ACCOUNTANCY PROFESSION IN A DIGITAL WORLD – TRANSFORMATION IN PROGRESS

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Abstract

The global economy has been experiencing enormous transformation in recent years. Technology and innovations have enabled organisations to reconsider their business models to satisfy the more specific market needs and the higher social expectations. Digital innovations such as robotic automation, generative artificial intelligence and developed digital platforms have already started reconfiguring traditional business operations. This whole change will not only enhance organizational efficiency but will also bring new potential for additional sustainable value. For sure this will be a change for the better and will leave a permanent footprint on the accountancy profession, being the "language of business". The purpose of this paper is to analyze the effect of new technological innovations on the role of the professional accountant. To meet the new rapidly shifting expectations, the way in which the accountancy profession is being practiced needs to be transformed and this paper will try to examine the general trends and challenges in this process of transformation. The main finding in this study is that the adoption of new technologies would rather increase than decrease the importance of accounting experts and it is crucial for them to adapt and acquire new digital skills, strategic understanding and a lifelong learning attitude to grasp the opportunities, which the new digital world is bringing to them.

Keywords: *digitalization, accountancy profession, digital skills, artificial intelligence*

1. INTRODUCTION

In his renowned book „Diffusion of innovations", Rogers (2003) tried to explain the spread of innovations by means of the sigmoid curve (s-curve), representing the rate of growth of a particular variable over time. Main implication of this theory is that when an established technology matures to its performance limit, it gives rise to an opportunity for new technology to develop. Since the first industrial revolution, technological innovations have been following such repetitive cycles of emergence, where one s-curve peaks and another takes off. For example, the first industrial revolution, driven by steam power was amended by the second industrial revolution, pushed by electricity generation, which on its turn was amended by the third industrial revolution, powered by automation, computer and software improvements. These processes have forced organizations to continuously innovate and transform. Propelled by the process of digitalization, the fourth industrial revolution makes this transformation process inevitable for organizations due to the increased accessibility of data and digital technology. According to the Gartner glossary "digitalization" is the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business. In a recent publication of the Association of Chartered Certified Accountants (Webb 2021) digital transformation is defined as a full adoption of digital technologies in the business processes and the integration of people, process and technology in using the data. Although still limited and uneven between larger organisations and small and medium-sized enterprises, digital transformation is not an option anymore. It is a necessity for organizations to maintain competitive advantage, to enhance efficiency and to optimize processes. The adoption of new technologies is exciting, but also challenging. It requires business leaders to clearly assess the potential of the new technologies in the context of the organization strategy. But it is the professional accountant who is considered to play a significant role in setting up the tone at the top for technology adoption. Due to their generic commitment to ethics and ethical behavior in exercising professional judgement, accountants are best placed to lead processes of compliance with regulation and ethics policies, to manage data, to challenge greenwashing, etc. (ACCA & EY 2020). Moreover, professional accountants are expected to actively participate in cross-functional

teams to navigate the new technology implementation processes. The continuously evolving digital horizon implies continuous transformation of organization's business models. This is a big change, but also a great new potential to add business value. It is a clear call for professional accountants to upgrade their skills set and to adopt the right mindset to navigate organizations successfully in the continual phase of digital transformation (Nikolova, 2023).

2. AIM OF THE PAPER AND RESEARCH METHODOLOGY

The purpose of this paper is to analyze the effect of new technological innovations on the role of the professional accountant. To meet the new rapidly shifting expectations, the way in which the accountancy profession is being practiced needs to be transformed and this paper will try to examine the general trends and challenges in this process of transformation. The main finding in this study is that the adoption of new technologies would rather increase than decrease the importance of accounting experts and it is crucial for them to adapt and acquire new digital skills, strategic understanding and a lifelong learning attitude to grasp the opportunities, which the new digital world is bringing to them.

