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Research Paper

Impacts of Accounting Digitization on the Profession of Accountants and Productivity: A Case Study

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ABSTRAT

Purpose: The primary objective seeks to answer the question of the impacts of accounting digitization on the profession and productivity. To this end, two specific objectives were established: 1) Examine the increase in productivity resulting from digitization in the process of document reception and recording in accounting; 2) Analyze the impact of digitization on the professional practice of accountants.

Methodology: This study adopts a qualitative and exploratory methodology based on a case study. To measure productivity, the CRM platform of Digital Company was used, allowing for the evaluation of working times before and after the implementation of digitization. Regarding the second objective, a questionnaire was used to collect the perception of the company's professionals.

Results: The obtained results confirm significant improvements in productivity, work quality, satisfaction, and motivation with the implementation of digitization in accounting. It enabled a productivity increase of 54.45%, evidencing operational optimization and better utilization of working time, leading to an extremely positive perception of digitization among accountants.

Research limitations: This study focuses on specific aspects of accounting, namely sales, purchases, payments, and receipts, excluding processes such as bank reconciliations and monthly closing records, not covering the entirety of accounting operations affected by digitization. Being a case study, the results may not reflect all business realities in the accounting area.

Originality: This study contributes to the understanding of digitization in accounting by exploring, through a case study, the practical effects of this transformation. It analyzes together the perceptions of accountants and productivity gains.

Keywords: *Accounting Digitization; Technological Innovation; Digital Archiving; Micro and Small Enterprises; Digital Transformation.*

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1. Introduction

Accounting digitization is a consequence of the 4th industrial revolution, characterized by the interconnection of intelligent machines and autonomous decisions, as highlighted by Marr (2018). The future has led to significant transformations in business processes, affecting the workforce and cost structures, as described by Kaya et al. (2019). The technological revolution introduced innovations such as Artificial Intelligence (AI), Machine Learning, Cryptocurrencies, Big Data, Blockchain, Internet of Things, augmented virtual reality, and social networks, which have the potential to profoundly transform society and professions, including accounting, with risks of dehumanizing society as per Dai and Vasarhelyin (2017) and Kaya et al. (2019). Studies by Berghaus and Back (2016) indicate that accounting, like other professions, is not immune to this digital and technological disruption, a theme also explored by Kokina and Blanchette (2019) and Kokina and Davenport (2017). Kroon et al. (2021) point to changes in accounting due to new technologies, suggesting the need for more empirical research.

In Portugal, Gonçalves et al. (2022) analyzed the impact of digitization on accounting, concluding that this process is still in its early stages in Portuguese small and medium-sized enterprises. The research identified barriers such as resistance to change and costs, but also benefits such as task automation and error reduction. Forecasts by Frey and Osborne (2017) suggest that, in one or two decades, 94% of accountants and auditors could be replaced by technology, while Chui et al. (2017) estimate that 35% of professional occupations have potential for automation, and the World Economic Forum (2023) predicts a significant loss of jobs in accounting and auditing, while the US Bureau of Labor and Statistics (2022) projects growth in the field.

Moudud-Ul-Huq (2014) emphasizes that accounting has evolved beyond traditional methods, but studies by Alderman (2019) and Susskind and Susskind (2015) suggest that digitization may not be entirely beneficial for the profession due to task automation. The need for accountants to adapt to new technologies is underscored by Guthrie and Parker (2016), Kokina and Blanchette (2019), and Sutton et al. (2016). In Portugal, according to data from the National Statistics Institute (NSI) (2023), accounting and management have shown sustained growth, presenting a significant evolution of accounting and business

management services, reflecting a trend of lower demand for repetitive services and greater need for value-creating services, in line with the observations of Gonçalves et al. (2022).

The transition from traditional to more collaborative accounting in the digital era involves significant changes. Traditional accounting, defined by Gulin et al. (2019), is based on conventional methods, while collaborative accounting, characterized by Odonkor et al. (2024), uses digital tools and technologies to improve efficiency[1] and accessibility. Anitha and Kumar (2023) highlight the advantages of collaborative accounting, such as greater efficiency and quick adaptation to changes.

The main objective of the study presented is to explore the influence of accounting digitization on the profession of accountants and productivity[1]. To this end, two specific objectives were established: 1) Analyze the impact of digitization on the professional practice of accountants; 2) Examine the increase in productivity resulting from digitization in the document reception and registration process in accounting. The methodology used in this study is qualitative and exploratory in nature, following a methodological procedure focused on the case study of an accounting firm.

This research differentiates from previous studies by analyzing not only the experience of accounting professionals and a concrete assessment of the impact on productivity. Unlike more general or theoretical approaches common in other studies, this work focuses on a detailed case study, examining the transition from a traditional to a digital accounting system in an accounting firm and the consequences of this change for accountants. Another point of differentiation is the evaluation of productivity increase following digitization. The research goes beyond theory and investigates the practical and quantifiable effects of digitization implementation on work processes, using concrete data from the company's Customer Relationship Management (CRM) platform.

