

Advanced accounting perspectives in the light of leading economic digitalisation processes

Elena Evstafyeva

Department of Accounting
Rostov State Economic University
B.Sadovaya str., 69, 344002 Rostov-on-Don
Russian Federation
e-mail: 2982232@mail.ru

Irina Kislaya

Department of Accounting
Rostov State Economic University
B.Sadovaya str., 69, 344002 Rostov-on-Don
Russian Federation
e-mail: kislaya_irina@mail.

Iulia Kruchanova

Department of Accounting
Rostov State Economic University
B.Sadovaya str., 69, 344002 Rostov-on-Don
Russian Federation
e-mail: consult161@mail.ru

Abstract This paper focuses on the advanced perspectives for modern top-notch accounting that employs some leading processes that have their roots in the recent trends of digitalization. With the current boom of information and communication technologies (ICT), accounting embraced many novel tools and instruments that help to achieve its results faster and with a smaller margin of error. As accounting professionals continue to embrace digitalization of accounting, they help more companies achieve new growth and development perspectives. Innovations that blend together digitalization with the traditional financial products induce a revolution in accounting meaning that taxes are better reported and collected. Furthermore, cloud computing and modern management have a major impact on accounting and accountants and the way they are providing their services. All in all, it appears that the success of automation strategies and the emergence of the digital age depend to a large extent on human factors: individual employees and a holistic human resources strategy.

1 Introduction

Accountants worldwide face rapid digitalisation and automation which might threaten their jobs because their jobs are centred around such mundane tasks as accounting and data entry (Dimitriu and Matei 2014). Nevertheless, thanks to centralisation and economies of scale of multiple customers, suppliers of financial services are capable of delivering various types of tasks in a more effective way (Taipaleenmäki and Ikäheimo 2013).

In spite of that, accountants nowadays fully understand the opportunities of digitalisation, information technologies and the use of neural networks including the artificial intelligence (AI). Those opportunities fundamentally alter the current state of things and business models with applications to be found in, for example, tax management and services (e.g. TurboTax, a popular app that allows tax preparations for a subscription fee and without any physical interactions between the customer and the accountant) (see e.g. Baldwin et al. 2006; Omoteso 2012). In addition, it is possible to develop many novel business applications such as implementations services, information acquisition and analysis, all done by the algorithm-based machine learning solutions.

Digitisation is not a substitute for traditional systems, but rather the use of technology to improve existing systems or services. However, it is not only technology, but also the changing business scenario, business processes and operating culture that drive digital transformation to success. For financial institutions, digitisation is more than just a cloud, large data, social media or mobile technology. The adoption of new technological tools increases process automation for services such as money transfer, order fulfilment, invoicing and KYC verification. Digitalization has changed financial models to allow resources to focus more on the acquisition of information than on transactions. Digital transformation has helped to automate monotonous tasks, manage compliance and

operations, including accounting, reporting and analysis. The digitalization has enabled new opportunities in the banking, lending and capital market sector.

Today, about 85 per cent of small businesses regularly use QuickBooks to track their invoices, invoices, payments, payroll, inventory, general ledgers, financial reports and many other accounting tasks. In order to speed up the accounting process, it has integrated its online translation value chain with QuickBooks automating invoicing and invoicing. Quickbooks also integrates with a number of Inventory management tools that can be more suitable for improving the supply chain, such as Cin7, TradeGecko, ShippingEasy, fishing Fishbowl, InfoPlus, final Inventory, Shopventory, point Labs, and local Inventory (Rathi and Given 2017).

It has been estimated by the International Energy Agency that digital solutions and technologies applied in financial services and business might help to decrease the costs of production by almost 20 per cent with smart meters and AI-based applications constituting a very important part of that (IEA, 2017). More examples also include global positioning systems (GPS), smart trackers, geographical information systems (GIS) as well as other alternatives such as GLONASS. The main effects of digitalization can be structured to three aspects: physical goods to becoming digital services, digital platforms for decision making, globalization of the markets through digitalization and internationalization of both the production marketing and incorporating digital technologies in management and production chain.

