



THE EVOLUTION OF THE ROLE OF THE ACCOUNTING PROFESSION IN THE DIGITAL AGE: CHALLENGES AND OPPORTUNITIES

Mohammed Yahya Alhajjar*

* Ferdowsi University, College of Administration and Economics, Master of Accounting, myh.alhajjar@gmail.com

Article history:	Abstract:
<p>Received: 20th July 2023 Accepted: 20th August 2023 Published: 20th September 2023</p>	<p>This research aims to explore the evolution of the role of the accounting profession in the digital age. It also aims to analyze the challenges it faces, including legal, regulatory, professional and ethical challenges which are associated with this transformation. It also aims to explore the opportunities for professional advancement and improving accounting performance in terms of increasing efficiency and accuracy, improving decision-making processes and developing accountants' skills.</p> <p>The researcher concluded that digital technology and automation are making a significant change to the accounting profession, and that the performance of accountants is improved by the use of advanced accounting systems, electronic financial reporting, audit technology and risk management. It also found that the transition to the cloud and electronic storage is important to improve the access and sharing of accounting information centrally and securely. Security and privacy challenges require accountants to take action to protect financial data and account information from cyber intrusions. Becoming a consultant and a leader reinforces the role of accountants by using financial analysis and artificial intelligence to provide strategic guidance and advice for innovative financial decision-making. Adopting and leveraging digital technology enhances accounting performance and provides added value to organizations in the digital age.</p> <p>The researcher recommends that accountants should be an active part in the digital transformation of organizations, through the implementation of advanced accounting systems, the development of electronic financial reports, and the use of technology to improve audits and risk management. Moreover, they must be prepared for continuous learning and following technological developments and financial and accounting laws. They should also enhance communication and collaboration skills to effectively exchange knowledge and information. It is also necessary to improve accounting measurement and disclosure, develop accounting standards to keep pace with digital transformation, and raise the efficiency of faculty members to develop teaching methods and use e-learning and modern means to develop competent accountants.</p>

Keywords: Accounting Profession, Digital Age, Big Data, Blockchain Technology.

INTRODUCTION

Modern societies live in an advanced technological age witnessing a revolutionary digital transformation in various aspects of daily life. One of the areas that is most affected by this shift is accounting. In light of the continuous technological advancement, the accounting profession faces new challenges that require accountants to adapt and continuously develop their skills and methods of work. In October 2013, a joint report was released by the Institute of Management Accountants (IMA), Association of Chartered Certified Accountants (ACCA), with the participation of researchers and accounting experts and more than 2,100 members of the Institute and the Association. The report confirmed that there are ten key technologies that will reshape the accounting profession, including Big Data, Cloud Mobile Computing, Cyber Security, Artificial Intelligence, Robotics & Artificial Intelligence, Education, E-Payment Systems and Virtual Reality, digital services, and social media.



Respondents to the report were surveyed on the impact of these developments on the accounting profession over the next ten years. The results showed that 81% of the respondents expect a significant change in the profession, and 18% expect a complete change. In addition, 87% of them expected the use of big data to spread in the coming years. (Tantawi, 2023, p. 476)

Due to the advanced technologies used in computer systems, this digital transformation requires modernization and improvement in concepts, rules, procedures, accounting standards and financial reports to keep pace with this transformation, as complex and difficult accounting transactions can now be carried out easily and quickly. Future transformations include the replacement of traditional accounting methods, such as reliance on papers, registration receipts and advertisements, all of which are implemented through the use of internet-based accounting systems such as cloud computing¹, blockchain technology² and artificial intelligence. (Muhammad Ali, Ma'touq, 2021, 670)

We try to make this article a useful reference for accountants and accounting researchers who want to understand the digital transformation taking place in their profession and take advantage of the available opportunities. We will provide a comprehensive analysis of potential challenges and opportunities, as well as review innovative digital tools and applications that can enhance accounting capabilities in this context. We will also highlight the concept of smart accounting and how to employ big analytics, artificial intelligence and machine learning techniques to improve accounting processes. We will also discuss ethical challenges that may arise in the digital age, such as protecting financial data and dealing with privacy and security issues. We will also show ways in which accountants can approach these challenges in ethical and responsible ways.

2- DIGITAL TRANSFORMATION AND THE CHALLENGES OF THE ACCOUNTING PROFESSION:

2.1 Digital Transformation:

Digital transformation is defined as the process of companies moving to a business model based on the use of technologies in the development of products and services, providing new channels for revenue and increasing the value of products. (Adnan, 2019, p. 3)

That is, it is a comprehensive process of change in institutions and societies based on the use of digital technology to improve processes, promote innovation, and achieve development and change. Digital transformation involves transforming traditional processes and activities into more efficient and effective digital forms, such as shifting from paper to electronic documents and from traditional communications to digital communications with the aim of achieving sustainable improvements in performance, customer experience and product and service innovation.

