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CHANGES AS A RESULT OF TECHNOLOGICAL ADVANCEMENT IN THE ACCOUNTING INDUSTRY

Abstract: In the era of globalisation more and more financial events which are recorded in the books of account are taking place in the modern world. This creates the need for their proper systematisation in order to maintain appropriate quality standards and ensure the efficiency of their application in conducting business operations. Those needs can now be met using advanced technologies, the use of which is unavoidable. The purpose of this article is to depict practices currently used for the needs of financial and management accounting as well as to determine changes which are likely to take place under the influence of the advanced technologies. Those practices arise mainly from advanced technologies and may influence the boost of efficiency in accounting in business. Potential that could be put into practice is also be presented. In addition, information from numerous scientific sources has been obtained for the purposes of preparing the content of the article, mainly using literature closely related to the subject of accounting. Applicable legal regulations that are key to that topical issue have also been taken into account. Due to the advanced technologies developed over the years, the organisation of the accounting system has changed dramatically. Moreover, advanced technologies currently used by enterprises have contributed to the increase in the efficiency of accounting work, more efficient and accurate data analysis, as well as the quality of services rendered. The accountant's profession has been long associated with monotonous work and a pile of paper documents. However, thanks to innovative technologies, the form of that profession can change dramatically over time. Experts in the field of the latest technological advancement suggest implementing robotics in accounting and auditing practices. Artificial intelligence may be one of the likely improvements. This forecast can have many irreversible consequences for the world of accounting. The adoption of such advanced technologies can in fact bring even better results in terms of increasing work efficiency. It can also trigger changes in the scope of duties performed by modern accountants.

Keywords: technological advancement, accounting system, artificial intelligence, economic development, innovations.

1. Introduction

Modern technological advancement brings about many opportunities which are also widely applied to accounting. Therefore, there are many doubts related to their

application in relation to traditional and proven methods. Thus, many questions arise, such as:

1. How will contemporary accounting develop?
2. To what extent will modern technological advancement be used in the accounting system?
3. What methods may be implemented in the future to increase the efficiency of this system?

The purpose of this article is to depict practices currently used for the needs of financial and management accounting as well as to determine changes likely to take place under the influence of the advanced technologies. It will enable us to formulate answers to the questions above. Those practices arise mainly from advanced technologies and may influence the boost of efficiency in accounting in business. Potential that could be put into practice is also presented. In addition, information from numerous scientific sources has been obtained for the purposes of preparing the content of the article, mainly using literature closely related to the subject of accounting. Applicable legal regulations that are key to that topical issue have also been taken into account.

The process of addressing that outstanding issue began with gathering the necessary theoretical information enabling us to extend knowledge in the issue under consideration. For the purpose of the in-depth analysis, examples of applications already adopted in practice by companies operating in the Polish market have been used. In the era of globalisation, more and more financial events which are recorded in the books of account are taking place in the modern world. This creates the need for their proper systematisation in order to maintain appropriate quality standards and ensure the efficiency of their application in conducting business operations. Those needs can now be met using advanced technologies, the use of which is unavoidable. The article will verify the hypothesis that the use of advanced technologies affects the entire accounting process in an enterprise. Nowadays, it is worth considering their significance for the entire system. Advanced technologies may increase the efficiency of accounting departments in business. They may lead to reduction of resource consumption, acceleration of work and its better organization, as well as to improvement in the quality of information provided.

2. Importance of accounting in modern economy

Accounting is widely recognised as the primary source of information about business operations. The collections of this information are used by a wide range of recipients – both internal, who manage an enterprise, and external ones, such as lenders or potential investors. From the perspective of management accounting, therefore,

they facilitate making important business decisions within an economic operator, while on the part of financial accounting they enable the process of drawing up financial statements. Due to the fulfilment of such important functions, accounting must provide useful information that is important for the company's operations, especially in the face of fierce market competition.

The goal of every business is to prove good financial performance and increase the goodwill. Therefore, it requires proper resource management and proper management of operations. The first mention of accounting appeared already in prehistoric times.

