

***Economic Theory***

Iryna NAZAROVA

**ELECTRONIC DOCUMENT  
IN THE CONTEXT  
OF INTERNATIONAL ECONOMIC  
AND LEGAL FRAMEWORK****Abstract**

In modern economy, the format of interaction between counterparties is rapidly changing under the influence of universal introduction of information technology and electronic record-keeping. This ongoing process is developing in conditions of insufficient research on the main characteristics of electronic documents, their essence, and authentication of such documents. The paper investigates the emergence of the legal framework for modern electronic document circulation, systemizes and generalizes current normative and legal acts that regulate the drafting and flow of documents. General provisions for recognizing electronic documents are developed, taking into consideration the adaptation to international corporate accounting standards. Comparative analysis of normative and regulatory acts reveals discrepancies in the drafting and recognition of electronic documents. Thus, the article substantiates the need for a classification of documents in electronic form by methods of creation, storage and authentication.

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electronic document; electronic record keeping; electronic document circulation; electronic document management; digital document; electronic-digital verification document.

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### **Problem Statement**

The introduction of computer technology – the latest means of communication and the ability to transmit information quickly – in the twentieth century led to the emergence of a new era of economic relations – the information or digital age. The latter is characterized by extensive capacity for transmitting and receiving information, expanding the scope of business units, increasing speed and streamlining information sharing. In such circumstances, the process of formalizing relationships between business entities or documenting them needs to be improved. The classic method of recording transactions using paper documents is losing its relevance, as it slows down the implementation of agreements. Accordingly, new forms of formalizing relationships are emerging, ones that do not require a long and costly transfer, and are easy to formalize and renew. Thus, computer technologies for collecting, storing and transmitting information are replacing paper-based means of recording information.

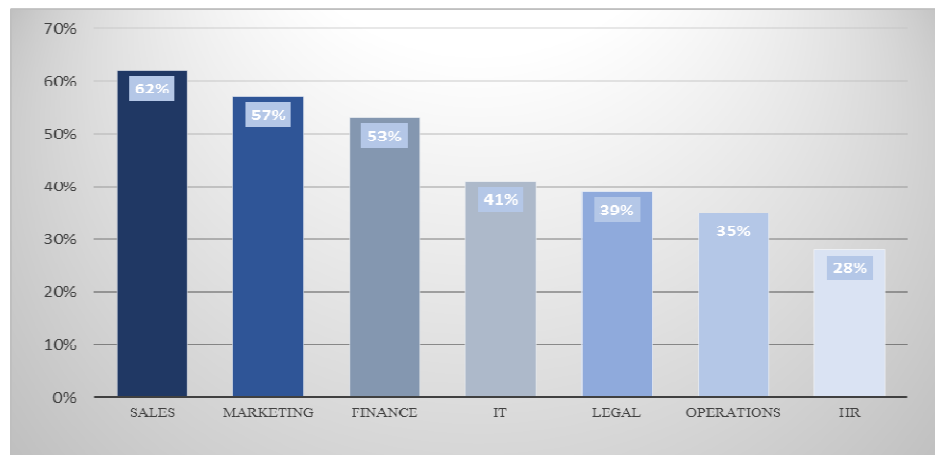
The first technical means in the field of electronic recording of information were machine-readable devices, and accordingly, documents generated by such devices were labeled «machine-readable». They were employed only in the initial stage of automated information processing, namely in the automatic reading and input of data into the machine. Later, in the 1990s, the format of machine docu-

menting was changed: documents at all stages of their existence (from creation to disposal) became electronic and thus were called «electronic documents».

Since then, electronic documentation has continued to evolve and, due to advantages like easy reproducibility and constant availability, has become more and more widely used by businesses around the world. For example, a 2020 study conducted by Forrester Consulting on behalf of Adobe on the digitalization of documentation in North America, Europe, and Asia Pacific showed that the majority of businesses, namely 72%, use a combination of paper and electronic documentation (Forrester Consulting, 2020). There was a significant difference between the types of work in terms of the share of electronic documents used by different structural units in 2020 (Fig. 1).