The study is divided into five chapters. Following this first chapter of the Introduction, the literature review and methodology are presented in chapters two to three. In the fourth chapter, the results and analysis are presented. Lastly, in the fifth chapter, the main conclusions of the study are presented, along with its limitations, and proposals for future research are identified.

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2. Literature Review

2.1. Brief Overview of the Evolution of Digitization in Accounting

In the era of the 4th industrial revolution, characterized by the interconnection of intelligent machines making autonomous decisions (Marr, 2018), a profound change in business processes is observed, particularly affecting the workforce and cost structures (Kaya et al., 2019). The technological revolution, introducing innovations such as AI, Machine Learning, Cryptocurrencies, Big Data, Blockchain, Internet of Things, augmented virtual reality, and social networks, has the potential to further transform society, with the risk of dehumanizing it (Dai & Vasarhelyi, 2017; Kaya et al., 2019). According to Berghaus and Back (2016), digital capabilities can disrupt industries and traditional modes of operation. Accounting, like other professions, is not immune to this digital and technological disruption (Kokina & Blanchette, 2019; Kokina & Davenport, 2017). Kroon et al. (2021) indicate changes in accounting due to new technologies, pointing to a need for more empirical studies such as case studies and surveys to confirm these observations.

Moudud-Ul-Huq (2014) emphasizes that accounting has evolved beyond paper and pen. Studies by Alderman (2019) and Susskind and Susskind (2015) suggest that digitization may not be beneficial for the accountant profession due to task automation. However, it is crucial that accountants become familiar with new technologies (Guthrie & Parker, 2016; Kokina & Blanchette, 2019; Sutton et al., 2016). Despite this, an Oxford study predicts that, in one or two decades, 94% of accountants and auditors will be replaced by technology (Frey & Osborne, 2017). The authors Chui et al. (2017) estimate that 35% of professional occupations have the potential for automation. The World Economic Forum (2023) estimates a loss of about 14 million jobs in accounting and auditing areas over the next 5 years. On the other hand, the US Bureau of Labor and Statistics (2022) projects a 4% employment growth for accountants and auditors between 2022 and 2032.

Table I, according to NSI (2023) data, in Portugal, services in accounting, auditing, and consultancy activities amounted to 6,623,147 (thousands) in 2022, and accounting services amounted to 1,257,356 (thousands), having grown 12% compared to 2021. Accounting services represent only 19% of the total services provided in accounting, auditing, and consultancy activities of companies.

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Table I: Evolution of Accounting and Business Management Services in Portugal

Year	Total Services	Accounting	Business Management
2022	6,623,147	1,257,356	3,262,066
2021	5,532,420	1,124,608	2,706,946
2020	4,845,182	1,047,519	1,053,184
2019	5,040,167	1,053,184	2,557,189

Source: NSI (2023) (values in thousands of euros)

Moreover, business management consultancy services, besides representing 49% of the total services in the area, had the highest growth of 21% from 2021 to 2022. Although accounting services have grown consecutively between 2019 and 2022 (19%), business management services have had a greater evolution in the same period (28%) and represent almost half of the services in the area. This trend aligns with the previously addressed needs for fewer repetitive services and more value-creating services for companies. These data in Portugal align with the study by Gonçalves et al. (2022), highlighting the advantages of automation, such as the elimination of routine tasks and reduction of errors, allowing accountants to focus on higher-value services. These higher-value services may be related to greater support services for management in Portuguese companies.

2.2.Evolution from Traditional to Collaborative Accounting

The evolution of accounting in the era of digitization involves the transition from traditional accounting to more collaborative forms of accounting. In this chapter, the terms traditional accounting and collaborative accounting are discussed, their meanings and how they differ, considering the advantages and challenges of each approach in the context of accounting digitization.

Traditional Accounting: Refers to conventional methods of managing financial and non-financial data within a company. This approach is characterized by long-established practices that have remained unchanged over the years, focusing primarily on the manual maintenance and processing of financial records (Gulin et al., 2019).

Collaborative Accounting: Involves the use of digital tools and technologies to improve efficiency and accessibility in accounting processes. This modern approach allows

multiple stakeholders to work together and share information in real-time, integrating AI into Information Systems (IS) to automate routine tasks and enable predictive analyses for strategic decision-making (Odonkor et al., 2024).

Advantages of Collaborative Accounting Over Traditional:

- Increased Efficiency: Collaborative accounting offers improvements in efficiency, accuracy, decision-making capability, and financial management, thanks to automation and real-time data access (Anitha & Kumar, 2023).
- Fast Adaptation: Allows for quick adaptation to global changes, stricter regulations, and technological advances, unlike traditional accounting, which is more stable and consistent but less adaptable (Gulin et al., 2019).

Challenges of collaborative accounting in the context of digitization (Odonkor et al., 2024):

- Implementation and Training: Requires careful implementation and adequate training for efficient use of digital technologies;
- Data Security: Concerns about privacy and data security become more critical with increased digitization and information sharing.
- AI Integration Costs: Adopting AI can involve high costs, requiring skilled personnel.