Digital technology and innovations are an essential part of the modern era, as the world is witnessing a revolutionary digital transformation in various industries and sectors. One of the areas that is most affected by digital transformation is accounting. Digital transformation in accounting refers to the use of digital technology and electronic systems to improve and simplify accounting processes and enable accountants to provide greater added value to the organizations and companies in which they work.

2.2 Accounting challenges in the digital age:

With the accelerating digital transformation, the accounting profession is facing new challenges that require accountants to adapt and continuously evolve their skills and work methods. We review some of the key challenges accountants face in the digital age:

A. Technological change: The rapid development of technology requires accountants to deal with advanced accounting systems and new technologies. For example, Big Data analysis requires strong analytical capabilities and a deep understanding of complex financial data.

B. Legal and regulatory transformations: Accounting and financial reporting laws are constantly changing, so accountants must stay abreast of new legal and regulatory requirements. For example, the application of International Accounting Standards (IFRS) and compliance with changing financial and tax legislation poses a challenge for accountants.

Information Security and Privacy: With the increasing use of technology in accounting, challenges arise with regard to the security of financial information and sensitive data. Accountants must have a deep understanding of the security

¹ Cloud computing is a term that refers to the computer resources and systems available on demand over the network that can provide a number of integrated computer services without being restricted to local resources in order to facilitate the user.

² Blockchain technology is one of the technologies enabled by the global distribution of computing power. Simply put, blockchain technology is the digital ledger in which transactions are recorded. (<https://www.un.org/ar/44863>)



risks and measures necessary to protect data from cyber leaks and intrusions and maintain the confidentiality of information.

C. Cultural Transformation and Training: Digital transformation is also a cultural shift for accountants, where they must adopt and learn new technology and sustainable ways of working with technology. Digital transformation requires continuous training and learning to keep accountants' skills up to date and keep pace with technological developments.

D. Professional and ethical challenges: This shift exposes accountants to new ethical challenges, such as security, reliability and confidentiality. Accountants should be able to deal with these challenges ethically and responsibly, and ensure that accounting is practiced in ways that meet professional standards and ethical rules.

E. Difficulty in accessing information for reasons of security and privacy.

F. As a result of this qualitative shift at the level of accounting work in terms of the abundance of treatment programs and the reduction of many stages generate fears of losing many jobs.

G. In addition to the lack of preparedness of accountants to face the transformation of digitization, it is noted that when the current accounting and auditing standards were issued, the current information technology was not fully available. Not enough attention has been paid to digital transformation in the financial sphere and has not yet been reflected in the accounting model. In general, if the database is available, there will be no significant change in accounting disclosure. (Titera, 2013, p. 136)

2.3 The impact of digital transformation on accounting

The role of accountants is affected as a result of digital transformation, as their role shifts from a traditional role of data recording and financial reporting to that of a data analyst and a physical steward of privacy and ethical use of data. This requires accountants to master the skills of collecting, managing and analyzing financial and non-financial data. (Shannan, 2020, p. 39)

In addition, the accountant will serve as a link that bridges the gap between what the traditional accountant does of financial work on the one hand and what is done by the information technology department (software engineers) on the other hand. So the accountant in this case must learn new skills in statistics, mathematics and analysis.

Accounting standards can be developed to keep pace with digital transformation and included in accounting disclosure. Technology in this context, such as text databases and their analysis, voice data, images, emails, web pages and social media, can be used and widely applied in the field of accounting through disclosures. (Agostino, 2016, p38)

The significant expansion of business reports will undoubtedly affect the accounting measurement and disclosure of employers, as a result of technological development. It has become common to use ready-made accounting and auditing programs, so the results will affect the decisions of regulators and standard-setters. (Vasarhelyi, 2012, p. 25)

To focus more on the development opportunities that digitization offers to the accounting profession, there are two techniques for digital transformation:

First: Blockchain Technology

Drescher defined it as a distributed database that is shared after agreement through a peer-to-peer network. Blockchain technology is based on the concept of implicit blockchain, where transactions are grouped into blocks and then the blocks are linked together by the hashing process. To form a continuum of blocks, a copy of this chain is stored on several devices participating in the distributed network, making it resistant to forgery and penetration, recording transactions on a time-bound basis and securing that information by public encryption and verified by network members. (Seebacher and Schüritz, 2017)

Blockchain is characterized by a set of characteristics, including:

A. The work of a blockchain is a general ledger where there is no central database that can be hacked or tampered with. (Staley, 2016)

B. Through their personal devices, the subscribers of the nodes (network) verify the validity of the information entered. (Andersen, 2016)