Figure 1

#### Use of electronic documents by type of activity



Source: designed by the author using the data of Forrester Consulting (2020).

Thus, sales (62%), marketing (57%), and finance (53%) departments use electronic documents the most, while HR, operations, and legal departments use such documents to a somewhat lesser extent.

An assessment of the general structure of documentation of business entities in market economies indicates that the share of electronic documents is quite high. Therefore, there is a need to study the essence of such documents, deter-

mine the main features that make them electronic, and assess the Ukrainian and international legal framework in terms of recognizing the authenticity of such documents.

## Literature Review

Despite the growing popularity of electronic documents, their essence and legislative framework have received insufficient attention from researchers. Among Ukrainian scholars, the documentation system (including electronic documents) was studied in detail by T. Butynets (2001), who linked electronic documents to certain technical means (computers) and believed that all screen-based accounting forms and computer data are documents. S. Ivakhnenkov (2008) studied electronic documents as an important component of the computer-communication form of accounting and argued that they are a combination of certain elements: physical registration of information, form of its presentation, activation of certain actions. N. Holiachuk (2012) considered the evolution of accounting information systems and technologies and substantiated the essence of electronic documentation not from the standpoint of information registration tools, but in relation to information carriers: as an electronic (paperless) work technology that allows for the paper form only as a copy of the document. A. Yanchev (2015) defined an electronic document as the main tool for organizing a virtual business, which ensures the interaction of infrastructure elements of virtual enterprises, information technology and input elements of the external information environment. The most complete and comprehensive study of electronic documenting in general and the essence of electronic documents in particular was conducted by V. Plaksienko, I. Nazarenko, K. Zhadko, and S. Harkusha (2021), who compiled the most common interpretations of the concept of electronic document. However, most Ukrainian scholars have studied electronic documents from the perspective of national practice, relying on Ukrainian legislation. At the same time, given the integration aspirations of Ukraine and its desire to be a part of the developed world economy, it is necessary to study the compliance of national norms for recognizing electronic documents with international standards and to outline areas for improvement.

Foreign authors have also studied certain aspects of electronic documentation. For example, D. Huttenlocher and A. Moll (2000) defined the structure of electronic documents and the possibility of bringing their format closer to the paper analog through coding while preserving the appearance, which would greatly facilitate the recognition of such documents. S. Kushybek (2021) studied the legal regulation of electronic documentation and defined an electronic document as a type of document that exists only in digital form and is an information product of the latest digital information technologies. G. Varbanova (2020) studied the interpretation of electronic documents, legal regulation and their recognition as evi-

dence in civil proceedings at the national and international levels. A. Kussainova, D. Kussainov, B. Zhumagulov, Zh. Simtikov, and B. Zhangutin (2020) analyzed the interpretation of electronic documents in regulatory documents of different countries, as well as its impact on the recognition of such documents as valid. A. Imamnazarovna (2020) considered the regulatory and legal aspects of the recognition of electronic documents in the countries of Central Asia; in particular, she highlighted the need to certify electronic documents created by a legal entity with a seal and display it when visualizing such documents. Reviewing the topics discussed in scientific studies on electronic documents, it is clear that most of them are related to regulatory or legal aspects of recognizing electronic documents, and only a few are devoted to defining their essence.

**This paper aims to** study the essence of electronic documents by outlining the framework of this concept in international and Ukrainian regulations in order to determine the uniform parameters for the recognition of electronic documents at the international and national levels.

## Methodology

The theoretical and methodological basis of the study was formed by general scientific, special and empirical methods of cognition of processes and facts. A statistical and analytical method for assessing the share of electronic documents in the general documentation system based on data collected from open sources for 2020 was used to empirically substantiate the need to study electronic documentation. The results revealed a significant share of electronic documents in the general documentation of businesses, as well as the correlation between the degree of digitalization of documentation and the types of activity of business divisions. For greater clarity, the results of the study are presented partially in visual form using the graphic method.

