

## DIGITAL ACCOUNTING: INNOVATIVE TECHNOLOGIES CAUSE A NEW PARADIGM

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### ABSTRACT

*The article is dealing with the concept of “digital accounting”, highlights its historical origins and current discourse in the contextual relationship and interdependence of accounting and information technology. Accordingly, the issues of rethinking the role and place of accounting in the digital economy, the study of changes in its semantic, methodological and conceptual principles under the influence of the growth of information potential of the digital economic space become relevant. Since the modern period is a qualitatively new stage in the development of accounting, which in all its aspects is undergoing of significant changes, it should accordingly lead to the transition to a new digital accounting paradigm.*

**Keywords:** *digitalization, digital economy, accounting, digital accounting, information technologies, Internet, accounting information, accounting paradigm, digital accounting paradigm*

### 1. INTRODUCTION

Digitalization of society and economy is due to the appropriate level both of information systems and information technologies development, as well as the opportunities provided by the current global information environment. Accounting and information technology have become interconnected since the days of tabulation machines.

For decades, accounting – the art and science of financial information – has evolved in conjunction with information technology. The differences between an accounting record and an IT message are almost non-existent. The advent of the Internet and e-commerce has not only continued, but also accelerated this trend.

The digital economy is characterized by the active introduction and use of digital technologies for storage, processing and transmission of information in all spheres of social activity using the latest digital services and products (BlockChain, RetailTech, FinTech, LegalTech, Digital-marketing, Grid-technologies, GovTech, BioTech, NanoTech, e-ID, TeleHealth, ePrescription and others).

The achievements of the 4.0 revolution are impressive, but even more dramatic changes can be expected, as progress in this area cannot be stopped. Under the influence of modern transformations of business processes in accounting theory and practice there are significant changes. The development of digital technologies has a direct impact on the speed and quality of these processes.

The logical attribute and consequence of the digitalization of the economy was the emergence of such a phenomenon (and consequently the concept) as digital accounting, the essence, origins and current discourse of which require special consideration.

These circumstances actualize the feasibility of developing adequate to the new conditions of the digital accounting paradigm, development of theoretical provisions and practical recommendations for expanding and modernizing the content of accounting, its positioning as a highly intelligent applied activity, increasing the prestige and demand of the accounting profession.

## 2. LITERATURE REVIEW

Issues of accounting development in the context of digital transformations are studied in the works of such scientists and practician as: Deshmukh (2006), Esmeray and Esmeray (2020), Giorgio (2020), Hoffman (2017), Half (2018), ICAEW (2018), Brukhanskyi and Spilnyk (2019), Spilnyk and Palukh (2019) Smith (2018) and Forbes (2018). In addition, the

leading consulting firms (The Big 4: KPMG, PwC, EY and Deloitte) Piscini, Cotteleer and Holdowsky (2018) and Ernst & Young (2016) and professional organizations (ACCA, CPA) The digital accountant (2020) and CPA (N/D) are making efforts to develop practical guidance in this area.

In this study, the review of accounting is carried out from the standpoint of the paradigmatic approach as the development of science through the revolution, described by Kuhn (2012), and the periodization of accounting development as a change of its paradigms Malyuha (2020).

### **3. RESULTS AND DISCUSSIONS**

#### **3.1. The Concept of Digital Accounting and its Essential Characteristics**

At first sight, semantically, the phrase “digital accounting” contains the tautology, because traditional accounting, as such, in itself is a personification of count and calculation, and the adjective “digital” refers to digit and number. However, in the IT lexicon, this term applies to the presentation of information in a binary system (through the use of 0 and 1), in order to make it readable, writable and stored by machines. Informatization of accounting contributes to the fact that any aspect of economic activity is entered in the register (database) in the form of a set of props.

As the number of props, such as analytical accounts to bookkeeping accounts, managerial and other information, grows, the entire information array is more convenient to summarize, systematize and submit for use in a format different from that achieved by manual data entry. The prefix “e-“ stands for “electronic”, which means the use of electricity and electronic machines such as computers. Digital accounting refers to the submission of accounting information in digital format, which can then be processed and transmitted electronically.

Online accounting is the application of Internet technologies to the function of business accounting. Like e-mail, which is an electronic version of traditional mail, electronic accounting is the “electronic support” of accounting processes that have traditionally been done manually and on paper. Electronic accounting involves the implementation of regular accounting functions, research in the field of accounting and accounting training using accounting tools via the Internet using computers, digital tools, specialized Internet resources,

international and domestic regulations, web links, specialized software for accounting, etc. to ensure effective decision making.

Thus, digital accounting does not have a standard definition, but only refers to changes in accounting due to the use of computing and network technologies (2006).

