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DIGITIZATION OF THE ACCOUNTING PROFESSION - A BIBLIOMETRIC ANALYSIS

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Abstract
In an environment where digitization is implemented in any field at an accelerated pace, the issue of its implementation in the accounting field is significant. This digitization brings both advantages and opportunities in the accounting field, as well as disadvantages and even threats from the point of view of data security. The main objectives of this work are the following: Objective 1 – Deepening the subject of digitization of accounting, carrying out a review of the specialized literature; Objective 2 – Bibliometric analysis of specialized literature through the Web of Science platform with the theme "digitalization of accounting" and Objective 3 – Evaluation of research trends regarding the impact of digitization on the accounting profession.

Keywords: *accounting digitalization; digitalization; bibliometric analysis*

JEL Classification: *M41*

I. INTRODUCTION

It is well known that the phenomenon of digitization has accelerated rapidly in recent years, with digitization being implemented in different areas of activity with the aim of ensuring the efficiency of the activities of staff involved in the performance of service tasks.

In this respect, accounting is one of the areas most suitable for digitization. Therefore, in the field of accounting, we have witnessed over time an acceleration of digitization, with major implications for increasing the efficiency of the services offered and the time taken to perform accounting services.

The digitization of accounting services, therefore, has led to significant changes in this field, forcing accounting professionals to change their traditional working techniques in order to adapt to the new realities of the accounting services market.

In our view, the future of the accounting profession belongs to digitised accounting services, which leads to an imperative need for digitization and technological development. This can only be achieved by abandoning traditional accounting methods and replacing them with integrated accounting methods based on cloud computing technologies.

In another vein, we believe that the need for digitization of accounting services has also been influenced by the transformations in the current business environment, under the impact of increased globalization of business processes and paradigm shifts in current business practices.

In this respect, we believe that accelerating the pace of digitization in the accounting profession is a viable solution that will help employees to streamline their work and the existing processes in the entity as well.

However, the subject of digitization of the accounting profession is still little discussed and studied in the literature, which, in our view, leads to a slowdown in the implementation of digitization in this area, which is why we have also resorted to bibliometric research to reinforce the aspects stated above.

Therefore, in order to achieve the purpose of the research, we also set the following objectives, namely: Objective 1 - To deepen the subject of the digitization of accounting by conducting a literature review; Objective 2 - Bibliometric analysis of the literature through the Web of Science platform with the topic "digitization of accounting" and Objective 3 - To assess research trends on the impact of digitization on the accounting profession.

II. LITERATURE REVIEW

Digitalization is influencing the course of development of a modern company and offers an unprecedented potential to produce value based on its virtualization (Chyzhevska et al., 2021).

At the same time, existing businesses are challenged by the phenomenon of digitization, as it forces them to reevaluate their current business plans (Möller et al., 2020).

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There are gaps between advanced digitization practices and academic research, as well as between practice and education, as the implications of digital transformation for the accounting sector have not been thoroughly addressed in the literature (Mihaila et al., 2021; Guşe & Mangiuc, 2022). According to Onyshchenko (2018), research related to the digital economy can be divided into three main periods as follows: the first stage, between 1995 and 2001, the stage in which the scientific idea about the essence of the concept and the fundamental innovations were formed; the second stage, between 2010 and 2016, the stage in which digitization was developed at the legislative level; and the third stage, which starts from 2016 and continues until now, during which this concept becomes more and more studied, becoming a fundamental aspect.

Moreover, Stoica and Ionescu (2021) state that, given the fact that most of the tasks performed by accountants are routine, the accounting industry is one of the most affected by digital transformation and authors Opudu & Tonyev (2022) are of the opinion that with digitization, the traditional business model has undergone irreversible changes in favour of the latter, with digitization becoming the new way of thinking about business.

As Kovalevska et al. (2022) state, accounting is transforming from its traditional form to a digital one, an aspect that brings both advantages and disadvantages within a company. Ionescu-Feleagă et al. (2022) claim that digitization in accounting helps improve the accuracy of data processed and presented in financial statements and audit reports, as well as the efficiency of accounting tasks. Furthermore, while some authors consider the digitization of accounting timely and beneficial, other authors see this digitization as a challenge or threat to the accounting profession. For instance, AlNasrallah & Saleem (2022) believe that intruders and hackers have the ability to manipulate, change or even delete company data. Moreover, Agostino et al. (2022) argue that the digitization of accounting changes the professional identities of accountants and influences the responsibilities and authority they hold. Study by Awang et al. (2022) reveals that the digitization of the accounting profession will bring both significant opportunities and risks for accounting professionals and that there are no different perceptions of these among the two genders. The study by Coman et al. (2022) also points out that a shift in the accounting paradigm is taking place and the role of accounting professionals is evolving in the direction of providing advice to management at the expense of traditional tasks of recording company events and transactions in the accounts.