In summary, while traditional accounting offers stability and consistency, collaborative accounting promotes greater operational efficiency and adaptability in response to rapid technological advancement, particularly in IS.

To better contextualize the impact of IS on the digitization of accounting, it is essential to analyze the evolution of IS to the present day. Guerrero and Sierra (2018), in their study on traditional IS in Colombia, identify gaps in conventional models, notably the lack of involvement of strategic leadership levels in valuing IS. The authors conclude that institutions lack effective indicators to evaluate the quality and productivity of processes, something that is only possible with advanced IS, as indicated in Figure 1.

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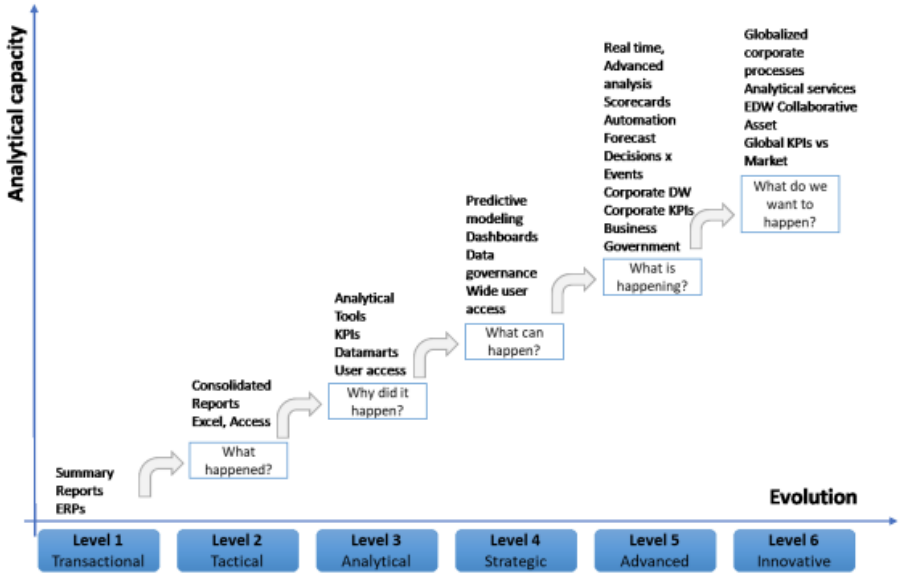
Figure 1: Evolution of IS and Levels of Analysis



Source: (Guerrero & Sierra, 2018, p.2)

Veiga (2006) addresses the evolution of IS, highlighting the importance of information as a source of power. Since the 20th century, accounting has undergone significant transformations due to technological advancement. The emergence of the telegraph and, later, the Internet spurred the need to adapt accounting practices to the growing volume of information. Initially focused on pre-defined reports and decision support, IS began to transform into vital strategic tools for organizations. The technological innovation of the 1980s, especially with the introduction of personal computers, promoted the decentralization of computing and the customization of programs to meet the specific needs of organizations. However, the exponential increase in data posed challenges in filtering relevant information, leading to the development of executive IS, designed to provide important information to decision-makers, improving efficiency in accounting and management. With the introduction of the World Wide Web in 1993, there was an acceleration in the restructuring of business processes and the emergence of DatawareHouses, leading to the development of relationship IS, focused on customer interaction (Veiga, 2006), thus improving the interface and automation in the process.

Regarding the current impact of automation on the accounting profession, significant changes are observed in two main aspects: professionally, with the reduction of time spent on routine tasks, and personally, where there is an increase in motivation and professional satisfaction. This last point is corroborated by the study of Duong and Fledsberg (2019), which shows an increase in enthusiasm and satisfaction among accountants when

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employing advanced technologies such as AI and Robotic Process Automation (RPA). Regarding the impact on clients, and as pointed out in the study by Dimnik and Felton (2006), there is a persistent request for services unrelated to the accountants' competencies. This phenomenon seems to be linked to the persistently traditional and outdated image attributed to the profession. In Portugal, according to Silva (2021), although the COVID-19 pandemic was a challenging period, it presented an opportunity to promote change and adaptation to digital accounting, significantly improving automations, with the Portuguese state contributing positively by automating and simplifying some tax declarations and the exchange of information between various public institutes, which helped to promote the dematerialization of the Portuguese tax system.

According to Collins and McCombie (2012), these technological innovations could create opportunities and trigger threats to the accounting profession. According to the study by the World Economic Forum (2023), a significant transformation in the employment landscape in the accounting field is evident (Table II).

Table II: What is the Future of Employment in the Accounting Field?

Emerging Jobs – 2023	**Declining Jobs – 2023**
AI Specialists	Accountants and Auditors
General and Operations Managers	Finance Clerks
Organizational Development Specialists	Accounting and Payment Clerks
Big Data Specialists	Administrative and Executive Secretaries

Source: World Economic Forum (2023, p. 30)

This transformation reflects emerging trends and declining professions in this sector, marking an era of changes and adaptations. Various studies also address the issue of automation in the accounting profession, considering it to bring greater speed in task execution, which is one of the main advantages (Brands & Smith, 2016; Gonçalves et al., 2022; Ribeiro, 2018; Fernandez & Aman, 2018).