The history of its creation proves that it is one of the oldest disciplines related to economic sciences (Staszel 2014). Capitalist historians have also recognised that double accounting has contributed to economic development (Dobija 2012). Despite the fact that traditional accounting principles do not change over time, the overall operation of the accounting system is constantly evolving which is influenced by the development of technology in the modern world. It was therefore inevitable to improve the system in terms of advancement and progress. Thanks to them, modern business may collect, classify, process and then analyse huge data sets, the so-called Big Data. Thanks to such technological advancement, contemporary accounting specialists can meet all challenges and develop more accurate financial forecasts (Rybicka 2018). Undoubtedly, along with the economic development, there are more and more demanding requirements for the managers of enterprises. This is connected to a huge competition in the market. In order to maintain a competitive advantage, they want to introduce more and more innovative projects which an individual may benefit from due to increased business attractiveness and improved quality of work and achievements.

Innovation is also often called an "entrepreneurial tool" because it provides resources with new opportunities to create wealth or new applications for specific items (Bogdanienko 1998). The progressing globalisation of the world economy together with the development of ICT technologies have created the possibility of distribution of products and services without geographical or political barriers.

That development also manifests itself in an intangible form of products offered through the Internet in the global market. The operations of many enterprises in this way have given rise to the evolution of accounting and the emergence of innovations (Łuczak 2014).

Accounting, like other fields, has been subject to innovation. The key evidence for this is the standardisation of its principles at the international level. The changes result in the International Financial Reporting Standards which set out the appropriate accounting practices. Innovations in accounting have been created in (Walińska and Jurewicz 2009):

– substantive terms which increase the functional efficiency of the system by increasing the quality and usability of the information contained in the financial statements;

– technological terms as a result of which it is possible to obtain data recorded in books faster, thus giving rise to the preparation of reports.

The above innovations are dependent on each other since those which fall into the substantive scope are implemented through appropriate IT tools related to the technological process, the implementation of which is in turn dependent on having appropriate knowledge.

The role of accounting in a modern enterprise has changed in a different way over time. The form and content of the financial statements have thus been modified. Financial statements and accounting policy on which the representation of the economic reality of a given enterprise depends have been subjected to the above mentioned innovations of a substantive nature.

During the 21st century accounting has developed under the influence of international regulations, thereby deepening the informative role due to the emphasis of those standards on an increasing number of disclosures in financial statements. Standardization has enabled intelligibility, transparency and above all credibility of information for all users of reports, both in the domestic and global market. In addition, there is a belief that compliance with the rules governed by international standards increases the value of a company due to significant improvements in financial management. Harmonisation of accounting principles on a global scale will therefore constantly progress in connection with the dynamic changes in the world, making "a common business language" a necessity (Walińska and Jurewicz 2009).

As it has already been mentioned, the accounting system has undergone technological changes. Information and communication technologies, such as the Internet, electronic banking and integrated computer systems affect accounting in modern times. They affect perception of accounting by a large number of users. Due to the dynamically occurring changes, managerial accounting is also developing because of the fact that the number of reports and analyses for the needs of management is increasing.

Therefore, in order to conduct accounting more effectively, there has been the need to improve relevant IT systems that make it possible to systematise information. Modern systems consist of several integrated modules that cover individual areas of an enterprise, such as production, sales, logistics and finance. Their multitasking results in better coordination of economic events. Thanks to IT tools, accounting as a system has been combined into one integrated construct together with all processes that take place in a given business (Walińska and Jurewicz 2009).

Nowadays, accounting in practice is associated with a number of innovations. The obligation to create Uniform Control Files may serve as an example. Due to that fact, economic operators are obliged to send data recorded in tax books to tax authorities in an electronic form.

The e-report is another example of the use of electronic tools in accounting. Economic operators maintaining ledgers must draw up reports in a specific electronic format of XML files. The document additionally bears an e-signature, for example a

qualified electronic signature, which is submitted using a special device. National legal regulations additionally favour the use of new technological advancement in accounting. The Polish Accounting Act sets out general rules to "keeping ledgers using a computer" or data protection, thus giving freedom to use advanced technological constructs (Ustawa z dnia 29 września 1994 r. o rachunkowości).

