempt from all taxes. Companies under what is now considered the ‘normal regime’ had monthly tax assessments. Microenterprises underwent annual assessments: we collected everything purchased throughout the year, inventory, entries and exits. They were not required to issue invoices, so most of them did not similar to today’s MEI. They were, however, required to have purchase invoices.

But how was this information submitted? There was a specific form on which values, company data, purchases, and sales were recorded. We prepared the inventory assessment and calculated costs—much like what is done today at year-end closing. This form was signed by the business owner and by the accountant and then delivered to the former tax office, which later evolved into what is now the SEFAZ local office” (Interviewee 3).

What can be observed from the interviewees' responses is that accounting processes have undergone significant transformations over time. At the beginning of the careers of some participants, routine tasks were performed entirely manually, with bookkeeping recorded in physical ledgers and calculations and verifications carried out directly on paper documents.

With the advancement of digital accounting, this scenario shifted toward more systematized and automated procedures, enabling greater speed, accuracy, and integration. One interviewee even noted that they entered the field at a time when many activities were already computerized, although they still experienced, for a short period, practices that relied on paper-based records and manual data entry. As highlighted by Franco et al. (2021), the profession has evolved from the "bookkeeper" responsible for repetitive and time-consuming manual entries to the contemporary professional who works with integrated management systems (ERP), capable of providing real-time information and contributing more strategically to managerial decision-making.

The third question sought to identify the longest and most time-consuming process each participant had ever performed, as well as the duration required. The following accounts were obtained:

"There was a client who had several *SPED* obligations although at the time it was not yet called *SPED*; it had another name, *DIEF* that were overdue and needed to be regularized. Back then, the client used fiscal modules, and at the end of each month the accounting office had to collect these modules, which came as a long printout, similar to a large tax receipt. He asked whether I could perform this service, how much it would cost, and how long it would take. I estimated that I could complete it in about five or six days.

He sent the documents an entire carload delivered them many boxes filled with these modules. I had to enter the data manually, one by one, day by day, covering a two-year period. Although I had estimated five days, I ended up completing the service in four months. The client was very dissatisfied, but there was no easier alternative at the time. Something that today could be completed in three or four days would take months back then. Other factors also contributed to the delay. Everything had to be manually entered into the system, recording daily sales. I initially thought the process would be more integrated, but it was not, which made it extremely difficult" (Interviewee 1).

"I believe the most time-consuming task was dealing with accounting and financial transactions. Even though the bank statements were already available in digital format, we still had to digitize them page by page. To record an entire month for a company, we had to open the PDF day by day, and sometimes a single PDF contained fifty files. Even though this represented progress since we were no longer using paper—if the information had been in an Excel spreadsheet, we could have imported it in five minutes, just as we do today. Previously, the process took weeks because we had to open each file, verify what was correct or not it was an extensive workload. Today, thanks to Excel and the agility of importing files such as .txt, the process is far more efficient" (Interviewee 2).

"Processes in the past were manual and required long turnaround times. Everything we submitted demanded significant time. We had to fill out forms and deliver them, and then the process would go to SEFAZ, where a civil servant would analyze it. It

was all manual, and extremely time-consuming. The most time-consuming situations occurred when a company was undergoing a tax audit. There were deadlines to be met, but what took the longest was receiving SEFAZ's response with the audit results. As for performing the required tasks, we had our own deadlines" (Interviewee 3).

Based on the interviewees' experiences, it becomes clear that before accounting became more digitalized, processes were highly bureaucratic and required a substantial amount of time to complete. As reported, because tasks were performed manually, procedures could take anywhere from days to months, as illustrated by the first interviewee. This stands in stark contrast to current practices, in which spreadsheets and digital files can be imported and processed in a matter of minutes, as noted by Interviewee 2.

These accounts demonstrate that, prior to SPED and the digitalization of accounting systems, professionals spent considerable time on repetitive and bureaucratic activities (Franco et al., 2021). With the implementation of SPED and the adoption of digital tools, not only has the time required for completing accounting routines decreased, but there has also been an increase in accuracy, information integration, and support for tax management confirming the crucial role of information technology in the modernization of accounting (Franco et al., 2021).