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2.3.Dematerialization versus Digitization

Archives represent a key component in controlling organizational activities, serving the dual function of supporting current management (primary value) and preserving institutional memory (secondary value), as highlighted by Cézar (2009). These records not only demonstrate compliance with legal obligations but also serve as a repository of corporate history, deserving appropriate protection and conservation, as emphasized by Vieira (2009). However, the growing volume of information challenges the organizational capacity to manage the documentary collection effectively, as pointed out by Cézar (2009). To mitigate this overload, dematerialization has gained prominence as a document management strategy.

Dematerialization involves the conversion of physical documents into electronic formats, facilitating their digital use, as explained by Guedes et al. (2009). However, the transition to a digital environment is not without concerns. Jordan (1999) highlights that the elimination of paper support can increase the risk of fraudulent practices, complicating the task of accountants in verifying and tracing the origin of transactions. Despite these challenges, dematerialization has become an indispensable requirement for modern accounting, which relies on digital tools and electronic documents. However, a Docxpert (2022) article warns about the common confusion between dematerialization and digitization, the latter not necessarily reducing paper use, but requiring a meticulous process to preserve informational value. In summary, document dematerialization refers to the process of converting documents to a digital format, whereas digitization involves converting documents from a physical format (i.e., paper) to an electronic file, typically in PDF.

Beyond the importance of the value of information, it is imperative that accountants adopt strict security measures to protect data against fraud and loss of control, as highlighted by Ionescu et al. (2013). Once dematerialized, information can flow more rapidly and clearly, becoming a strategic resource for business evaluation, decision-making, financial analysis, planning, and control.

2.3.1. Evolution of Document Dematerialization in Portugal

With the enactment of Decree-Law 28/2019 on February 15, 2019, which allows for the legal digitization of accounting documents, companies are no longer legally obligated to

keep all their invoices in paper form. One of the main objectives of Decree-Law 28/2019, as stated in its preamble, is "legislative simplification and providing greater legal security to taxpayers," creating conditions that encourage the dematerialization of documents in Portuguese companies, and the adoption of Digital Archive solutions, eliminating the legal requirement to keep paper invoices for a period of 10 years.

However, other technologies already existed to optimize the process of recording and collecting data in accounting, such as e-Invoice, Optical Character Recognition (OCR), and Quick Response (QR) Code. These technologies are used in the company that served as a case study for this article, allowing for the implementation of accounting digitization and increasing productivity in the document reception and registration process.

2.3.2. e-Invoice

In 2013, amid austerity resulting from an economic and financial crisis, there was a need to restructure the entire invoicing regime in Portugal, thus presenting an opportunity to implement technological modernization measures, i.e., e-Government measures. The evolution of the e-Invoice system in Portugal has been a significant process, with various advantages. The e-Invoice system serves both as a measure of simplification by the State and as an incentive for taxpayers to request invoices (Azevedo et al., 2023). Malta (2020) concludes that the e-Invoice system not only had a positive impact on tax revenues but also strengthened the fight against tax fraud and evasion. Moreover, the system played a decisive role in modernizing the Certified Accountant profession, increasing the efficiency and accuracy of these professionals' work. According to the authors, the implementation of e-Invoice in Portugal led to significant advantages in terms of promoting greater transparency between taxpayers and the State, as well as improving economic and fiscal efficiency and social promotion.

2.3.2.1.OCR

The implementation of OCR in Portugal has evolved significantly, bringing various advantages to different sectors. An example is the implementation of Tesseract-OCR, which automates character detection in text images of quotations, saving time in creating, processing, and typing documents (Lestari & Mulyana, 2022). The adoption of OCR in

accounting offers various advantages, such as reducing the time spent on manual data entry tasks, decreasing human errors, and improving data accessibility and analysis. Furthermore, it facilitates regulatory compliance and improves efficiency in audit and review processes.

In Portugal, specifically, the implementation of OCR in accounting is just beginning in small and medium-sized accounting services companies. Industry 4.0 technologies such as OCR, AI, robotics, and cloud-based Enterprise Resource Planning (ERP) are highlighted by professionals in the field (Gonçalves et al., 2022). This introduction of OCR in Portuguese accounting reflects a growing trend of digitization and automation, seeking efficiency and accuracy in accounting data processing. Moreover, the importance of pre-processing in offline OCR is emphasized, being fundamental in various applications, such as digitizing ancient manuscripts, authenticating signatures, automatic bank check compensation, and classifying postcards (Dey et al., 2022).

These developments show how OCR is an important tool in accounting, both globally and in Portugal, driving innovation, productivity and efficiency in a sector traditionally characterized by a large manual workload (Marracho & Ferreira, 2021).

