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ARTIFICIAL INTELLIGENCE AND THE STRATEGIC CHANGE OF THE ACCOUNTANT'S ROLES: A THEORETICAL APPROACH

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Abstract. *Background: Based on the premise that technology has changed the way in which the Accounting profession is exercised, it becomes relevant to understand the challenges that Certified Accountants face when using artificial intelligence.*

Method: Smart technologies have enormous potential as tools at the service of accounting and the preparation of financial and non-financial information for decision-making, however, they also affect the practice of the profession, which legitimizes concerns about the evolution of the profession and the need to assume new functions.

Results: The greater the incorporation of technology in companies, the more and better skills accounting professionals will need to ensure to show their relevance and ability to add value. This rapidly evolving scenario requires a real change in the accountant's functions, but also the possibility of emerging new opportunities. Thus, the present research proposal consists of a descriptive study with a quantitative and qualitative component and aims to analyse the potential use of artificial intelligence in accounting, and its consequent impact on the functions of the accountant.

Conclusion: The quantitative component will be supported by a questionnaire addressed to Certified Accountants, while the qualitative component will be supported by an interview guide and will have the purpose of collecting comments on the proposed objective, as well as on the results obtained in the quantitative analysis..

Keywords: *human factor, organization, organizational change, resistance, management.*

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Introduction

Throughout history, the challenges related to accounting functions have evolved in line with the development of the business world, tax policies and technology. This evolution is evident in its object, but also in the support methods and instruments. As Smith (2017) argues in the face of this evolution, the traditional focus on the compilation of quantitative data and historical information that is updated only periodically makes less and less sense, so accounting professionals must be willing to embrace the changes that occur in the current business scenario.

According to the McKinsey Global Institute, most current jobs will be automated by 2030 and accounting services that have already been automated will be affected by Artificial Intelligence (AI) freeing accountants to provide more consulting services (Shaffer, Gaumer, & Bradley, 2020).

Ghandour (2021) warns that accounting and control systems are changing dramatically due to technological advances, environmental complexity and the emergence of new organizational structures, noting that the accounting profession will face significant changes in the coming decades, referring to the study Drivers of Change and Future Skills carried out by the Association of Chartered Certified Accountants (ACCA). This author also points out that accountants will use increasingly sophisticated and intelligent technologies, including cloud computing (Cloud Services), and that globalization will continue to create opportunities and challenges, as it encourages the flow of money between capital markets and enhances the provision of services abroad, but also because it promotes an increase in the sharing and transfer of technical and professional skills with different cultural and financial systems. Another important aspect, referred to by the author, is the increase in regulations in the field of taxation and money laundering.

Other authors such as Melnyk, Trachova, Kolesnikova, Demchuk and Golub (2020) state that, following globalization and the evolution of digital and intelligent technology, accounting professionals are abandoning a posture traditionally focused on technique, and of a very static nature, to start supporting the management of companies with greater and better collaboration in the strategic area. This new posture will require new knowledge, mastery of new technologies, social skills and professional flexibility. For these authors, this change in priorities and functions will transform the challenges faced by the accounting sector and the accounting profession, and a greater mastery of technologies combined with soft skills can significantly improve the ability to create value, and therefore improve career prospects. This new emphasis on the performance of functions with a component more related to strategic information to support decision-making is crucial, as argued by Zhang, Xiong, Xie, Fan and Gu (2020). According to these authors, new technologies have introduced radical changes in the practice of many professions, including accounting, giving as an example a study carried out by the British Broadcasting Corporation (BBC) News in 2018, on professions with the potential to be eliminated due to the introduction of AI and in which accountants occupied the 21st position out of a total of 366 professions and with a probability rate of 96%. Zhang et al., (2020) also mention that at the Klynveld Main Goerdeler (KPMG) Information Technology (IT) Internal Audit Conference 2016 and 2017, about half of the 120 auditors present confirmed the use of AI in their organizations and 80% reported that they had no confidence in the use of this technology. The four largest companies in the Deloitte sector, PricewaterhouseCoopers (PwC), KPMG, Ernst & Young, already use their own financial robots, which are capable of automatically recognizing data, inserting invoices and generating financial reports.

In this sense, and given the realization of this new reality, the present research proposal emerged as relevant and useful, both in terms of improving understanding of the technologies themselves, and in increasing knowledge about the potential of AI at the service of the accounting profession. The importance of the subject is also highlighted by its contribution as an instrument of reflection in the preparation of training paths for current and future certified accountants.