In order to achieve this goal, Taib et al. (2022) draw attention to the need to improve the university curriculum in terms of introducing courses on the digitisation of accounting that contribute to increasing the digital skills of young accounting professionals. Another study (Awang et al., 2023) point out that there is a directly proportional relationship between the development of digital skills and the digitalization of accounting among postgraduate accounting students.

In the same context, the study conducted by Grosu et al. (2023) focused on testing the perceptions of accounting professionals on their willingness to upgrade according to new trends in the labour market, revealed that the ease of use of digital tools, achieving an expected level of performance with hard work as well as organisational culture and regulatory policies are the most important factors leading to the development of the accounting profession and increasing the willingness for continuing education of accounting professionals.

III. RESEARCH METHODOLOGY

In order to fulfill the objectives proposed at the beginning of the study, we carried out, with the help of the computer program VOSviewer, a bibliometric analysis of the works published with the theme "digitalization of accounting". This analysis was carried out on a number of 386 papers, published on the Web of Science platform, the analyzed period being between 1975-2022.

Therefore, for data collection, we selected the works related to the topic of "digitalization of accounting" published on the Web of Science platform, as can be seen in Table 1.

Table 1. Data collection

Data base: ISI Web of Science	
Search: ”accounting digitalization” OR accounting digitalization	
Inclusion criteria: - research areas: economics, business, management, business finance, social science interdisciplinary - all types of documents - analysis period: 1975 – 2022	
Exclusion criteria: - all fields of research, except those previously mentioned	
Results	
Without exclusion criteria	1.051
With exclusion criteria	386

Source: Developed by the authors

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The number of papers obtained initially was 1,051 papers with the theme "digitalization of accounting", and following the application of the inclusion and exclusion criteria we obtained a final number of 386 papers. The selection of the five research fields – economics, business, management, business finance, multidisciplinary social sciences and all types of documents – as well as the period of analysis – from 1975 to 2022 – constitute the inclusion criteria. Exclusion of all research areas other than those mentioned is an exclusion criterion. As a result, the created database contains 386 papers on the topic "digitalization of accounting" that were published between 1975 and 2022 and were obtained from the Web of Science platform.

We created a profile of published research using the database of the Web of Science platform to ascertain the interest of researchers in the topic "digitalization of accounting". The year of publication, the countries in which they were published, the fields of study and the source of the publication were all taken into account when creating the profile of published scientific research. As a result, Figure 1 presents the profile of the works that were published from the point of view of the year of their publication.

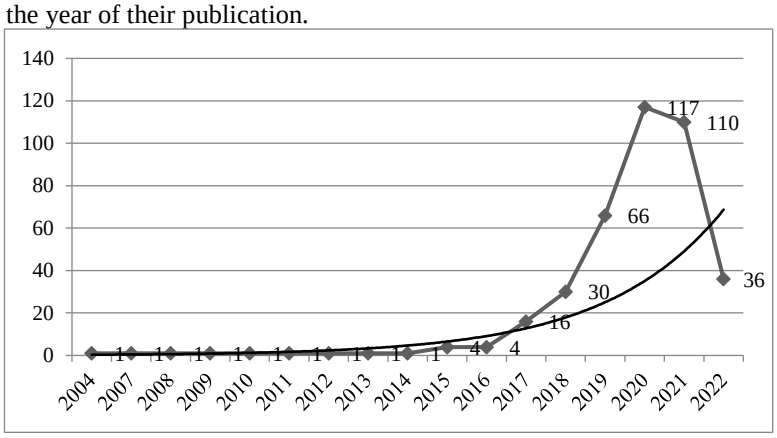

Figure 1 - The profile of scientific research according to the year of publication
Source: Developed by the authors according on the database provided by Web of Science

As you can see there is an increasing trend in the number of research papers carried out since 2004, when this issue was first raised, and continuing with a notable increase from 2016 to 2019, when 66 publications were published on the subject of digitization accounting.

The maximum point was reached in 2020, the year in which 117 studies were published on the subject of accounting digitization. Thus, we can see that this topic is of increasing interest to researchers, given the fact that digitalization is taking over every field.