2.3.2.2.QR Code

One of the main benefits of implementing QR Code on invoices in Portugal is its dematerialization. This technology allows consumers to digitally send invoice information without needing to enter their tax identification number. This process simplifies the transfer of accounting information, increases efficiency, and reduces the possibility of manual entry errors (Marques & Reis, 2020b). Additionally, the QR Code has been analyzed in terms of its contribution to relevant fiscal documents in Portugal, with a specific focus on analyzing the advantages of QR Code on invoices in the accounting system. This technology facilitates the tracking and validation of transactions, promoting transparency and compliance with tax laws (Marques & Reis, 2020a).

The introduction of the QR Code in accounting also represents a significant step towards the digitization and automation of accounting processes. With the ability to store a large amount of data in a compact format, the QR Code offers an efficient way to quickly access detailed transaction information, facilitating the analysis and review of accounting data. These developments indicate a move towards greater operational productivity, efficiency

and accuracy in accounting processes, as well as demonstrating Portugal's commitment to technological innovation in the field of accounting.

3. Methodology

For confidentiality purposes and to preserve the integrity of trade secrets and the business model of the organization, the company will be referred to as "Digital Company" throughout this study. The accounting office of Digital Company, located in the central region of Portugal, primarily serves Micro and Small Enterprises (MSEs)[2] in the commerce, services, industrial, and non-profit sectors. The ability to serve clients across the national territory stems from the implementation of a robust digital platform and a system that allows for the execution of data collection and processing procedures and the delivery of results in a fully digital manner. The transition to digitization in accounting and the consequent change in processes at Digital Company began in 2019, with the adoption of digital archiving for all the company's clients in 2020. In the latest data from INE (2022), MSEs represent 99.35% of the total number of companies in Portugal, thus highlighting the importance of the sample universe of this study.

3.1.Methodological Considerations

The selection of the research method is an important step that should be aligned with the objectives of the study at hand. Research methods are generally categorized into quantitative, which includes surveys and exploratory studies, and qualitative, such as case studies. The choice of method should be directly related to the phenomenon under analysis, as suggested by Freitas et al. (2000). It is important that the researcher carefully contemplates and opts for the research method that most appropriately aligns with the phenomenon to be studied (Sobh & Perry, 2006).

According to Sampieri et al. (2014), the exploratory typology is chosen when the purpose is to inspect a topic or research problem that is little studied, about which doubts persist, or that has not been previously addressed. Burrell and Morgan (2017) argue that researchers in the field of accounting have three distinct research methods at their disposal: positivist, interpretive, and critical. The interpretive method stands out for enabling a deeper grasp of accounting practices in their social context, focusing on the

description, understanding, and interpretation of the meanings conferred to them. This method is particularly useful for understanding the behavior of individuals and their evolution within a specific context, fostering a closer interaction between the researcher and the object of study.

Methodologically, this study utilizes a combination of bibliographic research and information gathering. Interpretive research, as described by Gil (2002), presupposes the collection of information directly from a group of people to understand their attitudes towards the topic under study. The collected data are subsequently analyzed with the intention of drawing conclusions.

A case study approach will be adopted, aiming to evaluate the impact of accounting digitization on the profession of accountants and on the operations of Digital Company's client businesses, focusing on the perceptions of accountants and their clients, as well as on the productivity of a particular entity.

This method is indicated for interpreting the particularities of a concrete case, based on a detailed analysis of relevant literature and allowing for the interpretation of the results achieved (Humphrey & Scapens, 1996).

Consequently, we intend to answer the following initial question:

1. How has the digitization of accounting positively impacted the profession of accountants and productivity?

Thus, the following specific objectives guide this research:

1. Analyze the increase in productivity with the implementation of accounting digitization in the document reception and registration process at Digital Company;
2. Analyze the influence of accounting digitization on the professional practice of accountants at Digital Company.

3.2.Population and Sample

For the first objective of the study, 40 client companies of Digital Company were used, all active in Portugal and maintaining organized accounting. It was decided to exclude from the sample the most recent companies operating exclusively in a digital environment, focusing instead on those that transitioned from a traditional system to a digital accounting regime. For the second objective, employees of Digital Company were

used to capture the perception of the impacts of accounting digitization on the professional practice of accountants.

3.3.Sample Collection Methods

To collect the necessary data for achieving the first objective of the study, data were obtained from the CRM platform of Digital Company, which allowed for the evaluation of working times before and after the implementation of digitization.

Regarding the second objective of the study, a questionnaire (included in Appendix 1) was used for the five employees of Digital Company, designed and adapted from the studies developed by Junior (2020), Mendes (2020), and Silva (2021). The questionnaire intended for the employees of Digital Company contains 7 closed questions aimed at addressing these professionals' perceptions regarding productivity, quality, improvements in the profession, and motivation resulting from the implementation of digitization in accounting. The Google Forms platform was used for sending and collecting the questionnaire.

4. Results and discussion

4.1.Increase in Productivity with the Implementation of Digitization in the Accounting Document Reception and Registration Process

The case study conducted on the impacts of digitization in accounting reveals significant results in terms of productivity increase. Focusing on 40 companies and addressing the process of reception and registration of accounting documents for sales, purchases, payments, and receipts during the year 2023, Table III provides a detailed overview of the transformations introduced by digitization in these processes.