To accomplish our research goal, we use an interpretive and critical methods approach. As a focal point for our attempts to better understand and analyze the impact of digitalization over the accountancy domain, the findings and conclusions of a few profound studies have been used. We contribute to this research strand by focusing on the new roles of the professional accountants in light of the digital transformation process as well as putting more emphasis on the new digital skills and competences, which practitioners should enhance in order to fit in successfully and to grasp the new opportunities, emerging from the new digital horizons.

3. THE EVOLVING DIGITAL LANDSCAPE IN THE CONTEXT OF ACCOUNTANCY PROFESSION

Brisbourne (2023) uses the number of patents issued as a benchmark for the growth of various digital technologies (Table 1). Artificial intelligence (AI) and Big data have marked enormous increase in recent years, while others such as Internet of Things (IoT) has witnessed fall-off. American computer tech giant, Oracle, defines big data as "data that contains greater variety, arriving in increasing volumes and with more velocity". In the accountancy profession Big data can identify patterns that indicate fraud and streamline regulatory reporting. It could provide a better understanding of market trends and customer needs, which can improve decision-making processes. The IoT describes the network of physical objects – 'things' – that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. Although it is a mature technology its application in accountancy is still important as providing real-time data improves decision-making process. By tracking the use and conditions of assets, IoT can provide accurate data for depreciation and maintenance data for better asset management. Virtual reality (VR) is a computer-generated artificial environment of pictures and sounds that is influenced by the actions of the person experiencing it. Augmented reality (AR) is a game-changing technology that seamlessly blends digital data with the physical world in real-time. VR/AR is advancing rapidly and is one of the top ten strategic technologies that will evolve through 2028 (Chukwuani 2022). Among the numerous applications of VR/AR in terms of accountancy, one of the most powerful is the possibility to create a 3D graphical picture of a company's financial status over a period, where different financial metrics such as revenue, costs, and profits are represented as different elements in the 3D space. This kind of visual representation can allow accountants and decision-makers to understand the financial data more intuitively. Another advancing technology is digital twinning. This technology has a lot of new potential implications in the accountancy sector. A digital twin works by digitally replicating a physical asset in the virtual environment, including its functionality, features, and behavior. Using this technology accountants can create virtual replicas of financial statement preparation processes to simulate different scenarios in order to optimize financial reporting. Computer vision is an AI-powered technology, which enables computers to automate tasks that require interpretation and understanding of visual information. It is a maturing technology, which in accounting is very useful for invoice processing by reducing

manual data entry input. Robotic process automation (RPA) is a virtual worker, that mimics human beings in fulfilling repetitive tasks such as data entry and reconciliation including the process of closing books at the end of a financial period in a timely and accurate manner (Hazar & Toplu 2023). Blockchain technology is an advanced database mechanism that allows transparent information sharing within a business network. A blockchain database stores data in blocks that are linked together in a chain.

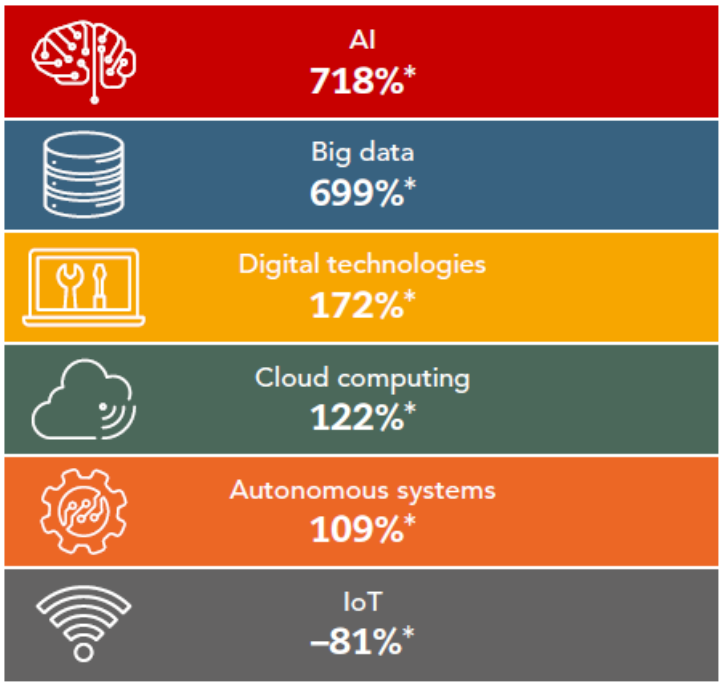

Table 1. The growth of various digital technologies, 2016–2020, measured by patents issued

Source: Brisbourne 2023.