The essence of the *electronic document* concept was studied using the bibliographic method based on a comparative analysis of keyword searches in Ukrainian and international legal documents. This resulted in suggestions on how to improve the existing definitions, in particular the term *electronic document* in a way that takes into account the latest realities and prospects of electronic documentation. This also allowed for the delineation of certain types of electronic documents based on the method of their creation, transmission, receipt and authentication.

The historical method is also used to study the development of the legislative framework for modern electronic document management and the implications of rapid digitalization for updating the legal acts regulating the creation and circulation of electronic documents.

## Research Results

The first documents generated by computers appeared in the 1970s. However, at that time, they were experimental, used only for internal needs, and in most cases were duplicated in the already familiar paper form. But with the increased speed of information data exchange and remote communication with partners, electronic documents have proven to be more user-friendly and practical. At the same time, given their special intangible form, there is a need for special regulatory and legal provisions for their use and recognition.

The first legislative initiatives to recognize and define the essence of electronic documents were introduced in the European Union and the United States. In particular, in 1997, the Digital Signature Act came into force in Germany, which was part (Article 3) of the Act on the Regulation of the Basic Conditions for the Provision of Information and Communication Services (Informations und Kommunikationsdienste-Gesetz – IuKDG August 1 1997). This normative document was one of the first regulatory acts on the recognition of electronic documents.

In other European countries, the recognition of electronic documents occurred a little later. For example, in the UK, the Electronic Communications Act was adopted only in May 2000 for such purposes, while France amended Chapter VI of the Civil Code (which mainly covered the form and evidentiary value of contracts). In addition, their main focus was on creating general rules that would equalize the legal force of electronic documents and signatures with their paper counterparts in all areas of legal relations (Dutov, 2002).

The international recognition of electronic documentation started in the late 1990s and early 2000s, when the European Parliament adopted two fundamental directives. Directive 1999/93/EC of December 13, 1999 on Electronic Signatures established the rules for legal validation of electronic documents through the use of electronic signatures and requirements for member states regarding the conditions for their certification. Directive No. 2000/31/EC of June 08, 2000 on E-Commerce established the general principles of e-commerce development, namely, by granting legal force to documents (including contracts) in electronic form, removing barriers to their use and prohibiting the denial of their legal force solely on the grounds of their electronic form.

At the same time, similar initiatives to recognize electronic documents were adopted in the United States. In particular, the US Congress approved the Uniform Electronic Transaction Act (1999) and the Electronic Signatures in Global and National Commerce Act (2000), the main provisions of which are still in use today.

Currently, most developed economies apply international regulations on electronic documents or have developed their own legislation based on unified provisions of international law. Thus, when studying the interpretation of electronic documents in developed countries, one should rely on international experience.

The definition of *electronic document* in the main international legal acts is somewhat ambiguous. Table 1 summarizes the different interpretations of this concept as used in international legal documents.

Table 1

**Interpretation of the *electronic document* concept  
in international legal regulations**

Source	Definition
Uniform Electronic Transaction Act (UETA) drafted by the National Conference of Commissioners on Uniform State Laws and by it approved and recommended for enactment in all the states at its Annual Conference Meeting in its one-hundred-and-eighth year in Denver, Colorado. July 23–30, 1999	«Electronic record» means a record created, generated, sent, communicated, received, or stored by electronic means (sec. 2.7).
Electronic signatures in global and national commerce act. (ESIGN). Public Law 106–229, 114 Stat. 464, enacted June 30, 2000, 15 U.S.C. ch. 96	«Electronic Record» – The term «electronic record» means a contract or other record created, generated, sent, communicated, received, or stored by electronic means (sec. 1. 106. 106).
Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC	«[E]lectronic document» means any content stored in electronic form, in particular text or sound, visual or audiovisual recording (art. 3(35))
UNCITRAL Model Law on Electronic Transferable Records. UNITED NATIONS. (2017)	«Electronic record» means information generated, communicated, received or stored by electronic means, including, where appropriate, all information logically associated with or otherwise linked together so as to become part of the record, whether generated contemporaneously or not (ch. 1, art. 2)