Table III: Productivity Gain with the Implementation of Digitization

Nº of Companies	Total Documents	Hours Used Before Digitization	Hours Used After Digitization
40	151 636	5 189.84	2 364.12
		Difference in Hours (horas)	**2 825.72**

Difference in Hours (%)	**54.45**

Source: Data according to Appendix 2

Before the implementation of digitization, a total of 151,636 documents required 5,189.84 hours to be processed. After digitization, the same volume of documents was processed in just 2,364.12 hours. This represents a reduction of 2,825.72 hours, equivalent to a 54.45% decrease in the time used for the collection and processing of documents. The results obtained reflect improvements in the productivity of the document reception and registration processes that were digitized, as some literature studies had already indicated (Brands & Smith, 2016; Gonçalves et al., 2022; Ribeiro, 2018; Fernandez & Aman, 2018).

4.2.Influence of Accounting Digitization on the Professional Practice of Accountants

Understanding the profile of accounting professionals is crucial for a better interpretation of the results. The analysis presented in Table IV focuses on three main characteristics: the function of the professionals, their tenure at the company, and their experience with digitization in accounting.

Table IV: Characteristics of Accounting Professionals

Characteristics	Classification	Frequency	%
Function	Accountant	2	40.00
	Certified Accountant	3	60.00
	Administrative	0	0.00
Tenure at the company	Up to 1 year	1	20.00
	From 1 to 3 years	2	40.00
	From 3 to 5 years	0	0.00
	From 5 to 8 years	0	0.00
	8 years or more	2	40.00

Experience in accounting digitization	Up to 1 year	1	20.00
	From 1 to 3 years	2	40.00
	From 3 to 5 years	1	20.00
	From 5 to 8 years	1	20.00
	8 years or more	0	0.00

Source: Questionnaire according to Appendix 1

Among the respondents, 40% identified themselves as accountants and 60% as certified accountants. This distribution suggests a predominance of professionals with a higher level of education and certification. The absence of professionals in the Administrative category results from the company not having this role filled at the time of the survey. Regarding tenure at the company, the results show a balanced distribution: 20% of the professionals have been at the companies for less than 1 year, 40% between one and three years, and another 40% have a tenure of 8 years or more. This variety in tenure reveals a range of experiences, from newcomers to those with a more established career in their organizations.

Regarding experience in accounting digitization, it is observed that most professionals have moderate experience, with 40% having between one and three years of experience in this area. Another 20% have up to one year of experience, 20% between three and five years, and 20% between five and eight years. The absence of professionals with more than eight years of experience in digitization shows that digitization is a relatively recent phenomenon in the accounting sector (Kroon et al., 2021; Gonçalves et al., 2022).

On the influence of accounting digitization on their professional practice, the obtained results provide insights into accountants' perceptions regarding this phenomenon. Table V summarizes the information obtained in the questionnaire that addressed various dimensions, including productivity, work quality, profession improvement, and professional motivation, with respondents evaluating the impact of digitization on a scale from 1 to 5, where 1 represents the least impact and 5 the greatest impact.

Table V: Influence of Accounting Digitization on the Professional Practice of Accountants

Questions	**1**	**2**	**3**	**4**	**5**
How do you rate the impact of digitization on your productivity?	0.00	0.00	0.00	0.00	100.00
Has accounting digitization improved the quality of your work?	0.00	0.00	0.00	0.00	100.00
How do you feel about your work after the implementation of accounting digitization?	0.00	0.00	0.00	20.00	80.00
Has accounting digitization affected your work motivation?	0.00	0.00	0.00	20.00	80.00

Legend: Rating from 1 to 5 (from least impact - 1 to greatest impact - 5)

(Values in percentage*)*

Source: Questionnaire according to Appendix 1

In the question on how they evaluate the impact of digitization on their productivity, 100% of respondents assigned the highest score (5). This result indicates a unanimous perception that digitization had a significantly positive impact on accountants' productivity. This data is crucial, suggesting that digital tools and automated systems are facilitating faster and more efficient processing of accounting data, allowing professionals to dedicate more time to higher value-added tasks (Alderman, 2019; Berghaus & Back, 2016; Chui et al., 2017; Frey & Osborne, 2017; Gonçalves et al., 2022; Kaya et al., 2019; Kokina & Blanchette, 2019; Kroon et al., 2021; Moudud-Ul-Huq, 2014).

When asked whether accounting digitization improved the quality of their work, again, 100% of respondents gave the highest rating. This feedback highlights the perception that digitization not only increases productivity but also contributes to greater accuracy and reliability in the outcomes of accounting work (Chui et al., 2017; Frey & Osborne, 2017; Gonçalves et al., 2022; Kaya et al., 2019). This aspect is crucial, as the quality of accounting information is fundamental for business decision-making (Alderman, 2019; Berghaus & Back, 2016).

Regarding professionals' feelings about their work after implementing accounting digitization, 80% of respondents rated it with the highest score, while 20% gave a score of 4. This result reflects a high degree of satisfaction and a positive adaptation to new digital practices in the work environment. This factor may be influenced by the team being young and more receptive to new technologies (Kokina & Blanchette, 2019, Kaya et al., 2019; Kroon et al., 2021).