The next question asked the interviewees to describe how the submission of ancillary tax obligations was carried out when they first entered the field, as follows:

"The opening of a company is the best example of all. In the past, one had to go to the *Junta Comercial*, bring all the incorporation documents, all printed, signed, and notarized. The process could take a month: the client submitted the documents and, one month later, the company would finally be registered. We had to open the business owner's signature file, notarize every document, notarize the articles of incorporation, obtain the client's signature, complete the viability analysis, print it, prepare the DBE, print the DBE, take it to the client for signature, notarize the DBE, and only then submit everything to the *Junta Comercial*. Once submitted, they required five days to review the documents. If there was an error, everything was returned, the error had to be corrected, and the documents resubmitted another five business days for a new review. This shows how much accounting procedures have improved. Since accountants are usually the ones responsible for opening companies, if it took a month to register a *Simples Nacional* company when I began working, imagine how long it took before that. It was extremely difficult. Today, we see how much we have evolved: with the government's current systems, it is possible to open a company on the same day" (Interviewee 1).

"It was already digital; thank God I entered the field when everything was already digital I was part of the SPED generation" (Interviewee 2).

"Companies under the regular tax regime were required to complete manual bookkeeping and submit the completed forms to SEFAZ. They also had ICMS reports, and at the end the tax owed would be calculated, and the amount due would then be available for payment which has not changed much today. Previously, we had until the fifteenth day of the following month to submit these reports. As for federal obligations, information was submitted to the Federal Revenue Service on diskettes. Over time, the system evolved: for SEFAZ, *DIEF* emerged, and for the Federal Revenue Service, new communication channels were introduced, allowing ancillary tax obligations to be transmitted electronically in magnetic format" (Interviewee 3).

Regarding the submission of ancillary tax obligations, the interviewees reported that, in the past, deadlines already existed for delivering these obligations, which were recorded manually. The process involved submitting physical documents to government agencies, followed by their review and analysis, which took a considerable amount of time. In contrast, one interviewee mentioned that shortly after entering the field, SPED was implemented, meaning they did not spend much time performing fully manual procedures.

According to Franco et al. (2021), SPED and other digital systems provide faster access to information, strengthen tax control, and optimize accounting management by reducing errors and rework, allowing professionals to perform their duties more efficiently and strategically.

When asked about their perception of the evolution of accounting in the past ten years, the interviewees expressed the following views:

“The evolution is happening more and more each day. If we look back ten years, the change is tremendous truly substantial. Previously, everything was recorded by hand, and it took days to complete. Today, the tax bookkeeping for 118 clients is finished in thirteen days from the first to the thirteenth of the month not counting holidays and weekends. At that time, I could complete the work of at most three or four clients per day, depending on their transaction volume. Thus, in ten years, technology has had a major impact on the transformation of accounting. Accounting is now far more automated; processes are much faster; access to client information, bank statements, purchase and sales transactions, and real-time verification has greatly improved. So, the field has changed substantially, and the expectation is that it will evolve even further in the next ten years” (Interviewee 1).

“It has evolved considerably, but it could have advanced even more. Many people still resist digital documents. Even though it is already 2023, many individuals hesitate to manage accounts payable and receivable entirely in a spreadsheet and simply send it for analysis. Some people still believe that accounting entries are only truly verified if the physical document is inspected yet not even auditing today relies on printed documents. With digital accounting, there is greater quality and more time to analyze and understand what is being entered into the system, whether it was done correctly, and consequently to perform better analytical reviews. When everything must be imported manually, however, there is no time for this, because more than half of the month is spent entering data, depending on the transaction volume. And that is not all: after importing and reconciling everything, taxes still have to be calculated so they can be sent to the client” (Interviewee 2).

“From 2005 onward, accounting has evolved significantly, driven primarily by technological advances in favor of the tax authorities. Today, the authorities no longer rely on information provided by taxpayers; rather, they provide information to taxpayers. Companies have fallen behind even when accountants warn organizations about these developments, some still hesitate to believe that tax authorities now possess all this information. I am not generalizing, but some people continue to doubt this evolution. Regarding the facilitation of processes, improvements occurred only in part. We have information systems from both the Federal Revenue Service and SEFAZ; if we still depended solely on taxpayer-provided information, our work would be much more challenging today” (Interviewee 3).