In accountancy context it is an evolving distributed ledger technology, which records transactions across multiple computers in a secure and transparent manner and is considered fundamental change in the accounting domain as it introduces a new way the accounting records are generated, stored and updated (Stancheva-Todorova 2020a, 2020b). As the Blockchain method allows the use of one single ledger, reconciliation between counterparties is avoided, costs savings are realized, and efforts of the transacting business parties are significantly decreased. It is a major shift from traditional bookkeeping characterized by organized central controlling to guarantee data trustworthiness. Moreover, blockchain is granting view-only access, by which third parties as regulatory bodies, tax authorities, etc. could perform a real-time monitoring of transactions leading to cost savings and enhanced efficiency of regulatory and compliance activities (ICAEW 2018), AI and machine learning (ML) are technologies, based on the capability to learn from data, to make decisions and to improve over time with a level of autonomy. AI and ML are a set of technologies, enabled by adaptive predictive power that advance our ability to recognise and detect patterns, anticipate and forecast future scenarios, create rules to optimise outcomes and make decisions (Brisbourne 2023). Although very sensational nowadays, in fact AI is not a new technology. It was 1950, when the famous work of Alan Turing, called the father of computer science, was published, asking 'can machines think?' He detailed a procedure, called the Turing test, to determine whether a machine could imitate human conversation and thus formed the basis for AI. Its initial potential was partly limited by the lack of enough computing power and the ability to store information. AI is now an advanced technology but is still developing on a regular basis with new models and methods. In accountancy context AI can analyse enormous quantities of financial data and

thus to overcome the limitations of the traditional spreadsheets. Another trend is that AI algorithms can analyze vast datasets, identify patterns, and catch potential risks that humans might overlook. AI has the special ability to facilitate the tools, already integrated in the organization's financial system. Besides, the direct positive impact on enhancing efficiency and error reducing, AI has indirect impact on the accountancy through other applications in customer service, supply chain, human resources, cybersecurity, etc. All these features of AI make it the driving force of the current digital horizon and the potential for AI to become a general-purpose technology (GPT) is maybe the most valuable trend of AI development in terms of accountancy. It only took five days for OpenAI's ChatGPT to reach a million users (Fig.1). One factor for this might be the early release for public consumption, as this is a developing technology, and the networking effect would further propel its advancement. Another factor is that the generative AI is built upon a very longstanding field of research and development and its success is as much to do with the development of more efficient hardware and cost-effective computing power (Brisbourne 2023).