3. Technological advancement in accounting. Analysis of software functionality

The modern progress of information technology is putting pressure on companies to modernise the accounting system. This is particularly important because accounting is recognised as a system in which the most important information about the property and financial standing of an economic operator is collected and processed, this information being necessary for making decisions at every level of management of the economic operator. Due to the fact that both internal and external recipients use the information provided by accounting in the form of financial statements, ledgers should be kept in a comprehensible form that is free from irregularities (Kuzior 2017).

Currently, traditional paper bookkeeping methods are being abandoned in favour of electronic form in order to improve the recording of economic events occurring in the enterprise. Therefore, the law allows for computer accounting.

This fact is governed by the Accounting Act which recognises computer-aided accounting, adequate accounting information resources, contained in the form of separate computer data sets, a database or its separate parts, as equivalent to traditional ledgers – regardless of their place of origin and storage (Ustawa z dnia 29 września 1994 r. o rachunkowości). In addition, the economic operator must have software that is the pre-condition for maintaining the accounting information resources in an electronic form, which will allow for obtaining readable information in relation to entries in ledgers by printing or transferring them to an IT data carrier (Ustawa z dnia 29 września 1994 r. o rachunkowości).

Another significant regulation concerning keeping accounting in an electronic form refers to lists of conditions that must be met by accounting entries made in this form. Those requirements are as follows: the records must be permanently legible in accordance with the content of the relevant accounting slips, they must be entered in such a way that it is possible to determine the source of their origin and determine the person responsible for their origin, the procedure of registering the records must ensure that the correctness of data processing is checked, completeness and identity of records and source data at the place of their creation must be properly protected in a manner ensuring their immutability for the period required to store a given type of accounting slips (Ustawa z dnia 29 września 1994 r. o rachunkowości).

In addition, legal regulations impose an obligation on economic operators to have the documentary proof containing the accounting policy adopted by the economic operator, including a description of the accounting support software and its mechanism of operation.

The legislator also emphasises the need to include in the above documentary proof a description of algorithms and software parameters together with data protection principles and methods of restricting access to them by unauthorised persons. It is also important to include the date when the program starts operating (Ustawa z dnia 29 września 1994 r. o rachunkowości). Because the Act does not explicitly impose methods of data protection, managers should make their own decisions in this regard, e.g.: establishing cooperation with an IT company that will receive administrator's rights, will be responsible for creating backup copies of data at the end of each day and will be additionally storing data by means of an external disk.

Computer accounting may therefore prove problematic for some entrepreneurs. However, such practices are more protected than traditional accounting methods. Keeping accounting in paper version is associated with a higher risk of theft, destruction or loss of documents by an people employed in a company. The advantage of an electronic form of accounting is also more effective monitoring of document circulation. Currently, there are many competing software used for accounting in the IT services market. Such programs consist most often of integrated financial and accounting modules, thus a software user uses several applications located in one system without the need to install separate programs. It is a convenient construct that allows you to tailor specific products to the specifics of a company's operations, and thus streamline the management process. Observing the financial and accounting systems in the market one can distinguish a number of key suppliers. The most frequently chosen by clients include: Comarch ERP Optima, Sage Symfonia Finanse i Księgowość or Asseco-WAPRO Fakir (Dynowska and Kes 2014).

Many companies have also received the recommendation of the Accountants Association in Poland which is well-renowned in this market. A positive opinion of this organisation can help potential clients in choosing the best software. Current financial and accounting systems cover virtually every aspect of economic operations. That fact may be proven based on the analysis of the Comarch ERP Optima system in terms of its functionality.