Literature Review

In the 50s, Alan Turing argued how it was possible to define artificial intelligence, if we still continued to define intelligence. Assuming that man is an intelligent being, Turing proposed a test

to determine the capacity of a machine to exhibit an intelligent behaviour equal to a human being, or indistinguishable from it, and considered that if the machine was able to act in a way that it was not feasible to distinguish it from the behaviour of a human being, that machine had some kind of intelligence, and being a machine, the term artificial intelligence should be used, to differentiate it from human intelligence (Castro, 2017). Currently, artificial intelligence is defined more broadly as a computer program or software application that can mimic or simulate human behaviour and encompasses a range of interconnected technologies.

According to Emetaram and Uchime (2021) AI can be understood as the ability of a programmable device to perform activities associated with the human brain. These activities include knowledge and the ability to acquire it, the ability to interpret, judge, produce original thoughts, understand relationships and make choices. In this sense, process automation may or may not include AI, so they are two very different realities.

As Ng and Alarcon (2021) explain, AI is divided into a variety of subfields, including, but not limited to, machine reasoning, machine learning, deep learning, and natural language processing. With these technologies, computers can perform tasks in an intelligent way, which implies that they are not limited to acquiring and storing data, but that they have the ability to learn from experience, with the purpose of being able to process and make available, in a short period of time, information, which obviously has an impact on the exercise of the accounting profession (Ng & Alarcon, 2021).

If, on the one hand, technological development and digitization allow real-time updates and enhance the importance of financial information for decision-making, so often forgotten, on the other hand, the use of computers, automation systems, networked systems and the interconnectivity provided by the internet, drastically reduces the workload of accountants and the profession is now considered as having a high probability of having to be rethought in terms of skills and functions (Gulin et al., 2019).

In this context and to assess the possibility of automating tasks and processes, Oschinski and Wyonch (2017) considered it essential to distinguish between routine tasks that can be easily automated and non-routine tasks that are difficult to be performed by machines or software. These authors studied different professions and argued that with technology, the production or provision of services requires fewer workers, who can be employed elsewhere, who require critical thinking, a high level of creativity and qualifications or human contact, realities that will not be so easily automated soon. Routine tasks that do not require a high level of education and training and that require little human communication can easily be automated. The most developed AI segment for Accounting is counseling on a wide variety of issues (Emetaram & Uchime, 2021).

Stancheva-Todorova (2018) explains that rapid technological evolution, namely the so-called intelligent one, associated with a constant increase in data and information, imposes not only storage and processing challenges, but also information security and management of what is strategic for decision-making. The author considers that this new framework makes accountants demand an interdisciplinary approach and experience in information systems, statistics, computing, storage and protection tools and ethical issues related to the use of intelligent technology. In the same line of thought Melnyk et al. (2020) present several studies and analyze impacts and trends.

Methods

Given the nature and scope of the problem under study and the defined objectives, the option fell on a descriptive study, with a quantitative and a qualitative component, which configures a mixed method (Teddlie & Tashakkori, 2009).

The quantitative component will be supported by a questionnaire duly prepared for this purpose, based on theoretical foundations, directed at Certified Accountants. Given the expected size of the sample, closed questions will be privileged and whenever appropriate, Likert scales will be used. In order to increase the number of responses and avoid completion by non-certified accountants, the Chartered Accountants Organization (OCC) will be asked for its support in disseminating the study.

The questionnaire will be developed on an online platform and its link will be made available in a study presentation letter, which will be sent by email with a request for participation by the OCC.

The qualitative component will be supported by an interview guide and will have the purpose of collecting comments on the data obtained and treated statistically. All quantitative data collected will be anonymous, confidential and treated in aggregate, using the Statistical Package for the Social Sciences (SPSS) program.

The combination of the two approaches (mixed method) allows for a better understanding of the phenomenon under study, as both techniques, both quantitative and qualitative, have strengths and limitations, and their use satisfies different purposes. Thus, the advantage of integration is to take advantage of the best of each method, in a vision that generates synergy (Creswell, 2014).

Having as a pillar that humans and machines can work efficiently and effectively together, this research proposal is guided by the following starting question: How can the use of artificial intelligence in accounting change the functions of certified accountants?