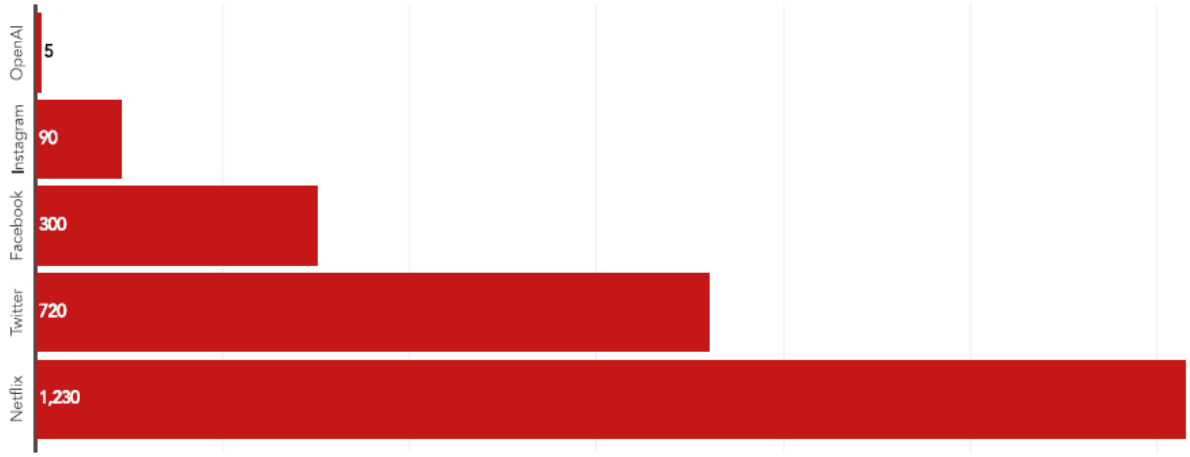

Fig. 1. Time in days that various platforms took to reach one million users

Source: Brisbourne 2023.

4. MAIN CHALLENGES OF TECHNOLOGY ADOPTION AND THE NEW ROLE OF THE PROFESSIONAL ACCOUNTANT

The present digital landscape is shaped by rapidly developing technologies, which are raising great expectations by promising unprecedented efficiency and capabilities. Nonetheless, some of these technologies show a relatively low level of development. ACCA has performed a survey (Brisbourne 2023) aiming to analyse the level of visibility versus the level of development of AI technologies. Results show that Big data and IoT score highly in both visibility and development, while AI and ML, despite the robust visibility score, show a pretty low level of perceived development. It is obvious that AI and ML's potential impact over the accountancy profession is widely recognised; however, practical implementation seems to be a complex process and many organizations might struggle with adopting these new technologies. Whether it would be a transition from a legacy IT system to a modern digital platform or digitalizing business processes and workflows, the implementation of a new technology is a challenging process. The stated ACCA survey paper has ranked the challenges faced by organizations when new technology adoption is taking place (Table 2).

Expectedly high costs are presented as the most significant challenge. Managing costs and budget for adoption of new technology is essential as it affects the scope, the quality and the timeline of the process. There is always a risk of unexpected expenses and cost overruns. To address this challenge detailed planning is crucially needed and professional accountants should proactively take part in this process. By creating a detailed cost-benefit analysis and by continuously monitoring expenses against the budget,

professional accountants can ensure financial transparency and accountability, as well as prevent cost overruns. This proactive approach, together with effective communication with stakeholders could mitigate financial challenges and could ensure cost effective and successful adoption of new technology solutions.

Employee resistance to adoption is ranked second as particularly significant challenge when adopting new technologies. The more technologies develop and become more efficient, the more concerns about job losses continue to grow. The 2023 Future of Jobs report by the World Economic Forum (2023) has reflected that accountants and bookkeepers are among the top professions expected to be less demanded by organizations due to the global technological adoption process. Another important trend has also been highlighted: that the pace of automation has been significantly slower than was expected previously. Overall expectations for the accountancy profession are shifting dramatically. Although continuous employee resistance is still challenging technology adoption, many believe that professional accountants are in a really good position as the adoption of new technologies rather increases than decreases the importance of accounting experts (Brisbourne 2023). New technologies could increase productivity but are still unable to think critically and to make judgements when taking decisions. One example is the so-called AI hallucination, where AI systems confidently assert claims, which are untrue. The role of the professional accountants is to be adaptable and flexible, to be open-minded and to accept the lifelong learning attitude. Accepting the adoption of new technology as a benefit, rather than as a threat will empower accountants to help businesses create better strategies and develop more effectively. Accountants may not be IT experts, but understanding how new technologies work, combined with their existing business knowledge will become a game-changer for the whole profession.