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Finally, concerning the influence of digitization on work motivation, the data also reveal a positive trend, with 80% assigning the highest rating and 20% a score of 4. This result suggests that digitization is perceived as a motivating factor, possibly due to the simplification of processes and the opportunity to focus on more strategic and less routine tasks (Alderman, 2019, Berghaus & Back, 2016; Gonçalves et al., 2022; Moudud-Ul-Huq, 2014; Kaya et al., 2019).

Regarding the first objective, a significant reduction in time spent on routine processes was revealed, pointing to an optimization of operational costs. Digitization provided notable operational efficiency, allowing for faster and more accurate processing of a large volume of documents and freeing up employees for activities of greater strategic value. This 54.45% productivity gain not only improves work productivity but also suggests a possible improvement in time management and tasks of greater added value for client companies. These results reflect improvements in the productivity of document processes, aligning with trends identified in the literature (Brands & Smith, 2016; Gonçalves et al., 2022; Ribeiro, 2018; Fernandez & Aman, 2018). The critical analysis of the results obtained in this study on accounting digitization reveals fundamental points and challenges inherent to the interpretation and applicability of the findings. Initially, the significant reduction of 54.45% in the time spent on routine processes underscores the positive impact of digitization on operational productivity. However, it is crucial to consider variability across different organizational contexts, as the magnitude of this impact may vary depending on existing technological infrastructure, organizational culture, and employee adaptability.

The impressive productivity gain opens a dialogue about the long-term sustainability of these benefits and the need for continuous investment in technology. Digitization alone does not guarantee lasting improvements without being accompanied by a strategy for professional development and technological updating. Thus, the emphasis on continuous improvement and professional development emerges as a critical component to maintain and enhance the gains obtained.

For the second objective, the results point to an extremely positive reception of digitization among the professionals at Digital Company. The unanimous perception of improvement in productivity and work quality, coupled with an increase in satisfaction and motivation, reflects how beneficial digitization has been for accounting practice. This scenario reinforces the need for continuous investment in digital technologies in the

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sector, seeking not only to enhance operational productivity but also to foster professional development and job satisfaction. This unanimous perception emphasizes the productivity and precision provided by digital tools, a point highlighted in previous studies (Berghaus & Back, 2016; Kaya et al., 2019; Kokina & Blanchette, 2019), and also a consequence of the increased productivity observed in the first objective of this study.

The extremely positive reception of digitization by professionals at Digital Company is a valuable indicator of the technology's potential acceptance in the sector. However, this unanimity also suggests the need for a deeper analysis of possible selection or confirmation biases, where positive expectations about digitization may influence the perception of the results. This highlights the importance of methodological approaches that can disaggregate the effects of digitization on different dimensions of accounting practice and professional development.

In response to the initial question, the study demonstrates that accounting digitization decisively and transformatively impacts the accountant profession. Accounting digitization not only improves productivity in accounting processes but also has a profound impact on the professional development of accountants. These results reinforce the importance of digitization as a fundamental pillar for innovation and sustainable growth in the accounting sector.

5. Conclusion, Limitations, and Future Studies

This study constitutes an initial approach to analyzing the impact of accounting digitization on productivity within the accounting profession and professionals' perception of this change. Digitization, characterized by the adoption of advanced technologies, has significantly influenced business processes and professions, including accounting. Throughout the study, we observed that accounting is not exempt from the challenges posed by digital disruption (Berghaus & Back, 2016; Kokina & Blanchette, 2019; Kokina & Davenport, 2017). In Portugal, accounting digitization is still in its early stages, especially among MSEs, facing obstacles such as resistance to change and high costs, but also recognizing significant benefits such as task automation and error reduction (Gonçalves et al., 2022).

This study underscores the impact of accounting digitization on operational productivity and professional development within the sector. By significantly reducing time spent on

routine tasks by 54.45%, digitization has optimized operational processes and redirected focus towards higher-value activities. This enhances not only productivity but also time management. Furthermore, the positive reception of digitization by accounting professionals at Digital Company highlights its role in improving work quality, satisfaction, and motivation. These findings affirm that digitization is crucial in reshaping the accounting profession, boosting process efficiency, and significantly contributing to the professional growth of accountants.

This study makes significant contributions to the literature on accounting digitization by providing a detailed and contextualized analysis of its effects, standing out for its practical approach. By focusing on a specific case study, it offers a deep and differentiated understanding of the challenges and opportunities that digitization presents in the accounting sector. One of the main innovations of this study lies in an integrated analysis of accounting digitization, encompassing the experience of accounting professionals and practical assessment of productivity increase. The study stands out for focusing on a specific case, Digital Company, analyzing the transition from a traditional to a digital system and the consequences of this change. This detailed analysis of a real case provides a practical and concrete view of the transformations resulting from digitization in accounting, offering valuable contributions that can be applied in other similar contexts. Lastly, the evaluation of the productivity increase resulting from digitization is also a differentiating factor in the study. Unlike theoretical or generic approaches, this study examines the tangible and quantifiable effects of digitization on work processes, using concrete data from the company's CRM platform, which allowed for the evaluation of working times before and after the implementation of digitization. This focus allows for a clear and objective demonstration of improvements in operational productivity and time management optimization, aligning with trends observed in previous studies but offering a new perspective based on practical evidence.