With the increase in machine learning and artificial intelligence (AI) applications and the impact on accounting and financial responsibilities, human resources professionals also have the opportunity. Some authors, such as, for example, Breman and Felländer (2014) demonstrate that many jobs might be employing information technologies in the place of human beings for reducing the production costs and making the production more efficient. However, not many firms are exploring this potential though as digitalisation require a change in business strategies (Frey and Osborne 2017). Firms new to digitalisation business tend to digitalize only specific parts of their management and production chain with non-standardized digital technologies not integrated with one another. This separation decreases the effectivity of use of digital technologies both for the employees and the customers and decrease the effectivity of the firm (Kane et al. 2015)

The audit is the other process which will experience major changes due to digitalisation. Auditing typically involves more than 40 percent of the financial statements of some companies and 80 percent of online businesses. CPA requires a background in higher education and the professional skills of employees are essential for the growth of accounting firms. For example, the line between accounting and auditing responsibilities, the identification of digital audit certificates and the interconnection and interoperability of accounting systems.

When it comes to audits, digitizing the audit process will help to improve security by providing a digital trace of when and by whom each file has been accessed. On-board vendor can involve machines which can run background checks on the new clients obtaining their credit and tax information using the widely available online portals and sources, such as tax registries. In addition, the use of big data digitalisation techniques helps the firms to concentrate their accounting and audit procedures to actual analysis rather than presentation (Krahel and Titera 2015; Strielkowski 2017).

Digital data and analysis can reduce the cost of energy systems in a number of ways: decrease the costs of operation, improve the efficiency of power stations and networks, reduce unplanned interruptions and downtime, and extend the lifetime of assets. Mitchell (2000) described five ways on how information and communication technologies can reduce the energy usage and the losses of energy in large agglomerations: dematerialisation, demobilisation, mass customisation, intelligent operation and soft transformation. Dematerialisation represents turning physical product into digital services. Demobilisation helps to decrease the demand for transporting physical objects due to the fact that most of them are turned into services. Mass customisation helps using less resources with the product personalisation and demand management. Intelligent operation means resource efficient operation in the use of energy, transport, water and other resources. Soft transformation which represents the last way means that the existing physical infrastructure of product design, architecture and urban planning is undergoing transformations because of the new arising opportunities and solutions (Mitchell 2000). Digital data and analysis can also reduce the cost of ownership, allowing predictive maintenance, which can reduce the cost of plant and network owners and ultimately the price of electricity for end users.

Impressive advances in data acquisition and analysis (including the Big Data) allows to conduct a variety of new digital applications. Everyday objects such as smart meters, household appliances and cars are connected to communication networks which constitutes the concept of the Internet of Things (IoT) that is helpful in providing a range of services and applications such as financial services, health care, intelligent power networks, monitoring, home automation, and intelligent transport, just to name a few. Digital technologies are already widely used in financial services with the widespread distribution of potentially transformative technologies and the perspectives of 5G networks that are about to be launched. The examples of such solutions include GPS combined with real-time information to optimize banking operations, on-board monitoring and feedback to improve business performance, connectivity, which can safely reduce financial losses and improve the efficiency and share data between businesses across the supply chain.

While there is an on-going transfer of process functions from human to artificial systems, digitalization means the transfer of analogue information or procedures to digital formats for their processing using IT systems. Currently available systems and systems that can be configured with them allow for very high levels of automation of, for example, Treasury processes (e.g. single-handed processing).

2 Advanced accounting perspectives and digitalization

Organizational strategies for growth and the structure of whole industries are based on technological changes in many areas of activity and on various economic platforms. Various applications such as the Internet of Things (IoT), Machine Learning, Artificial Intelligence (AI), speech recognition and modelling, as well as analytical technology provide real-time monitoring, digital assistants, personalization, dispersed decision support and predictive analysis. Digital transformation technology requires investing in hardware, software and sometimes even products or services. In addition, some applications, such as the financial software and related services can be built and developed using the software-generated solutions and approaches. For many financial institutions, digitisation represents more than just a cloud, large data, social media or mobile technology. The adoption of new technological tools increases process automation for services such as money transfer, order fulfilment, invoicing and KYC verification. ICTs and customer services might complement one another, with information technologies helping to transform customer-based solutions into the customer-focused ones. Even the most novel and successful technology would not be able to exist by itself and run itself properly – successful transformation to the customer-based digital solutions require effective leadership, excellent management and impeccable business provisions and processes. For many industries, the digitisation of technological offerings and processes underpins the extent of value creation and the basis of exchange. However, it is not only technology, but also the changing business scenario, business processes and operating culture that drive digital transformation to success.