### **3.2. Retrospective Review of the Historical Background and Origins of Digital Accounting**

Accounting, as the art and the science of measuring business results, developed alongside business, and even so more with information technology. Punch cards and mainframes, databases and data warehouses, personal computers and productivity software, specialized accounting and enterprise resource planning (ERP) software, local area networks (LANs) and wide area networks (WANs), among others, have left their marks in the theory and practice of accounting. This applies in particular to data entry technology, data storage and processing, final reports, internal control, audit procedures and qualification requirements for accountants, which have been constantly changing over the last few decades (2006).

Accounting is sometimes called the science that follows, that is, accounting is reactive - it responds to the development of business and technology. Interestingly, accounting was initially at the forefront of the information technology revolution. The roots of digital accounting can be traced back to the Depression and World War II. At that time, tax regulation was complicated, and hostilities caused various logistical problems and the need to solve them. Information about the details of financial transactions and the physical location of the nomenclature could not be reliably processed, involving an army of clerks. This work was routine, poorly paid and required diligence, which necessitated the invention of spreadsheets.

In the late 1950s and early 1960s, accounting and financial information became a major candidate for automation due to their repetitiveness and large volume. The mechanization of accounting and financial information processing has expanded the powers of chief accountants and financial directors through the ability to make more informed operational and strategic decisions, including on financial investments. Further automation of accounting and financial data processing has become irreversible.

Convergence between accounting and e-commerce also emerged decades ago. The development of electronic data interchange (EDI) and electronic money transfer (EFT) can be called the beginning of digital exchange of accounting information, which has become a

necessary condition for e-commerce. EDI uses a standardized format for documents that can be transmitted, read and processed electronically. EDI was initially used to transfer sales documents and later to process financial transactions such as payments and fees.

The history of EFT can be traced to bank transfers from 1871. Cash could be delivered to one place and then telegraphed to another, where a third participant with the appropriate identification could receive the funds. When the development of electronic networks reached a certain level, the banking industry began to use these networks for transfer money to reduce banking costs, speed up clearing and protect against errors and fraud. Eventually, the capabilities of EFT merged with EDI, which led to the Financial EDI (FEDI) format, designed for settlements in the business world (2006).

The emergence and spread of the Internet and e-commerce have greatly accelerated evolutionary change. The Internet and e-commerce not only offered a change in internal and inter-entity business processes, but also challenged the very foundations of established business practices. Business elements such as communication infrastructure, business processes, delivery of products and services, management philosophy and organizational structure are changing due to the influence of the Internet. The development of the e-revolution has led to unprecedented changes (artificial intelligence, BlockChain, robots, chatbots) (Half 2018; ICAEW, 2018; Forbes, 2018; Piscini, Cotteleer and Holdowsky (2018); Tadros, 2016).

Hoffman provides the following information: “According to the McKinsey Global Institute, shifts in society under the influence of artificial intelligence (AI) are ten times faster and 300 times stronger than the industrial revolution of the late 18th and early 19th centuries. This means about 3000 times more powerful influence” (Hoffman, 2017, p.1).

Consider in more detail the impact of the Internet and e-commerce on the development of accounting. The Internet is a collection of interconnected computer networks. These connections are global and form a digital space that is used for a variety of activities, such as business, entertainment, communication, and so on.

The use of the Internet for business has given rise to e-commerce. The complexity of this area is characterized by numerous definitions (e-business, e-commerce and i-commerce; various types of e-commerce, such as business for the consumer (B2C) and business for business (B2B); online and offline business models; and so on). Either way, e-commerce is a

more general term that applies to all areas of business related to the use of the Internet, rather than just selling and buying.

Additional new opportunities have emerged with the proliferation of compact digital devices (netbooks, tablets, smartphones) and related mobile applications. This significantly changes the management paradigm and allows to solve almost any business problem outside of the office in real time.

Today, Internet business is one of the most effective and promising options for doing business, because it helps to address a number of issues, such as: social distancing, location, flexibility of work schedule and more.

With the growth of the “.com” business, all areas, including accounting and finance, need to be revalued and restructured. The use of the Internet for accounting purposes is described in English literature in various terms; for example, financial e-commerce, e-financing and e-accounting. Such terminological confusion is very common in e-commerce.

The development of information and network technologies has affected almost all areas of accounting. Briefly, the impact of the Internet on accounting can be described in e-commerce terminology as follows:

- electronic networks or the Internet are used as a communication intermediary for the exchange of accounting and financial information;
- accounting and financial functionality that supports the ability to sell and deliver products or services online;
- uses networks and digital information to restructure accounting, financial and work processes.