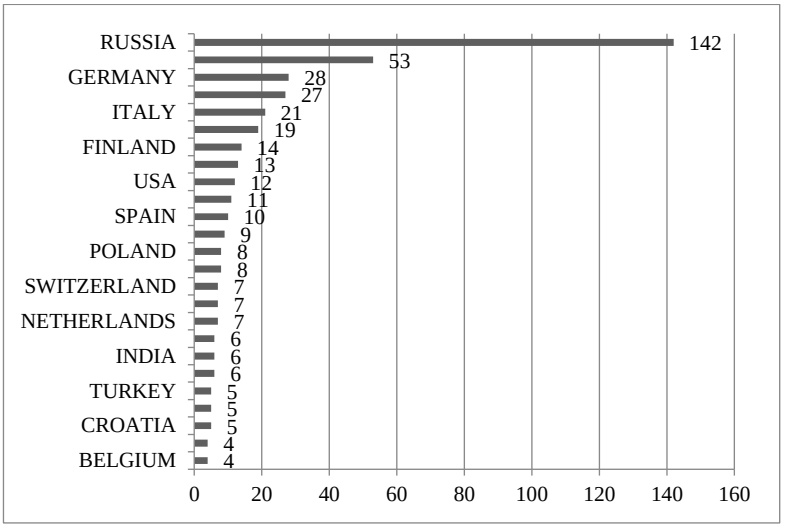

Figure 2 - The profile of scientific research by country
Source: Developed by the authors according on the database provided by Web of Science

Figure 2 shows the number of works published on this topic in each country, Russia being in first place with 142 publications. Russia is followed by Germany with 28 papers and Ukraine with 53 published studies. As for Romania, with 27 papers on the digitalization of accounting, it has surpassed Italy, which has 21 papers published on the same subject, now occupying fourth place, just after Germany.

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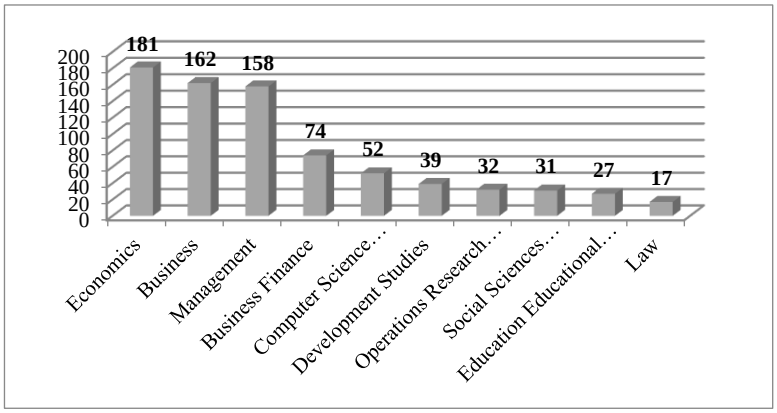

Figure 3 - The profile of scientific research according to the field of research
Source: Developed by the authors according on the database provided by Web of Science

In Figure 3 it can be seen that this topic has been approached at the expense of a large number of research fields, including interdisciplinary social sciences, law, multidisciplinary computer applications, development studies and education. The variety of research fields shows that this theme is approached from several angles, demonstrating the multidisciplinarity of the subject.

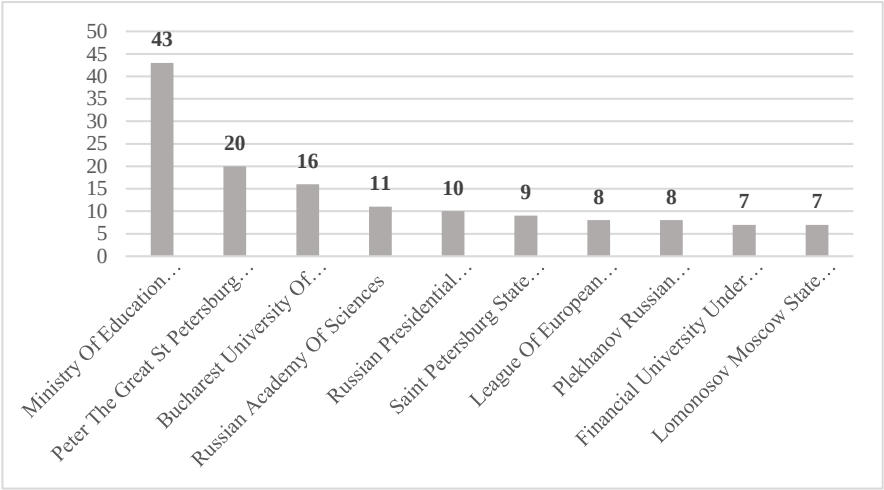

Figure 4 - The profile of scientific research by publication source
Source: Developed by the authors according on the database provided by Web of Science