Management accounting changes are particularly important when an organization adopts innovative solutions and novel management approaches which have connections to the new information and communication technologies. There are links between the potential of digitisation and management accounting practices and concerns, because when a company implements a new strategy based on changing economic reasoning, financial control and cost management priorities are also changing.

Digitalization has changed financial models to allow resources to focus more on the acquisition of information than on transactions. Digital transformation has helped to automate monotonous tasks, manage compliance and operations, including accounting, reporting and analysis. The digitalization has enabled new opportunities in the banking, lending and capital market sector. Accounting officers are often engaged in very mundane and boring jobs that involve simplistic tasks such as filling in the accounting forms or tax reports. These tasks can be easily done by the algorithms which would be able to effectively replace humans. In a way, accountants are the species that is most threatened by the digitalisation. An advanced AI-based system would be able to read, comprehend, analyse and process the data much faster and more efficient than any human being. Its capacities for the risk assessment and finding the right solutions for minimising risks are also much higher. The accountants cannot compete with AI, but they can embrace the advantages it might provide and integrate them into their daily routine and work that might include outsourcing and online tax processing and reporting (just at TurboTax is doing).

Providing real-time accounting information through the use of digitized technology offers opportunities not only for fast access to information, but also for the rapid restructuring of information structures. Such globalisation, which is based on its technology, brings accounting practices closer together and juxtaposes different forms of decision - making. There are similarities in both the digital reporting modes of economic activity and the digital nature of the products being traded and the financial and accounting function.

Companies in all industries are now experimenting with advanced analytical analysis - a wealth of business data (on people, profits, processes, etc.) to gain relevant knowledge that can improve the tactical decision - making of business leaders. Once the Chief Financial Officer (CFO) of a company has understood the role that advanced analysis can play in improving financial processes, they can work with the CEO, board and other senior executives to identify the broader uses of advanced analysis to discover new sources of business value. One can observe that leading digital companies are testing and refining products and strategies, or prototyping, in close collaboration with customers and their reference groups.

To achieve this goal, companies are simultaneously piloting a number of strategic approaches: the development of digital services, employing new business models, optimising the offer of accounting and financial services and reducing the costs of these services thanks to the online processing and the use of AI and other ICT solutions that might dramatically cut the costs without compromising the quality of services.

The use of ICTs provides many exciting opportunities for business units and revenue streams and helps to obtain and to use the data (including the very popular Big Data applications that become widespread nowadays). In order to be sure, companies that adapt novel technologies are also adopting a fundamental transformation the whole concept of their businesses, including their strategy and implementation.

The software architecture allows to process incoming data, clean it and transform it with great integrity-critical for regulatory reporting and accounting, more reliable modelling and predictive analysis. Digital tools such as predictive analysis, digital dashboards, AI and advanced algorithms can provide powerful insights into how businesses can improve their bottom line. For example, digital dashboards can function as strategic hubs, providing real - time data to manage business operations. If the automation of financial functions is mainly concerned with process optimization, then their experiments with data visualization are aimed at improving organizational performance.

3 Accounting and digital economy

Accounting is one of the fields which can benefit from digitalisation the most. Frey and Osborne (2015) estimated, that accounting tasks have a 98 per cent probability of getting computerized. Although accounting focuses on the daily management of financial reporting and accounting in all areas of business and economy, it employs the same information to design future growth and analyse expenses to strategize the company's finances.

The most common areas of study for individuals studying finance include business finance, financial valuation, behavioural, behavioural, derivative, capital market, econometry, financial modelling, quantitative financing, investment management, financial regulation, financial reporting, as well as some accounting solutions (Zielinska 2016). Among the areas which should expect the most penetration of information technologies are management, science and technology consulting, computer systems design and related services, accounting, tax preparation, accounting and payroll accounting and general financial investment. It can also be shown that learning processes in all those sectors would immensely benefit from the use of information technologies (Coskun 2015).