Source	Definition
ISO 19005-3:2012(en) Document management – Electronic document file format for long-term preservation – Part 3: Use of ISO 32000-1 with support for embedded files (PDF/A-3)	[E]lectronic document [is] electronic representation of a page-oriented aggregation of text, images and graphic data and metadata useful to identify and understand that data, that can be reproduced on paper or other substrates, as well as rendered electronically on display devices, without significant loss of its information content (art. 3.2)
ISO 32000-2:2020(en) Document management – Portable document format – Part 2: PDF 2.0	[E]lectronic document [is] electronic representation of a page-oriented aggregation of text, image and graphic data, and metadata useful to identify, understand and render that data, that can be reproduced on paper or displayed without significant loss of its information content (art. 3.22)

Clearly, there is a lack of uniformity in the definition of «electronic document» in international regulatory documents. The same is true of Ukrainian regulatory legal acts.

The Law of Ukraine on Electronic Documents and Electronic Document Circulation adopted in 2003 was the first national regulatory act that legalized electronic documents and, accordingly, electronic document management. This Law actually set forth the first legal definition of an electronic document, which has not changed to this day. The gradual increase in the share of electronic documents in both the government and business document management systems also led to more regulations governing the use of documents in this format. Each of these acts provided its own definition of an electronic document. The main interpretations of this concept are presented in Table 2.

Thus, the review of scholarly and regulatory sources shows that there is no single definition of an electronic document. Most Ukrainian authors follow the interpretation given in the Law of Ukraine on Electronic Documents and Electronic Document Circulation, which was adopted in the early 2000s and does not take into account significant technical breakthroughs and new realities of business development and information support.



Table 2

**Interpretation of the *electronic document* concept in the regulatory acts of Ukraine**

Source	Definition*
On Electronic Documents and Electronic Document Circulation: Law of Ukraine No. 851-IV of May 22, 2003	Electronic document is a document in which information is recorded in the form of electronic data, including essential document attributes (art.5)
State Standard of Ukraine DSTU 2732:2004 Record keeping and archival affairs. Terms and definitions of concepts: approved by the Order No. 97 of the State Committee of Ukraine for Standardization and Consumer Protection of May 28, 2004	Electronic document is a document created and used only within a computer system (par. 3.33)
Regulation on the Automated Court Document Management System: approved by the Council of Judges of Ukraine on November 26, 2010, No. 30	Original of an electronic document with mandatory requisites that give it legal force, including an electronic digital signature of the author (sec.2, par.1)
Regulation on Electronic Educational Resources: approved by the Order of the Ministry of Education, Youth and Sports of Ukraine on October 1, 2012, No. 1060	Electronic document is a document in which information is presented in the form of electronic data and for the use of which technical means are required (par.2.1)
Regulation on the Procedure for Organizing and Exercising Supervision in the Field of Financial Monitoring, Currency Supervision, Supervision of the Implementation and Monitoring of the Effectiveness of Personal Special Economic and Other Restrictive Measures (Sanctions): approved by Resolution of the Board of the National Bank of Ukraine No. 90 on June 30, 2020	Electronic document is any document (letter/outgoing letter/cover letter, request, order, on-site inspection certificate/report on the on-site inspection outcomes, other document drawn up in accordance with the requirements of this Regulation) that is stored and/or drawn up in electronic form and signed with a qualified electronic signature(s) of the relevant authorized person(s) (sec.1, par.3)
Regulation on the Procedure for the Operation of Certain Subsystems of the Unified Judicial Information and Telecommunication System: approved by the decision No. 1845/0/15-21 of the High Council of Justice on August 17, 2021	Electronic document is a document, information in which is recorded in the form of electronic data, containing essential document attributes, the legal status of which is verified by a qualified electronic signature of the author (sec.1, par.5)

\* Original definitions in Ukrainian. Translation by the *Journal of European Economy* editorial team.

The same applies to the definitions provided in other Ukrainian regulatory acts, which essentially repeat the interpretation of the above-mentioned Law, only partially rephrasing or supplementing it. In turn, the drafters of international regulations are trying to keep pace with economic progress by expanding the scope of the electronic document concept. However, their interpretations are not uniform either. Accordingly, there is a need to analyze this concept, taking into account the main areas of concern.