Comarch ERP Optima is the most popular program used for managing a company from every sector of the economy. That system, with the help of the offered modules, facilitates management of key functions of a company such as sales, finance and accounting, production or human resources and payroll. One of the basic features of the ERP software is the possibility of its configuration and expansion with modules and constructs used in specific industries, both in the sectors of production, trade and services, including accounting offices. However, it is worth paying special attention to the most important module related to accounting in the company – finance and accounting and the tasks to be performed. The program is adapted to the currently

binding accounting (the Accounting Act and International Financial Reporting Standards) and tax regulations, which is a practicable construct in the era of a rapidly changing law. In addition, in order to reduce the scale of mistakes, it is possible to initially include accounting entries in the so-called "posting buffers", entries that are first verified and then can be modified. That module also uses practicable constructs to relieve the work of people responsible for accounting. They include automation of postings using intelligent posting schemes that recognise the characteristics of source documents and then automatically assign them. The periodic bookkeeping mechanism provides for automatic cyclical recording for monthly, quarterly or annual operations. The simplified process of preparing declarations for tax authorities is an important element of accounting for improvement of the software functionality.

The program controls the correctness of preparation of a tax declaration – if the amounts contained in the declaration are inconsistent with the entries in the ledgers, the user will automatically receive information about the mistake. Thanks to this the company may be sure to send correct documents to public authorities. In addition, due to the obligation to submit e-reports to the National Court Register imposed by the Ministry of Finance, the company offers the "Comarch e-Reports" application to its clients, in which it is easy to draw up financial statements for a given period in the XML format, in accordance with statutory requirements. The application also allows for the creation of e-reports by listed companies by enclosing reports in the form of ESPI (Electronic System of Processing Information). The application, however, is characterised by a much broader functionality. It allows for an analysis of the financial standing of a company, allows for import of data from files of various formats, enables a company to manage several electronic signatures (which is an indispensable element of documents submitted electronically) and to automatically generate reports based on the previous year. In addition, Comarch ERP Optima program offers OCR option, viz. using text recognition mechanism. The application, after scanning or photographing, recognises the data contained on a paper invoice, and then enters it automatically into the accounting program which significantly saves the person's running the accounting time (Infor 2016). Thus, the IT system described above used in accounting allows business to easily and quickly prepare reports in various cross-sections. The person responsible for keeping accounting saves time and thus avoids mistakes possible in the process of preparing information for audit and control bodies (Kunz and Tymińska 2014).

When analysing the company's offer, attention should be paid to the possibility to run accounting in the so-called Internet cloud. That method of accounting does not require one to install the software on a local disk – the user performs all necessary tasks via Internet, logging into the company's portal.

The supplier is responsible to ensure document security and the customer does not have to worry about additional costs associated with the IT environment (Gupta and Gaur 2018).

The analysis of financial and accounting systems may also be extended with other most frequently selected software such as: Sage Symfonia or Asseco-WAPRO Fakir, which have finance and accounting modules, too. The ability to effectively manage the company's finance, regardless of the type of business, is a common feature of those systems. The Symfonia financial and accounting system offers many comprehensive applications for companies, such as: mass clearance of settlements from bank statements, automatic error search on settlement accounts or services related to tax liabilities, including the Uniform Control File and e-financial statements (Sage 2020).

On the other hand, Asseco-WAPRO Fakir financial and accounting system offers a significantly larger number of applications depending on the size and specificity of the company's operations. A characteristic feature of that system is the ability to choose out of five versions designed for companies depending on the size and business profile: Business, Prestige, Budget, Office and Office plus. Each version has applications that allow for automatic, cyclical assignment of documents and the creation of a company's own accounting machines to improve the recording of economic events, automatic download of exchange rates and data of contractors from the Central Statistical Office. Each system has also control mechanisms that reduce the risk of errors in account assignment and the ability to work in the cloud.

In addition, the program has subscription services intended for users under license, thanks to which it is among other things possible to create e-reports based on data automatically downloaded from the accounting program. It also includes the WAPRO-RODO module that records the consents of entities for data processing and the ability to keep a register of notifications regarding personal data breaches (Wapro 2020).

Moving onto conclusions from the above analysis of integrated financial and accounting systems, it is plausible to state that electronic bookkeeping brings a number of benefits in the form of improving the flow of information in the company, increasing security, optimising working time, as well as reducing the scale of errors in the records of economic events. Therefore, choosing the right software determines the quality of information processed in a company.