Nowadays, financial services provide a wide range of job opportunities that require familiarity with digital technologies and applications. Accounting firms, insurance companies, construction companies, investment banks, and public sector agencies are just a few of the potential employers for accounting or finance graduates. Moreover, large multinational financial services companies also offer many interesting opportunities. All of them are pushing financial and accounting leaders to catalyse a fundamental shift towards resilient business models and a sustainable economy.

Sustainability accounting combines corporate strategies with a sustainable framework by revealing three - dimensional (e.g. economic, social, and environmental) information (United Nations 2005). The digitalisation of accounting implies constant improvement and in digital tools and management strategies in order to stay up today with the industries, customers and markets. According to the United Nations, it is of the key importance that the business companies should aim for economic sustainability and search for new goals for sustained income (United Nations 2005). The social pillar of sustainability if the firm accounting processes imply dealing with the replacement of human workforce by digital procedures. This pillar implies also educational aspect, when firms and Higher Educational Institutions need to find new ways to educate students to fit the future need of accounting and other professions. The third, environmental, pillar of sustainability that digitalisation brings to accounting sphere is saving material (paper mostly) and lower carbon footprint thanks to using less paper and stationery that is replaced by the digital storage and solutions (United Nations 2005).

Sustainability accounting is a form of activity directly influencing the company, its business environment and its competitors, as well as its markers and suppliers. The development of sustainable accounting allows to fully employ various social, environmental and economic benefits and risks in digitalised accounting systems. However, there exists a very unclear regulatory framework for social and environmental accounting so the conceptual framework for accounting does not extend to non-financial quantification and social or environmental issues.

As sustainable accounting evolves, companies are learning by doing in reporting frameworks, standards and guidelines which can have a trace and impact on the contents of their reports. There exist some organizations offering services to companies that wish to modify their traditional reporting and move to the sustainability reporting. These companies employ various advanced management tools (e.g. key performance indicators, environmental reports and social reports) for the creation of the inclusive models and other ways for financial reporting.

More and more often, finance will use predictive and artificial intelligence (AI) tools to create more robust business and forecasting capabilities (Baldwin et al. 2006; Omoteso 2012). By automating and strengthening the ability to support financial decisions, new digital technologies will enable the creation of better audit, business partnerships and support senior management in evaluating and developing business strategies (Kokina and Davenport 2017). Some advanced digital system that is capable of accessing and analysing all available data (including the Big Data) using all available analytical tools for the audit and other related processes might provide better and more complete risk assessments. The recent development of information and communication technologies makes it possible to develop some novel business models such as financial software implementation service makes it possible to provide better results in reporting and financial analysis.

While the compliance requirements and deadlines are becoming stricter tax departments might need to automate their enterprise resource planning (ERP) technology and tax compliance solutions effectively (Grabski et al. 2011). Data management analysis can provide greater transparency to key business metrics and improve data-based decision-making processes and solutions. It can be shown that the ERP systems also change the role of management accountants by ruling out the routine jobs, using the expertise of managers with accounting knowledge, providing more forward-looking information, as well as widening up the role of management accountants (Scapens and Jazayeri, 2003).

Thanks to centralisation and economies of scale of multiple customers, business process outsourcing (BPO) suppliers can perform various financial and account tasks more efficiently (Maelah et al. 2010; Reddy and Ramachandran 2008; Cuganesan 2007). Access to financial services is crucial for global development, as it facilitates investment in health, education and the economy. Krell (2007) remarks that the finance and accounting outsourcing market are growing since 2000 with a rate of more than 45 percent annually since 2005. Such services can serve as a starting point for the increasingly digital economy around the world, providing greater access to information, transparency and growth through more effective and targeted involvement of customers in developing countries. On the other side, such models improve economic outcomes of developing countries as they provide the educated residents with adequate jobs (Reddy and Ramachandran 2008)

Strong and equitable tax systems, so essential to maintain public confidence in government, tax authorities and other economic institutions, is the other sector which can benefit from digitalization of accounting and audit. Digital technologies enormously increase the capacities for data collection and storage. While in 2000 the data stored digitally accounted for only 25% of total data, by 2007 the number has risen to 94% (Ross 2016). Through digitalization the governments can have better tax information, create better tax systems and implement better policies (Gupta et al. 2017)