However, e-commerce involves not only the purchase and sale of products, but also the provision of services, the range of which can be quite wide. Particular attention in the studied context deserves such an area of e-business as the remote provision of accounting services by specialized outsourcing companies using cloud technologies, or e-accounting.

Online accounting through a web application is usually based on a simple monthly fee and zero administration to help companies focus on key activities and avoid the hidden costs associated with traditional accounting software such as installation, upgrades, data file sharing,

backup and disaster recovery. Most e-accounting services are offered as SaaS (software as a service).

### Principal Accounting Paradigms and Objective Preconditions for the Formation of the New Digital Accounting Paradigm

One of the main criteria for accounting historical periodization is a change of scientific paradigm (Malyuha, 2020), which occurs as a result of the revolution in science and practice, at the moment when society is ready to abandon outdated postulates and methods in favour of forming a new worldview (Kuhn, 2012). The principal accounting paradigms are represented in table 1.

When we look at the historical process of accounting development, it can be noticed that there were some revolutionary turning points, such as: the occurrence of writing, arithmetic and inventory; monetary measurement and valuation. The most fundamental achievement was the invention of the double entry in the 15th century, which became the true birth of accounting as a science.

The above-mentioned evolutionary changes were predetermined by certain objective circumstances and caused a certain breakthrough in the development of accounting science and brought it to a new qualitative level. This allowed to form a fairly holistic system of ideas about a certain order, structure and stable relationships between the constituent elements of accounting science in the form of a paradigm.

In recent decades, there have been significant improvements in evolutionary accounting: the unification of the accounting system, the practice of international accounting standards and the use of computer software. But digital technologies initiated the process of radical transformation, allowing to transfer accounting to a digital platform (2020).

Table 1: Principal Papadigms of Accounting

Accounting paradigm	Main characteristics			
	Purpose	Accounting techniques	Accounting elements	Measuring instrument
<b>Simple natural accounting</b>	Control over the preservation of values and ensuring fast receipt of information	Simple counting of objects and phenomena	Inventory accounts and registration of account objects	Natural
<b>Chamber accounting</b>	Fixation of income and expenses	Simple counting and double entry	Reporting period and budget	Monetary

<b>Simple monetary accounting</b>	Accounting for property, its condition and natural movement	Simple recording	The results of the use of property	Monetary
<b>Double (entry) accounting</b>	Property accounting. Determination of the effectiveness of business	Documentation; inventory; evaluation; calculation; accounts; double entry; balance sheet; reporting	Enterprise property, intangible assets, liabilities, sales, receivables, accounts payable, equity, depreciation	Monetary

Source: Compiled by the authors.

The set of trends and factors in the development of accounting in the digital economy (technical and technological capabilities of the accounting process for the efficiency of collection, amount and quality of information processing; accelerated development of electronic paperless document flow; separation of information as a factor of business value; emergence of new digital objects of accounting; expanding the scope of activity; development of intangible and intellectual components of capital; focusing on non-financial target priorities; involvement of non-financial information in the accounting system; application of alternative accounting methods; formation of the global information and telecommunication environment and related technologies and information security requirements; development and application of alternative types of accounting, formation of approaches to their integration) determine the accounting methodology, principles, procedures, content and characteristics of the information product, internal structuring, selection of types of accounting and their integration, identification and systematization of accounting objects, establishing criteria for their recognition and taxonomy, etc (Spilnyk, Brukhanskyi & Yaroshchuk 2020, p. 581).

Changes in accounting practice require a revision of the provisions of accounting theory, including such centuries of “inviolable truths” as, for example, components of the method of accounting and so on. This raises many issues of theoretical and applied nature and opens up new perspectives for the profession of accountant.

#### 4. CONCLUSION

The digital agenda is transforming our lives in many ways. The ways in which we both interact and conduct business are radically different from those in the environment of ten, and perhaps even five, years ago (The digital accountant, 2020, p. 4). Thus, the informatization and computerization of society has made changes in technology, forms, methods of accounting. The operational, analytical, control, and informative capabilities of the accounting system have



significantly expanded, and the probability of obtaining erroneous data has been practically minimized. However, the thinking and behavior of many accountants are shaped and driven by academic research, established business practices, colleagues in the workplace, and outdated systems. The time has come when we learned to continually question these paradigms.

Since the modern period is a qualitatively new stage in the society development, and accounting in all its aspects is undergoing significant changes, it should accordingly lead to a transition to the new paradigm. Innovative technologies certainly update the revision of the accounting paradigm both in its methodological basis, which has developed over five centuries, and in epistemological aspects. Theoretical and conceptual research of the accounting system in the new environment is needed now more than ever.

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