The main inconsistency in the definitions found in the scientific literature is the limited scope of electronic interaction with documents, reduced to the use of computers only. After all, today there are many technical devices that can record data and produce electronic documents that could arguably be considered computers. This applies, in particular, to payment terminals, smartphones, and other means of communication.

Another problematic aspect of the Ukrainian legal interpretation of electronic documents is the inevitable reference to a physical storage device. Today, new realities of electronic document circulation must be taken into account. In modern times, a file can be shared in a network even if none of the network users have the full version of the information file and all of them share only parts of it. Under such conditions, capturing documented information on a physical storage device loses all meaning, given that documents are in constant motion in decentralized networks.

In addition, the development of blockchain technologies is particularly relevant now. In particular, this applies to sharding, which is used to create a fragmented system. In contrast to the current system of storing a full copy of the database on each node, sharding allows you to store data fragmented on separate nodes (Vishnevsky et al., 2020). Then the complete database is formed as a mosaic of separately stored parts, which significantly boosts the performance of the entire system (Jordan, 2018). Under such conditions, the record of business transactions and agreements is divided into blocks contained in a public decentralized register. In this case, the requirement to have a record saved on a physical storage device is fulfilled only conditionally, since it is impossible to identify the specific storage device.

Yet another problematic issue is the inclusion of mandatory requisites of the document, since when specifying the attributes in the unified database, they will be stored separately after the data is distributed. In addition, not all electronic documents may have mandatory requisites. For example, when making payments using contactless payment, the fact of payment itself may not be confirmed by a verified electronic signature, since funds can be charged directly from an electronic wallet without the need to enter a PIN.

Thus, it should be noted that the international approach to the regulatory interpretation of an electronic document is broader than the Ukrainian national view. It is better adapted to modern circumstances, as it does not specify that an

electronic document must be visually comprehensible to humans and does not link the document to a physical storage device. However, such documents face the problem of legitimacy.

Therefore, in our opinion, several concepts should be used for electronic documentation, namely *electronic document*, *digital document* and *electronic-digital verification document*. Electronic document is a document whose data are recorded by electronic means on physical storage devices in the form of a single file, and can be reproduced in a readable form and verified by a qualified electronic signature. Digital document is a document whose data is stored by electronic means in one or more separate places, combined and visualized when accessing the document and verified by an ID code / QR code with access to the original in the digital register (Fig. 2).

At the moment of downloading and visualization, electronic and digital documents are converted into electronic-digital verification documents. Electronic-digital verification documents are electronic or digital documents that can be visualized on paper or other media, as well as displayed electronically on technical devices without significant loss of informational content with the ability to identify them (using mandatory requisites) and confirm their authenticity and integrity (using a qualified electronic signature or an existing ID code with access to the original in the electronic register).