Based on the interviewees' reports regarding the transformation of accounting over the past ten years described by one of them as "tremendous" it is clear that the evolution has been substantial. Previously, it was not possible to complete the tax bookkeeping of more than three companies per day, whereas today more than one hundred companies can be processed in approximately ten days. This represents a significant advancement.

Moreover, information has become more easily accessible through government information systems, which has facilitated accountants' work (Santos, Cunha, & Batista, 2023). Conversely, some individuals still resist the shift toward digital accounting and the digital management of information, as they continue to believe that proper accounting depends on traditional, manual verification processes.

Regarding the greatest benefit brought by digital accounting to practitioners and the greatest challenge that emerged alongside it the interviewees expressed the following opinions:

"The main benefit is the speed and acceleration of information processing. However, the downside is that people are no longer analyzing the data. Today, we are seeing what Professor Paulo Almada often highlights in his lectures and courses he is highly regarded at SEFAZ-CE when he says that we are becoming 'XML shufflers.' And indeed, there are many: people import XML files, but they do not analyze them; they do not know how to analyze them, and they are unable to do so. For example, when the tax authority reviews the information and sees that a motorcycle parts store has purchased a computer, they interpret it as inventory for resale. This creates a major issue. Consider the impact of that! Information moves so quickly today that people are not analyzing it; there is simply no time left for proper analysis" (Interviewee 1).

"I believe the main benefit is the agility of processes. It is now possible to close a company's monthly accounts much faster and with greater quality. On the other hand, accounting firms must have many clients in order to remain financially viable to generate sufficient revenue and pay staff. As a result, many offices become overloaded. The ease of importing everything into the system means that numerous tax assessments must be performed for many companies. Staff members end up overburdened due to the large number of companies, making it difficult to keep up with the workload" (Interviewee 2).

"In fact, I see only advantages. The only difficulty is obtaining feedback from clients. But there have been many benefits: today, we have access to information in real time, which helps greatly. It actually demands more from the professional, who must keep the client informed about everything, but overall, it has only made things easier" (Interviewee 3).

When discussing the benefits and challenges that digital accounting has brought to professionals in the field, the interviewees emphasized agility in processes and the speed with which information is now obtained, noting that the necessary data are available in real time. They also observed that this increased speed demands more from those working in the profession. On the other hand, in terms of challenges, the interviewees described difficulties related to analysis and professional overload. They reported that because information circulates more quickly and accounting procedures have become more agile, professionals who should be analyzing data once it is in the system are no longer performing such analyses. Consequently, they are becoming unable to properly review information, verify data, calculations, and financial values. One interviewee even stated that analysis has been replaced by people who

merely “shuffle XML files,” as they import transactions without reviewing or validating them an extremely risky practice that can lead to inconsistencies in critical information.

These accounts corroborate the discussions presented by Franco et al. (2021), who argue that information technology enhances agility and accuracy in accounting processes, reduces repetitive tasks, and strengthens support for decision-making.

The next question asked professionals whether, during their time in the field, they had ever encountered a problem that could have been solved through automation. The following responses were provided:

“Yes, several. Company registration, payroll processes in particular especially when hiring an employee. Ten years ago, when processing a new hire, we had to collect all documents manually; today we receive them much more quickly, and the hiring process is completed on the same day. This is a significant improvement. Accounting, for instance, is now time-sensitive: it is no longer possible to issue an invoice dated January 2023 as could be done in the past, because that time has already passed and such procedures are no longer allowed. This is also a major improvement, as information is now processed as it should be and within the appropriate timeframe. Processes have improved by 100%. Today, we can immediately verify whether invoices were submitted completely or not, whether all invoices are present, and this has a major impact it eliminates the accountant’s dependence on the client’s certainty, since information is available both from the State to the taxpayer and vice versa. This greatly reinforces the reliability of what was actually carried out” (Interviewee 1).

“There is a lack of partnership with clients. Today, we have many high-quality accounting systems, but most of them are designed exclusively for accounting. Very few systems are fully integrated. For example, a system that includes accounting, accounts payable, and accounts receivable such integrated control is rarely found within companies; almost none have this kind of automation, even though it could greatly facilitate processes. Even without full integration, automation could have helped immensely” (Interviewee 2).