Some novel tax systems synthesize a holistic view of digitalization processes, taking into account the needs of different stakeholders, whether they are individual or corporate, government, tax professionals or even software vendors. The accounting and audited financial statements, combined with comprehensive budgeting, are hence crucial for improving global public finance management. For example, standard setters may wish to encourage information about i) value per customer, ii) profit or income performance or other specific metrics related to specific ongoing projects, and iii) data on how digital business is studied and software talent. Thence, many business companies do not want to reveal details of their current and planned projects due to the fact that this can bring in the asymmetry of information between investors and managers. When these companies start reporting negative profits and their true reports and yields are closed for open public access, analysts are making several adjustments to reconstruct the company's finances in their internal assessments.

4 Conclusions and implications

Overall, it appears that recent trends of digitalization advance the perspectives of modern top-notch accounting systems. Informational and communication technologies allow accounting to achieve new result faster, with the smaller margin of error and to concentrate more to the analysis as opposed to the mere presentation of results. The tools of predictive and artificial intelligence enable firms to create more robust businesses, better audit and accounting practices and support the sound and forward-looking financial decisions. Similarly, important in the role of IT technologies in supporting senior management in evaluation and developing business strategies including the outsourcing of non-core services.

The enterprise resource planning (ERP) technologies bring new automatization to the decision and planning processes and enable tax departments to speed up the compliance requirements and the deadlines. Extensive data analysis will provide greater transparency to the key business metrics and improve decision making with side effect of eliminating the routine jobs. The modern software procedures will help the managers to line up with the accounting knowledge and provide more forward-looking information.

Business process outsourcing (BPO) is another mechanism that benefit from digital technologies. With global connectivity suppliers can perform many tasks simultaneously and in less time. The can easy access to global financial services is crucial not only for business development but also for global development as it improves controllable investment in health, education, social sector and economy. The digital globalization also provides one touch access to information, transparency and growth of developing countries.

Digitalization and automatization bring new challenges to the job market, accounting officers being most vulnerable to. On the other hand, business accountants get the tool of digitalisation, automatization and business intelligence to expand the actual business models and procedures through outsourcing business processes and tax management services. In addition, the new financial software implementation services generated by the software will expand the horizons of traditional financial services. So, digitalization may not be seen as the substitute to existing systems, but rather as the technology to improve the systems or services.

Digitalisation will also play a role in the public sphere of tax collection and audit. Equitable tax system and strong and just tax authorities are ones that help to hold countries together. The new holistic digital tax systems

can take into accounts the needs of different stakeholders such as individuals, corporations, NGOs, or government organisations. In addition, the digitalisation of tax procedures can help to reconstruct tax duties of the companies which report negative profits from their internal audits thus increasing the tax revenues.

However, the success of the automatization strategies and the emergence of digital age are contingent on human factors and holistic human resource strategy. Leaders in the public and private sector, need to start working together in new ways and in a new context to enable us to realise our collective vision of universal financial access and improve financial health for all.