The first 10 sources of publication of works on the topic of digitization of accounting are listed in fig. 4, grouped by their number. As a result, we can see that the Ministry of Education and Science of Ukraine has published the largest number of works on this topic, namely 43 research studies. Peter the Great St Petersburg Polytechnic University has published a large number of works, respectively 20 scientific studies on the topic of digitization of accounting. The Bucharest Academy of Economic Studies stood out among the publishing sources in Romania, publishing 16 papers on this topic.

IV. RESULTS AND DISCUSIONS

The database created with the help of the Web of Science platform was processed in the VOSviewer program by going through the following six steps:

- Selection of the type of data to be processed: bibliographic data;
- Selection of the database to be processed: Web of Science;
- Selection of the type of analysis to be performed: co-occurance, full count;
- Selection of significance threshold: minimum 5 occurrences;
- Check selected terms: manually remove terms that are not related to the domain;
- Interpretation of clusters based on the resulting network.

The final objective is to examine the relationship between digitization and the accounting profession as well as the role of digitization in the accounting field.

Therefore, Fig. 5 presents the network of keywords regarding the digitization of the accounting profession after the completion of the six listed processes.

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Nine groups can be seen in the network of key terms shown in fig. 5. These clusters are grouped according to their relevance, and their frequency of occurrence is specified by the size of the circles. The first two clusters are the most extensive in terms of the number of key terms included in them, respectively 22 terms each. The keywords related to the first cluster illustrated in red on the term grid center around the concepts of digitization, digital economy, globalization, e-commerce and innovation, indicating that we are in a continuous shift in how information is reported and to the satisfaction of accounting professionals who engage in innovation at the expense of the new era of digitized accounting.

The second group colored in green is represented by the main concepts related to management, information, industry and accounting expressing the flow of information that flows towards management through new technologies. The third cluster includes a number of 18 words that revolve around several concepts, which are impact, efficiency, performance and productivity highlighting the advantages brought by digitization in the economic field. Cluster number four comprises a total of 17 key terms that focus on concepts such as technology, blockchain, computer system, artificial intelligence and implementation.

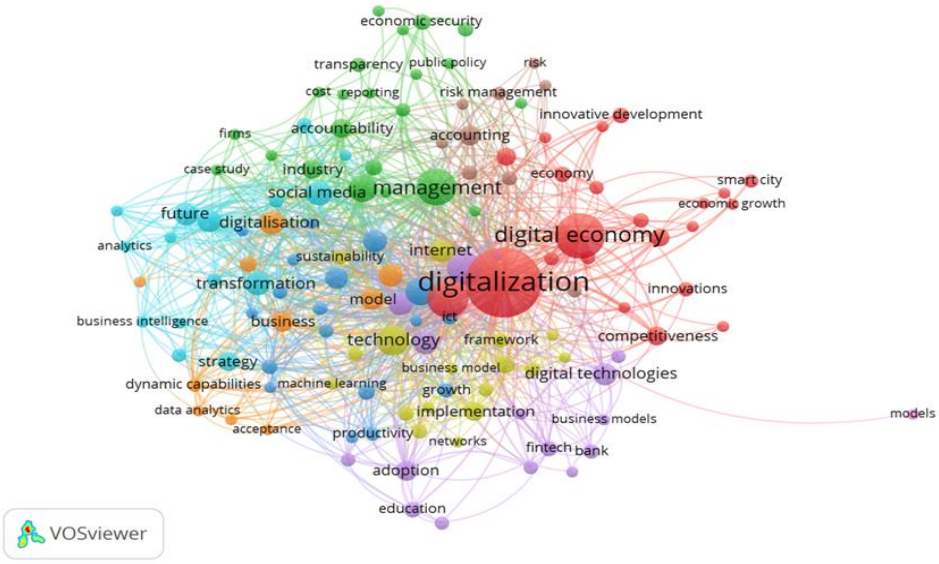

Figure 5 - Network of key terms on the topic "digitalization of accounting"
Source: Developed by the authors using VOSviewer software

The fifth cluster contains a number of 16 key terms that mainly refer to concepts related to Industry 4.0, digital transformation, digital technologies, digitization and information technologies, concepts that outline the image of a new accounting profession at the expense of a new era in the accounting field , which must ensure the digitization and implementation of new information technologies within companies.