“Certainly there were many instances. For example, cases involving invoices that did not pass through the fiscal checkpoint and the taxpayer misplaced the document. There was no way of accessing that information or discovering what had happened, and the accountant only became aware once SEFAZ issued a notice of assessment. Today, however, automation assists us greatly in such situations and is extremely beneficial” (Interviewee 3).

Throughout their time working in the accounting field, the interviewees reported having faced numerous problems that digital accounting technologies could have resolved. Examples include company incorporation procedures, employee hiring processes, access to information on tax invoices, and the lack of integration among systems and data sources. These activities were highly bureaucratic and time-consuming, demanding considerable effort from the professionals responsible for executing them unlike the present context, in which automation facilitates these and many other tasks.

In this sense, technological advancement requires professionals to develop more sophisticated analytical and control skills, ensuring that automated data are correctly interpreted and applied within accounting practices (Franco et al., 2021).

The interviewees were then asked which daily activities, from the perspective of an accounting professional, have become more efficient as a result of digital accounting. Their responses are presented below:

“With digital accounting, we are able to access information in real time. This is one of its main benefits having faster and more accurate information. Today, in our daily routine, we no longer need to be physically close to the client or depend on their memory to obtain information. We can analyze a company’s profile based on the data made available digitally, and this is extremely helpful” (Interviewee 1).

“The accounting closing process itself has become much faster and more efficient precisely because we no longer need to spend all our time manually debiting and crediting transactions a very tedious task. Some clients do not perform monthly closings, so they accumulate two or three months without recording anything. When they request a trial balance, we end up having to post several months at once. Imagine manually debiting and crediting six months of transactions by reviewing each digitalized file this represents an enormous workload. Now, however, clients send the data in a spreadsheet, which can be imported, and all that remains is the analytical review” (Interviewee 2).

“In reality, everything has become more efficient. For example, in the past, accounting offices recorded transactions in physical ledgers all invoices were handwritten. Today, clients send a file generated by a system that their employees update daily with all transactions, and we simply work from that file” (Interviewee 3).

From the interviewees’ statements, it is evident that obtaining information has become significantly more efficient, as data are now accessed in real time and with greater accuracy. Previously, accountants needed to maintain more direct and frequent contact with clients; however, with the advent of digital accounting, such proximity is no longer necessary—except for decision-making purposes. Furthermore, digitalization has greatly accelerated the accounting closing process and the importation of transactions, since company data are now imported through files provided already in structured format, whereas in the past all of this work was performed manually by the accountant.

To conclude the interview, participants were asked what, in their opinion as accounting professionals, could be improved in digital accounting to make it even more efficient. The following responses were obtained:

“Today, we know that the tax authorities have access to all information: they know who your employees are, your purchases and sales, what was purchased during the month, and what was paid through card machines in short, they have all of this data. So why don’t the tax authorities send us the correct tax calculation directly? Why do they allow us to perform the assessment if they already possess all the information? I believe the future should work as follows: for example, I purchase supplies for my office, provide my services, and issue my service invoices. Fine. On a given date, the tax amount should be automatically debited from my account. This is what needs improvement. The tax authorities have all the information, so why do they require us to perform the assessment instead of providing the final tax calculation? The same applies to FGTS and INSS why must I calculate them? This is what needs to evolve”

(Interviewee 1).

“What could be improved is perhaps system integration. Government digital tools are still insufficient, even though they have advanced significantly albeit very late. Another point is personnel qualification, as there is a considerable gap in terms of trained professionals” (Interviewee 2).

“I am sure there is room for improvement there always is but nothing specific comes to mind at the moment. I believe improvements could be made within the accounting system we use, as we encounter daily issues that the system could address” (Interviewee 3).

To conclude the interview, accounting professionals were asked what aspects of digital accounting could be improved. Interviewee 1 suggested that, given that the tax authorities already possess complete information on business transactions, purchases, sales, and payroll, taxes such as FGTS and INSS could be automatically calculated and debited, eliminating the need for manual assessment. According to the interviewee, this would promote greater practicality and accuracy in fulfilling tax obligations.