The accountant's profession has been long associated with monotonous work and a pile of paper documents. However, thanks to innovative technologies, the form of that profession can change dramatically over time. Information technologies have already significantly accelerated the work in accounting and influenced its efficiency. Currently, there are many useful constructs in the market which improve the flow of information on financial data for the needs of numerous recipients. Many technologies have already been mentioned in the previous section but there are many more. So how can innovative technologies be used in order to further improve accounting work? The answer to this question requires reflection because with the de-

velopment of new solutions, customers' expectations regarding the quality of services provided increase. Experts in the field of the latest technological advancement suggest implementing robotics in accounting and auditing practices.

Robotics means broadly understood technologies operating on the basis of an expert system, commonly known as "artificial intelligence" (Abhishek and Divyashree 2019). Currently, artificial intelligence is not yet fully used in accounting but with the development of technology it may apparently be a matter of time.

It is estimated that the future use of that technology may have unimaginable benefits. It is worth considering the effects of this phenomenon. The use of artificial intelligence in accounting raises many fears and controversies as there may be potential threats. The use of robotics will undoubtedly help the accounting department employees in performance of numerous duties that are part of their daily work. Therefore, it becomes reasonable to suppose that this may bring about jobs slash. People educated in this field may expect difficulties in finding a job in their profession. In addition, regular staff members may be confused in this new reality because of many difficulties related to the novelty. Until now they have had contact with most commonly applied solutions. In turn, employers can see greater benefits of the use of robotics in an enterprise at the expense of human labour. Despite the fact that this may involve a large expense, in the long run such an investment can compensate for the salary costs associated with regular employment. For this reason, many people are afraid of modernisation and the fact that the profession of an accountant will become obsolete but this need not be the case. On account of the fact that automated expert systems will relieve accountants in the tedious process of entering financial data as well as other energy-consuming repetitive human duties. Thanks to this, an accountant will be able to devote more time to data analysis which will contribute to increasing the efficiency of his or her work and making the best financial decisions possible, free from mistakes. The profession of an accountant will therefore be improved considering the new constructs.

A person working in accounting will broaden his/her competences, perform more advanced tasks, and possibly become an expert in the field of robotics, as he or she will supervise the work of artificial intelligence – robots will only have a subservient role. Thanks to the use of modern algorithms, the accountant will receive ready reports. His or her task will be then their accurate analysis and forecast. According to the EY company report, automation enables the release of up to 40-50% of human resources in the organisation. This increases the level of customer satisfaction because a company is able to perform services faster and more efficiently. As a result, the level of innovation in the company and the sales volume increase. Robots are able to perform a greater number of the simplest and repetitive tasks in a much shorter time than humans – 24 hours a day, 7 days a week, especially in the period of greatest workload (EY 2018).

4. Conclusions

The purpose of this paper has been to show the constructs currently used for the needs of financial and management accounting as well as to determine the likely direction of the changes that take place under the influence of the latest advanced technologies. The importance of accounting in modern economy has been explained on the basis of the collected literature and other sources. Because of so many functions that accounting represents, its entire system must be properly organised. Due to the advanced technologies developed over the years, the organisation of the accounting system has changed dramatically. Those changes have taken place not only at the national level but primarily through progressing globalisation – in the global market. This has contributed to the unification of accounting regulations as well as to increasing the reliability of the financial data disclosed to a large number of recipients.

In addition, advanced technologies currently used by enterprises have contributed to the increase in the efficiency of accounting work, more efficient and accurate data analysis, as well as the quality of services rendered. Due to the progressing economic development, resulting in the emergence of ever newer opportunities, an attempt has also been made to determine new constructs that can be adopted by specialists in the fields of accounting. Artificial intelligence may be one of the likely improvements. This forecast can have many irreversible consequences for the world of accounting. The adoption of such advanced technologies can in fact bring even better results in terms of increasing work efficiency. It can also trigger changes in the scope of duties performed by modern accountants.

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