Like any scientific study, this one also has limitations. Firstly, it focuses only on certain aspects of accounting, specifically in the areas of sales, purchases, payments, and receipts. Important accounting processes, such as bank reconciliations and other monthly closing records, were not included in the analysis. This methodological choice means that the results obtained primarily reflect the productivity in the processes that were digitized, not offering a complete view of all accounting operations that could be affected by digitization. Another significant limitation of the study lies in the sample composition,

involving 40 entities, clients of the accounting firm serving as the case study. This natural restriction of the sample may impact the ability to generalize the results.

In future studies, it would be important to address other accounting processes not covered in this study, such as bank reconciliations and monthly closing records. This expansion would allow for a more comprehensive evaluation of the impact of digitization on all accounting processes, providing a more complete view of the transformations resulting from digitization. Additionally, diversifying the sample would be important. It would be valuable to assess business owners' perception of the impacts of accounting digitization on their businesses. It would also be interesting to explore the long-term impact of digitization on accounting. While the present study offers a current view of the effects of digitization, a longitudinal study could observe how these impacts evolve over time, offering a dynamic perspective on the continuous changes in the sector. Finally, a comparative analysis between companies that adopted digitization and those that maintained traditional accounting processes could provide a deeper understanding of the real benefits and challenges of digitization. Such a study would contribute to a more pronounced understanding of the competitive advantages and potential obstacles associated with the transition to digital accounting.

Note:

[1] In the era of accounting digitalization, distinguishing between "productivity" and "efficiency" becomes crucial. Sajady et al. (2008) demonstrate that digitalization enhances productivity by enabling accountants to process more transactions and prepare reports swiftly through automation and real-time data. Concurrently, Debreceny & Gray (2001) and Kokina & Davenport (2017) highlight the improvement in efficiency, with digitalization reducing errors and revision times, thereby optimizing human and financial resources.

[2] Decree-Law No. 372/2007, dated November 6, established the concept of a company and, more specifically, the concept of micro, small, and medium-sized enterprises (SMEs). Micro enterprise: employs fewer than 10 people and its annual turnover or total annual balance sheet does not exceed 2 million euros; Small enterprise: employs fewer than 50 people and its annual turnover or total annual balance sheet does not exceed 10 million euros; Medium enterprise: employs fewer than 250 people and its annual turnover does not exceed 50 million euros, or the total annual balance sheet does not exceed 43 million euros.

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Appendix 1 – Control of Hours Used

Company	Total Documents	Hours Used Before Digitization	Hours Used After Digitization
Classified	586	76,65	42,16
Classified	7370	156,95	86,32
Classified	802	138,36	62,26
Classified	616	71,20	28,48
Classified	1559	143,78	64,70
Classified	1141	146,10	58,44
Classified	10070	67,28	33,64
Classified	27077	177,42	97,58
Classified	637	41,60	16,64
Classified	731	81,45	32,58
Classified	4802	747,85	299,14
Classified	1214	114,71	51,62
Classified	761	82,30	32,92
Classified	2386	95,89	52,74
Classified	1127	63,45	34,90
Classified	16247	285,28	142,64
Classified	638	93,05	51,18
Classified	1680	212,89	95,80
Classified	668	57,70	23,08
Classified	1644	134,65	74,06
Classified	1376	131,64	59,24
Classified	2315	446,89	201,10
Classified	120	18,10	7,24
Classified	1327	132,20	52,88
Classified	1417	141,10	56,44
Classified	586	97,60	39,04
Classified	7415	139,78	62,90
Classified	2170	147,25	58,90
Classified	125	18,76	8,44
Classified	2	1,14	0,40
Classified	190	34,58	15,56
Classified	1001	96,07	52,84
Classified	40298	208,13	93,66
Classified	359	64,85	25,94
Classified	6222	146,40	65,88
Classified	1847	89,95	35,98
Classified	2131	209,13	115,02
Classified	910	63,75	25,50
Classified	50	9,29	4,18
Classified	19	4,67	2,10
Totals	**151636**	**5189,84**	**2364,12**
		Productivity Gain	**54,45%**

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Appendix 2 – Employee Questionnaire

Questions	Possible answers
Function	Accountant Certified Accountant Administrative
Tenure at the company	Up to 1 year From 1 to 3 years From 3 to 5 years From 5 to 8 years 8 years or more
Experience in accounting digitization	Up to 1 year From 1 to 3 years From 3 to 5 years From 5 to 8 years 8 years or more

Questions - *Rating from 1 to 5 (from least impact - 1 to greatest impact - 5)*

How do you rate the impact of digitization on your productivity?
Has accounting digitization improved the quality of your work?
How do you feel about your work after the implementation of accounting digitization?
Has accounting digitization affected your work motivation?