Interviewee 2 pointed out that system integration remains limited, particularly with respect to government-provided digital tools which, although they have advanced, still present shortcomings and require better professional training for efficient use. Interviewee 3, in turn, noted that the accounting systems used on a daily basis continue to exhibit specific operational issues that could be improved to further streamline accountants' workflows.

Thus, it becomes evident that, although digital accounting has advanced considerably providing greater speed, precision, innovation, and improved quality of information and routine processes there remain opportunities for further development, especially regarding system integration, automation of tax calculations, and correction of failures in accounting software (Franco et al., 2021).

5 CONSIDERAÇÕES FINAIS

The aim of this study was to analyze the effectiveness of digitalization and automation in accounting, examining the benefits and challenges perceived by professionals with extensive experience in the field. Based on a qualitative case study, using semi-structured interviews conducted with three accountants working in the Northeast region of Brazil, it was possible to address the research question proposed. The interviewees' narratives, contrasted with the theoretical framework on the evolution of accounting, digital accounting, SPED, and process automation, showed that the shift from manual routines to digital and integrated systems has generated profound impacts on professional practice.

The results consistently indicate that digitalization and automation in accounting enhance the speed, accuracy, and level of integration of information. Processes that previously required days or even months such as manual bookkeeping, paper-based submission of ancillary tax obligations, extensive reconciliations, and the closing of accounts can now be completed within a few hours, supported by software systems, imported spreadsheets, and digital environments. The adoption of digital bookkeeping systems, such as SPED, and corporate ERPs has contributed to reducing repetitive tasks, enabling real-time access to tax and financial data, and increasing the reliability of the information used for management purposes and for meeting

tax compliance requirements.

On the other hand, the study shows that the new digital era does not eliminate challenges; rather, it reshapes them. Among the main limitations identified are work overload in accounting firms that, in order to remain competitive, serve a large number of clients; resistance from some clients to extensively using digital documents and integrated systems; and the gap between the availability of data and its effective critical analysis. The figure of the professional who “only shuffles XML files,” without engaging in the interpretation of information, illustrates the risk of an accounting practice that is highly operational and insufficiently analytical. The respondents also mentioned weaknesses in the integration between public and private systems, as well as the need for greater technical qualification for the advanced use of available tools.

The contributions of this research emerge in several dimensions. From an empirical standpoint, the study offers a portrayal of the experiences of seasoned accountants facing the transition from manual accounting to digital and automated accounting in a context that remains underexplored in the literature: firms and professionals located in the Brazilian Northeast. In theoretical terms, the article dialogues with studies on the evolution of accounting, Accounting 4.0, and SPED, articulating legal and technological milestones with day-to-day practice and reinforcing the idea that technology repositions the accountant’s role from a mere executor of routines to an analytical and strategic agent. From a practical perspective, the findings highlight the need for continuous investment in professional training, system integration, and business models that value analysis, consulting, and strategic proximity to clients, rather than the purely mechanical fulfillment of obligations.

Based on the results obtained, it is recommended that future research increase the number of participants and include professionals from different regions of the country, as well as from different organizational segments (small, medium, and large accounting firms, in-house accounting departments, and digital accounting startups). Quantitative studies could measure the degree of adoption of digital and automated tools and relate it to performance indicators, information quality, and client satisfaction. It is also suggested that comparative studies be conducted between organizations that operate predominantly in digital environments and those that maintain more traditional practices, as well as investigations focused on clients’ perceptions of digital accounting, the management of technological risks, information security, and the impact of emerging technologies such as artificial intelligence and RPA on the future of the accounting profession.

In summary, this study confirms that digital accounting represents an irreversible advancement in the profession, while simultaneously showing that technology alone does not guarantee information quality or consistent decision-making. The full realization of the potential of digital and automated accounting depends on a combination of robust systems, effective data integration, an analytical stance on the part of professionals, and active partnership with clients and government agencies. Thus, more than simply replacing old processes with digital platforms, the challenge that emerges is to redefine the role of the accountant in this new accounting era, consolidating them as a professional capable of transforming data into knowledge and knowledge into decisions that add value to organizations and to society.

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