C. The combination of lack of central authority, distributed ledger uses and cryptography characterizes the ledger as non-modifiable. (Yermack, 2017)

D. No user in the network can modify the registry unilaterally, as each entry is stored in multiple copies with each account in the network, and this procedure protects the system from any attempt to hack or damage the system. (Pradhan, 2018)

E. Blockchains help to add reassurance and trust because transactions are made directly between users without intermediaries. (FRC, 2018)



It is an available database that can be used and shared at any time and place without any restrictions. (Rao and Pandurangiah, 2018)

The quality of accounting information is positively affected by digitization as the effective implementation of blockchain technology in the accounting environment enhances the quality of accounting information that will be presented in financial reports. (McComb and Smalt, 2018)

The use of blockchain technology has many advantages, including that it reduces the cost of keeping transaction records to a large extent. At the same time, that data is available anywhere and anytime, and also it is difficult to manipulate that data because any change in it can be detected through the technology used. Adding to the features of blockchain, it contributes to eliminating the need for settlements because transactions are recorded instantaneously with continuous updating in the ledger, so there is no need for accounting adjustments. In addition, other advantages are speed, transparency, reliability of data, reduction of errors. (Kwilinski, 2019; Sarkar, 2018)

Also, accounting education is affected by digital transformation, as it was noted that Jiaotong University in Beijing, China has become one of the seven model universities that adopt an innovative curriculum based on the use of big data. In America, they began to change the ways and means of education, as the use of digital devices dedicated to each student is now adopted as an educational method. Also, at the University of Arizona, the teacher is no longer the only one who helps students with their academic progress, but there is a program that collects, analyzes and compares data, which provides each student with the learning materials they need. (Coyne, 2016, p161)

Second: Big Data

The concept of big data is one of the relatively recent concepts that have emerged recently in the digital age with the information revolution and came as a result of the increase in the volume of business and the large number of data as a result of what is collected as a result of activities and the different processes of tabulating, analyzing and classifying data in different structures. (Turhan, 2022)

Big data³ is defined as information assets of large size, high speed, and various sources, which require new templates and forms to operate and manage this information properly to help decision makers, so it requires a user with knowledge of strategic planning and statistics to develop algorithms and build predictive models. (Laux et al., 2021)

Big data is distinguished from traditional data in many advantages that contribute to increasing productivity, improving services, and the consequent increase in profitability and raising the efficiency of operations, as it is characterized by its large size with rapid growth, reaching very large numbers that need processors and devices capable of absorbing it. It is also characterized by speed in processing inputs and giving results, and diversity, i.e., the multiplicity of data forms. Its most prominent features is that its output is valuable as it processes idle data and turns it into information that contributes to creating added value. (Turhan, 2022)

Platov (2021) concluded that it is beyond doubt that the practical application of management accounting under the influence of B.D³ has become imperative for all stages of operation in the organization.

4. CONCLUSIONS AND RECOMMENDATIONS

First: Results

Through the theoretical review of studies and research related to the subject of research, the following can be concluded:

A. Increasing automation and digital technology: Research suggests that the development of digital technology and automation will lead to a significant change in the nature of accounting work. Accountants can have many smart accounting tools and programs that facilitate and speed up audits and financial reports.

B. Switching to cloud and electronic storage: The researcher concluded that the use of cloud storage and electronic storage will become more widespread in the field of accounting. This means that financial documents and accounting information will be centrally available and accessible anywhere, any time.

C. Security and privacy challenges: Research indicates that the digital age is facing increasing security and privacy challenges, which necessitated the emergence of so-called cybersecurity. So, accountants must be aware of the risks of electronic intrusions and theft of financial data, and they must take the necessary measures to protect sensitive information for the company and customers.

D. Orientation towards consulting and leadership: Research suggests that accountants are shifting from being mere financial reporting providers to a consulting and leadership role. Accountants can leverage financial data analysis and information to provide strategic guidance and advice that helps the company make better financial decisions.

³ Big Data



E. Mega Analysis and Artificial Intelligence: The research found that Big Data technology, blockchain and other artificial intelligence technologies will play an important role in the future of accounting. Accountants can use these techniques to analyze large amounts of financial data and derive important insights for strategic decision-making. Digital transformation techniques improve the quality of accounting information that is reliable and appropriate to improve the quality of financial reporting.

Second: Recommendations

A. Digital transformation of organizations: Accountants should play an active role in promoting digital transformation within organizations. This can include implementing advanced accounting systems, developing electronic financial reports, and using technology to improve audits and risk management.

B. Focus on analysis and strategy: Accountants should develop their capabilities in the field of financial analysis and strategy, in order to provide more added value to organizations. Accountants must be able to interpret and analyze financial statements comprehensively to make informed strategic decisions.