CHALLENGES	RANK
High costs	1
Employee resistance to adoption	2
Data quality / migration concerns	3
Poor IT legacy systems making implementation difficult	4
Understanding how to combine with other technologies	5
Lack of technical leadership	6
Return on investment / payback	7
Identification of the processes most suited to new technology	8
Poor clarity on process ownership and accountability	9
Poor IT security to govern implementation	10

Table 2. Ranking of challenges faced when introducing new technologies

Source: Brisbourne 2023.

Rated third is the data quality concern challenge to technology adoption. Being fundamentally probabilistic most of the new technology solutions produce data according to predefined patterns and statistical correlations, which means they are not always entirely accurate. From accounting perspective,

the importance of using data to generate information to support an insight is crucial. Being the organization's active players in data governance, accounting professionals have a key role to play in ensuring good data quality, relevance, accuracy and compliance with legal and regulatory requirements. Due to their commitment to ethics and ethical behavior, professional accountants should set up the tone at the top on new technology adoption process and should take the lead in complying with regulation and ethics policies, data management, including its quality and confidentiality.

The rest of the stated challenges are a matter of leadership. One of the biggest challenges which leaders face in new technology adoption is integration with legacy systems. The incompatibility of the aging systems requires careful planning to ensure their modernizing in the most efficient way possible. Part of this problem is the lack of understanding how to combine the new technology solution with other existing technologies in the organization. Lack of technical leadership would prevent leaders from deciding where transformation is most needed and how it could serve the organization. In this way identification of the processes most suited to new technology would not be possible and new technology adoption would fail. In addition, poor clarity on process ownership and poor IT security to govern implementation are significant challenges to be faced by leadership teams when implementing of a new technology takes place in the organization. Adoption of new technology requires a digital leadership, which means application of holistic mindset, performing a clear planning and executing of a careful study where this new technology would best impact on revenue, market share, customer experience, security, productivity and other business metrics. Apart from that, digital leadership is fostering a culture of innovation and empowers teams to develop skills and adapt to new ways of working, which is a critical factor for successful adoption of new technologies. There is a clear call for professional accountants to help drive the new technology adoption process. By verifying accuracy of data produced by the adopted technology, by assessing its fairness and by ensuring its accountability they will help business and society work through these challenges.

5. NEW SKILLS AND COMPETENCES IN THE ACCOUNTANCY DOMAIN IN LIGHT OF THE DIGITAL TRANSFORMATION

Moving into the digital direction would require professional accountants to enhance their skillset with digital literacy. It would be vital for them to understand the capabilities, limitations and potential application of the new technologies in the specific organization. To be data literate means to be capable of identifying relevant data, to understand how it can add value and to know how it can shape decisions in line with the business strategy and goals. Data literacy can be broken down into four cornerstones – accessing data, processing and summarising data, analysing data, and predicting future trends based on data (Brisbourne 2023; Madlener et al. 2018) (Fig.2). Each of these elements requires from professional accountants to master different sets of skills.

In digital context to access data for accountants means to be able to work with different technological tools and applications so they can download and manipulate data. This requires basic coding skills to understand how a code works. Data is presented in various forms and the accountant should be able to comprehend it, in order to use it. Being able to interpret what a code means from a business perspective is one of the most valuable technical skills for professional accountants nowadays. This does not mean that accountants should become programming experts. However, they need to get a good understanding of the analytical methodologies, standing behind the datasets.

When processing and summarizing data, professional accountants need to know how the data is composed, where it originates from and who has generated it. Having this knowledge will give the accountant a better understanding of the context and the perspective from which the data has been created. This would help them interpret, process and summarize better the datasets. Digitally generated information should never be taken for granted and critical thinking is essential for accountants when processing data. An important capability when summarizing data is to visualize it in such a way that a clear message is sent to the interested audience. This requires considering who the data consumers are and what their information needs are, so that the data visualization is relevantly adjusted.