Effectively, as defended by Stancheva-Todorova (2018), technology can replace accountants in some of their functions, and can perform them more accurately and quickly than humans. Since this issue is a real finding, there is a risk of an increase in the unemployment rate for the profession, if accountants do not develop new skills and abilities in line with the expected changes due to the use of Artificial Intelligence in Accounting (Shaffer et al., 2020).

Thus, any successful strategy for the future of the profession will involve embracing technological challenges and adapting to the new business environment and management requirements. However, it is a relatively new problem, which needs reflection and to know what the present and future needs are, it is crucial to carry out research studies.

Considering the nature of the problem under study, the general objective was to analyse the impact of the use of Artificial Intelligence in accounting on the functions of the accountant. The following specific objectives were defined:

- Characterize the applicability of AI in Accounting;
- Knowing the opinion of Certified Accountants in Portugal on the growing use of AI.
- Research trends, assess consequences and possible changes in the accountant's functions.

In terms of summarizing and reflecting on work already done, it should also be noted that the survey carried out by the Chartered Institute of Management Accountants (CIMA) in collaboration with the University of Bath in 2010. This study shows that, all over the world, accounting professionals are embracing new responsibilities and assuming a more active role in the context of strategic management (Stede & Malone, 2010).

The literature review will allow us to validate the construction of the research questionnaire and the possibility of comparing the results obtained, in this sense it is important to identify the contributions of similar studies.

Chester and Peprah (2021), for example, opted for a descriptive and correlational method, having developed a questionnaire, which was validated by five experts and randomly applied to seventy accounting graduates at a private university in the Philippines. Although the aim of the study was to verify the correspondence between technical skills and the first professional experience of graduates in accounting, it proved to be interesting, by identifying the skills and calling attention to the pertinence of investing in skills that will be useful within 5 or 10 years.

Ramlall and Ramlall (2014), in turn, prepared a questionnaire which was applied to three hundred and thirteen students attending undergraduate and graduate courses in Accounting at different universities in the United States, having concluded that both institutions and students value the acquisition of transversal skills, in line with the needs and requirements of the labor market.

Chua (2013) synthesized emerging trends in the business sphere and the potential impacts of technology on the accounting profession with a horizon of five to ten years. The author presents ten trends with a special impact on the accounting profession: mobility; cloud; social collaboration; provision of digital services; big data; payment systems; cybersecurity; robotics; augmented and

virtual reality and artificial intelligence, and it is still necessary to consider future technological developments in general terms.

Kroon, Alves and Martins (2021) opted for a methodological approach of systematic review on the implications of recent technological developments on the role and skills of the accountant, analysing forty articles published between 2015 and 2020. One of the contributions of this study is the identification of the types of emerging technologies that have an impact on the practice of the profession and inherently on the necessary skills. The authors point out that although professionals may feel some threat from new technologies, they generate very interesting opportunities.

Results

In the study carried out by Imene and Imhanzenobe (2020), a qualitative investigation was developed to highlight the relationship between the accounting profession and advances in technology. The authors identify digitization, preparation and timely presentation of financial reports, record keeping and data storage, transaction processing speed and accuracy as relevant. For these researchers, given technological advances such as cloud computing, AI, virtual reality and augmented reality, the accounting profession is evolving and lacks new skills to keep up with technological trends.

Mancini, Lombardi and Tavana (2021) analysed articles stored in reference databases between 2000 and 2020, using a qualitative methodology supported by a bibliographic review. Starting from a collection of ninety-six documents, fifty-one were selected for the study. The authors concluded that scientific knowledge about the relationship between intelligent technologies and accounting is still in its infancy, and in view of the results obtained, they confirm the need for more research to help accountants, accounting systems and processes and accounting tools to monitor and benefit from technological innovations.

Conclusion

A research conducted by Nielsen (2020) allowed an analysis of the State of the Art on the subject, having concluded that accountants can see their responsibilities grow with the use of AI and that they can work together with data managers recommending content to explore and then be interpreted in the light of the company's strategic objectives.

For this author, accountants must recognize that technological skills are no longer something that is “nice to have”, but something that is “mandatory to have” and that they must also be more proactive in acquiring and maintaining a set of skills suited to the challenges that lie ahead. He also considers that AI offers an unprecedented opportunity for accountants as it allows them to create competitive advantages through anticipation, efficiency and accuracy.

Some limitations of the study are related with the fact that is still an exploratory analysis, the final idea is to promote further research processes in order to consolidate the findings.

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