C. Continuous acquisition of knowledge: Accountants must have a willingness to continuously learn and follow technological developments and financial and accounting laws. They should participate in relevant training courses, seminars and conferences and make use of online educational resources.

D. Communication and Collaboration: Accountants must enhance communication and collaboration skills, as they deal with multidisciplinary teams within organizations. They must have the ability to communicate effectively with other team members and share knowledge and information effectively.

E. The development of accounting measurement and disclosure must be sought through digital transformation techniques, as well as the development of current accounting standards to keep pace with the development.

F. Raising the efficiency of faculty members to contribute to the development of teaching methods and the application of e-learning and the use of all modern means so that they can provide the profession with competent accountants capable of keeping pace with the new updates related to the accounting profession.

5 - REFERENCES

First: References in Arabic

1. Al-Tantawi, 2023, The impact of big data on the role of the management accountant in the era of digital transformation: a field study, *Journal of Accounting Research*, first edition, p. 476.
2. Mohamed Ali, Matouk, 2021, The impact of digital transformation on the accounting and auditing profession and accounting education in Libya: obstacles and solutions, *The Fifth International Scientific Conference of the Faculty of Economics and Commerce (The Future of Arab Economies in Light of the Spread of Epidemics and Health Pandemics)*, p. 670
3. Adnan, Mustafa Al-Bar, 2019, Digital Transformation Technologies, *Journal of King Abdulaziz University, Saudi Arabia*, p. 3
4. Shannan, Ali Abbas, 2020, The impact of big data as one of the tools of digital transformation on the development of the accounting profession, a field study, the eighteenth international scientific conference, Faculty of Commerce, Alexandria University, *Digital Transformation*, p. 39.

Second: References in English

1. Titera, W. R., 2013 "Updating audit standard enabling audit data analysis", *Journal of Information Systems*, Spring, pp. 136-147.
2. Agostino, D. & Sidorova, Y., 2016, "A performance measurement system to quantify the contribution of social media: new requirements for metrics and methods", *Measuring Business Excellence*, vol. 20, No. 2, pp. 38-51.
3. Vasarhelyi, M. A., 2012, "AIS in a more rapidly evolving era", *Journal of Information Systems*, Spring, pp. 25-36.
4. McComb, M. and Smalt, S., (2018), "The Rise of Blockchain Technology and its Potential for Improving the Quality of Accounting Information", *Journal of Finance and Accountancy*, Vol. 23.
5. Coyne, J. G., Coyne, E. M., & Walker, K. B., 2016, "A model to update accounting curricula for emerging technologies", *Journal of Emerging Technologies in Accounting*, No. 13, pp. 161-169.
6. Kwilinski, A., (2019), "Implementation of Blockchain Technology in Accounting Sphere", *Academy of Accounting and Financial Studies Journal*, Vol. 23, No. 2.
7. Sarkar, S., (2018), "Blockchain Technology: A Game Changer in Accounting", *The Institute of Cost Accountants of India (ICMAI), The Management Accountant*, Vol. 53, No. 6.
8. Seebacher, S. and Schüritz, R., (2017), "Blockchain Technology as An Enabler of Service Systems: A Structured Literature Review", *International Conference on Exploring Services Science*, Available At: <http://www.springeronline.com>.



9. Staley, O., (2016), "The Unsexy Future of Block Chain is Accounting", Quartz, Available At: <http://www.qz.com>, (accessed June 20, 2019).
10. Rao, U. and Pandurangiah, S., (2018), "Blockchain Technology: A Game Changer in Accounting", The Institute of Cost Accountants of India (ICMAI), The Management Accountant, Vol. 53, No. 6.
11. Andersen, N., (2016), "Blockchain Technology: A Game-Changer in Accounting?", Deloitte, Available at: <https://www2.deloitte.com>.
12. Pradhan, S., (2018), "Blockchain Technology: A Game Changer in Accounting", The Institute of Cost Accountants of India (ICMAI), The Management Accountant, Vol. 53, No. 6.
13. Financial Reporting Council (FRC), (2018), "Blockchain and the Future of Corporate Reporting How Does it Measure up?", Available At: <http://www.frc.org.uk>.
14. Turhan, Sultan Nezihe, (2022), "Internet of things and big data analytics", Industry 4.0 and Global Businesses, Chapter 3, Emerald Publishing Limited, pp. 31-53.
15. Laux, Chad; Atal, Nimita & John Springer, (2021), "Six Sigma and Big Data", Lean Six Sigma in Higher Education, Chapter 11, Emerald Publishing Limited, pp. 171-184.
16. Platov, Alexey; Kalemulloev, Munir; & Shakhlo Zikirova, (2021), "Management accounting in the context of digitalization", SHS Web of Conferences 106, 01037, MTDE 2021, pp. 1-7, <https://doi.org/10.1051/shsconf/202110601037>.