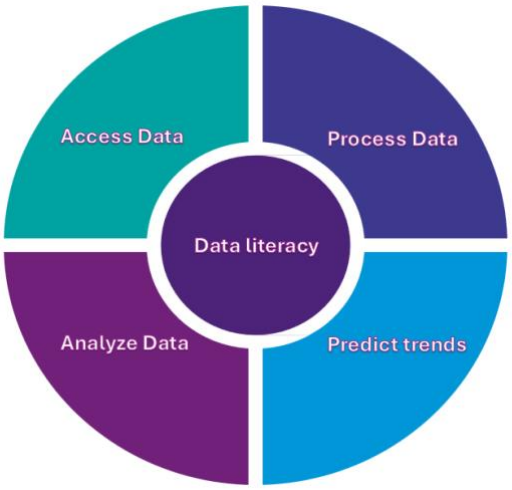

Fig. 2. The four cornerstones of Data literacy

Source: Madlener et al. 2018.

Accessing and understanding information by the means of new technologies is assisting accountants in creating information. But to generate further insights professional accountants need to analyze the datasets. The ability to apply statistical and analytical methodologies in analyzing digitally delivered data in the specific business context and thus to create valuable insights for the organization is one of the most important capabilities for professional accountants nowadays. But this is not about traditional financial analysis based on historical information. It is about a shift in thinking and going beyond generic accountancy practices, to explore data analytics and data science to leverage technology and predict the future. Professional accountants should have strong communication skills to interact with other departments because they can bring in some insight from the users' perspective or from the product's perspective. Finally, professional accountants should possess broad interdisciplinary knowledge to interpret data from a financial perspective and thus to make better predictions and enhance strategic business planning.

6. DISCUSSION AND CONCLUDING REMARKS

The current digital landscape and AI as its main driver is representing another revolution in the history of innovation. Although expectations for unprecedented efficiency is so far ahead of practical implementation of new technologies, there is a straightforward message that we are entering a phase of continual transformation. There is a call for professional accountants to take key part in this process by stepping forward and embracing the imperatives of the 21st century to integrate the finance function into the new digital economy. Main challenge in this process is to translate business problems into problems, which can be solved by the means of the new technologies. Moving in this direction, professional accountants are required to enhance their technical skillset with digital literacy. They do not need to become IT professionals. However, they should understand what technologies can and cannot do, and how it could be applied so that complex data is translated into a reliable and meaningful business insight. Professional accountants should re-think traditional accounting practices in order to leverage new technologies in the specific business context. Results from a recent comparison of current skills against future skills requirements, performed by ACCA (Brisbourne 2023), show that many skills, which are currently low ranked are expected to top the list of future skills requirements. Workbooks and Cloud storage of accounting systems, which are leading in the current skills list are expected to be displaced by advanced analytic tools, forecasting tools and RPA. This is additional proof of the increased demand of technical skills in the accounting domain. In fact, technical skills have always been part of the accountant's skillset. However, a calibration process has started and while data entry, invoice processing and data summarization will become skills of low demand in future, new more complex skills

such as data science, analytical reasoning, data-driven decision-making, basic coding, IT architecture, etc. will become of higher interest and demand. To remain relevant in the changing landscape, professional accountants should not rely exclusively on data literacy, since it is strongly dependent on business understanding and a successful future accountant would need more than just enhanced data skills. Analytical skills, interpretation skills and decision-making capabilities will remain some of the most valuable skills, which require human expertise. Digitalization may offer productivity and efficiency improvements but is unable to replace human critical thinking and still cannot make decisions, based on a few contextual factors. The new digital horizon brings plenty of challenges, but also new potential to add value. Possessing a mindset for continuous improvement, combined with the right data skills will advance accountants' capabilities and will let them grasp the new opportunities, emerging in the process of continual transformation ahead. Representing a new cycle in the history of innovations digital revolution will transform traditional industrial thinking. Like in the past, while new capabilities will amend some tasks from the last cycle, new development opportunities will rather increase than decrease the importance of professional accountants in the new digital world.

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