The sixth group of key terms contains a number of 15 words that encompass concepts that refer to how the accounting profession will change in the future in the context of its adoption of new technologies. Cluster number seven comprises 10 key terms that bring to the fore concepts related to model, business, digitization, knowledge and work. The penultimate cluster includes a number of nine key terms that refer to key terms that express the fact that the topic of digitization of accounting is still little studied and requires more attention from researchers because digitization in the accounting field helps the enterprise to function at the highest quality. The last cluster, represented in the keyword network by the color pink, contains only one keyword, which refers to patterns.

Later, through the VOSviewer program, we created a network of countries involved in researching the digitization of accounting, grouped according to the number of works published in that country. This network of countries involved in the research area of digitization of accounting can be seen in Figure 6.

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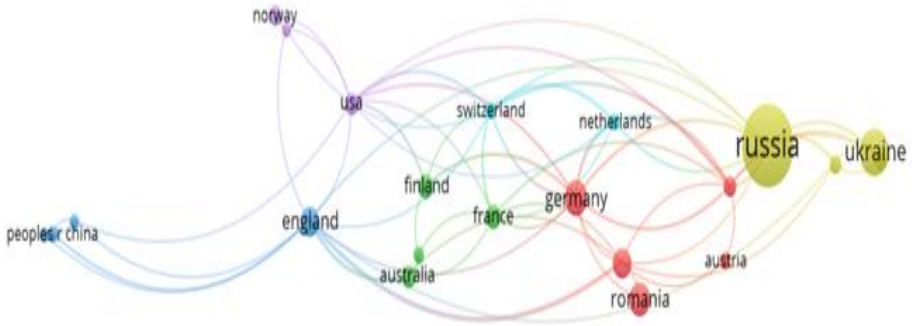

Figure 6 - The network of countries involved in researching the accounting digitization
Source: Developed by the authors using VOSviewer software

Through the network of the countries involved in the research of digitization of accounting, it can be seen that Russia shows the greatest interest in the study of the specified theme. After Russia, another country showing a high interest in digitization research within the accounting profession is Ukraine, followed in turn by Germany. Among the countries that show a low interest in studying digitization in the accounting field are Denmark, Turkey, India, but also China. From the network shown in figure above, related to countries with implications in digitization research, it can be seen that Romania shows a high interest in this subject.

Moreover, we have created a network of organizations that have published works on the topic of digitization of accounting, this being made up of seven clusters, grouped according to the frequency of publications.

Figure 7 - The network of organizations that have published papers on the digitalization of accounting theme
Source: Developed by the authors using VOSviewer software

Therefore, the first cluster that can be seen in Figure 7, illustrated by red color, consists of four components, namely three organizations based in Kyiv and Dragomanov National Pedagogical University. The second cluster, represented by the color green, has three components, all of which are based in St Petersburg. The dark blue color represents cluster number three, which consists of three components, namely a university of economics, a state university of management and a university of finance. The fourth cluster is illustrated in yellow in the network of organizations involved in the study of the digitization of the accounting profession and contains a number of two organizations, both of which are based in Russia. Cluster number five is represented by the color purple in the network and is composed of two organizations, where the Russian Academy of Sciences stands out in terms of the frequency of published papers. The sixth cluster is illustrated by the light blue color and it accumulates a number of two organizations, namely the Federation University of Australia and the University of Turin.

The last cluster is represented by the orange color in the organization network and consists of two components, the first being represented by Don State Technical University based in Russia, and the second being Voronezh State Technical University, also based in Russia. Therefore, it can be seen that Russian limitations predominate in the presented network, given the fact that most of the published works are from Russia, where the interest in the study of digitization in the accounting field is much higher compared to the rest of the states.

V. CONCLUSIONS

In the context of the new era of digitization, the accounting field is undergoing significant changes that bring both advantages and disadvantages to the profession.

In the first part of this study, we presented different opinions of the authors regarding the digitization of the accounting profession, thus observing both positive attitudes towards this aspect and negative attitudes. However, the digitization of accounting is inevitable, and accounting professionals are forced to adapt to the new requirements of this era.

Based on the bibliometric analysis of the publications on the digitalization of accounting through the computer program VOSviewer, we emphasized the fact that, despite the current attractiveness of the subject, researchers are just beginning to explore it. Since digitization has an accelerated character and is implemented in

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all fields, the topic represented by digitization of accounting can therefore become a future field of study and research.

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