References

- Baldwin AA, Brown CE, Trinkle BS (2006) Opportunities for artificial intelligence development in the accounting domain: the case for auditing. *Intelligent Systems in Accounting, Finance & Management: International Journal* 14(3):77-86. doi: 10.1002/isaf.277
- Breman A, Felländer A (2014) Diginomics—nya ekonomiska drivkrafter. *Ekonomisk debatt* 42(6):28-38.
- Coskun YD (2015) Promoting digital change in higher education: Evaluating the curriculum digitalisation. *Journal of International Education Research* 11(3):197-204. doi: 10.19030/jier.v11i3.9371
- Cuganesan S (2007) Accounting, contracts and trust in supply relationships. *Journal of Accounting & Organizational Change* 3(2):104-125. doi: 10.1108/18325910710756131
- Dimitriu O, Matei M (2014) A new paradigm for accounting through cloud computing. *Procedia economics and finance* 15:840-846. doi: 10.1016/S2212-5671(14)00541-3
- Frey CB, Osborne M (2015) Technology at work. The Future of Innovation and Employment. Citi GPS: Global Perspectives & Solutions. https://www.oxfordmartin.ox.ac.uk/downloads/reports/Citi_GPS_Technology_Work.pdf Accessed 12 July 2019
- Frey CB, Osborne MA (2017) The future of employment: how susceptible are jobs to computerisation? *Technological Forecasting and Social Change* 114:254-280. doi: 10.1016/j.techfore.2016.08.019
- Grabski SV, Leech SA, Schmidt PJ (2011) A review of ERP research: A future agenda for accounting information systems. *Journal of Information Systems* 25(1):37-78. doi: 10.2308/jis.2011.25.1.37
- Gupta S, Keen M, Shah A, Verdier G, Walutowy MF (eds.) (2017) Digital revolutions in public finance. Washington, DC: International Monetary Fund. https://www.projectfinance.pl/pluginfile.php/109/mod_forum/attachment/787/eBook_Digital%20Revolutions%20in%20Public%20Finance.pdf Accessed on 20 June 2019
- Kane GC, Palmer D, Phillips AN, Kiron D, Buckley, N. (2015). Strategy, not technology, drives digital transformation. *MIT Sloan Management Review and Deloitte University Press* 14:1-25.
- Kokina J, Davenport TH (2017) The emergence of artificial intelligence: How automation is changing auditing. *Journal of Emerging Technologies in Accounting* 14(1):115-122. doi: 10.2308/jeta-51730
- Krahel JP, Titera WR (2015) Consequences of Big Data and formalization on accounting and auditing standards. *Accounting Horizons* 29(2):409-422. doi:10.2308/acch-51065
- Kramers A, Höjer M, Lövehagen N, Wangel, J (2014) Smart sustainable cities—Exploring ICT solutions for reduced energy use in cities. *Environmental Modelling & Software* 56:52-62. doi: 10.1016/j.envsoft.2013.12.019
- Krell E (2007). Finance and accounting outsourcing-making an informed decision. *CMA MANAGEMENT*, 81(7): 38.
- Maelah R, Aman A, Hamzah N, Amiruddin R, Sofiah Auzair M (2010) Accounting outsourcing turnback: process and issues. *Strategic Outsourcing: An International Journal* 3(3):226-245. doi: 10.1108/17538291011093811
- Mitchell WJ. E-topia: "Urban life, Jim—but not as we know it", 1st edn. (Harvard: MIT Press, 2000), 192 p.
- Omoteso K (2012) The application of artificial intelligence in auditing: Looking back to the future. *Expert Systems with Applications* 39(9):8490-8495. doi: 10.1016/j.eswa.2012.01.098
- Rathi D, Given LM (2017) Non-profit organizations' use of tools and technologies for knowledge management: a comparative study. *Journal of Knowledge Management* 21(4):718-740. doi: 10.1108/JKM-06-2016-0229

- Reddy YM, Ramachandran M (2008) Outsourcing of Finance and Accounting Operations: The Feasibility of the Vertical in the Indian Context. *ICFAI Journal of Services Marketing* 6(1):23-39.
- Ross A. *The Industries of the Future*, 1st edn. (New York: Simon & Schuster, 2016), 320 p.
- Scapens RW, Jazayeri M (2003) ERP systems and management accounting change: opportunities or impacts? A research note. *European Accounting Review* 12(1):201-233. doi: 10.1080/0963818031000087907
- Strielkowski W (2017) Social and economic implications for the smart grids of the future. *Economics and Sociology* 10(1):310-318. doi: 10.14254/2071-789X.2017/10-1/22
- Taipaleenmäki J, Ikäheimo S (2013) On the convergence of management accounting and financial accounting-the role of information technology in accounting change. *International Journal of Accounting Information Systems* 14(4):321-348. doi: 10.1016/j.accinf.2013.09.003
- United Nations (2005) Revised draft outcome document of the High-level Plenary Meeting of the General Assembly of September 2005 submitted by the President of the General Assembly. http://www.un.org/ga/59/hlpm_rev.2.pdf. Accessed 19 June 2019
- Zielinska A (2016) Information is a market products and information markets. *Czech Journal of Social Sciences, Business and Economics* 5(4):31-38. doi: 10.24984/cjssbe.2016.5.4.4