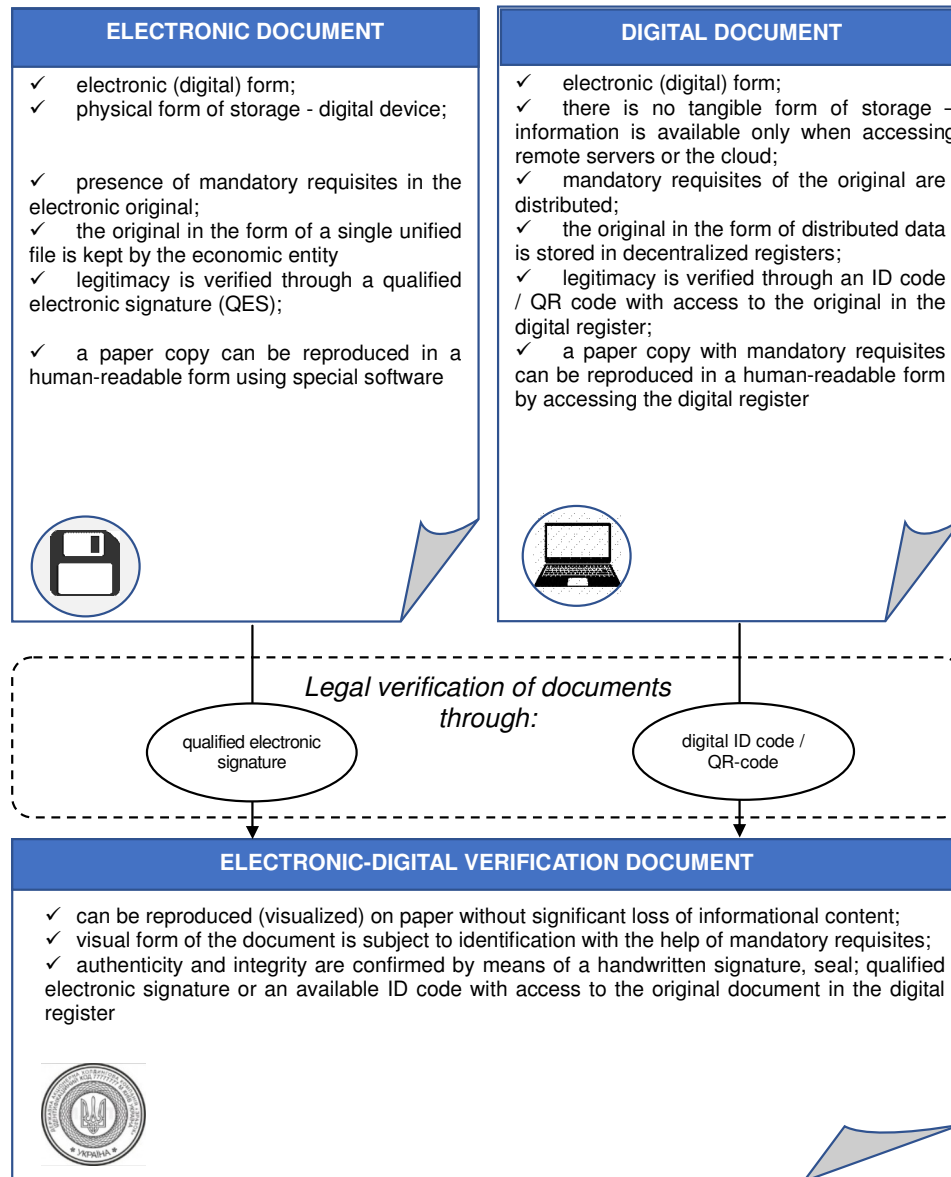
## Conclusions

The new information age of economic relations is characterized by broad opportunities for transmitting or receiving information, expanding the field of activity of businesses, increasing speed of information flow and simplifying information sharing. Thus, it is especially important to change the format of recording transactions and relationships, in particular through the use of electronic documents. This has led to an increased share of electronic documents in the total volume of business entities' documentation. Accordingly, there is a need to study their essence, determine the main features attributed to electronic documents, assess the Ukrainian and international legal framework for recognizing the legitimacy of such documents in order to determine the uniform parameters for creating electronic documents at the international and national levels.

A study of scientific publications and regulatory acts showed that there is no single definition of *electronic document*. In general, most scientific and regulatory sources in Ukraine are based on the definition set forth in the Law of Ukraine on Electronic Documents and Electronic Document Circulation, which was adopted in the early 2000s and takes into account neither rapid technological advances nor new realities of business development and information support.

Figure 2

**Types of documents used for electronic documentation (record-keeping)**



Meanwhile, the drafters of international regulations are trying to keep abreast of economic progress by expanding the scope of this concept. Accordingly, international interpretations are more suited to the modern rules of partnership relations, as they do not specify the need for an electronic document to be visually understandable for human perception and do not bind the document to a tangible medium. At the same time, the problem of legal validation of such documents arises due to different ways of their creation and storage. Therefore, in my opinion, several concepts should be used in the description of electronic documentation, such as:

- electronic document – when data is recorded by electronic means on physical storage devices in the form of a single file that can be reproduced in a readable form and verified by a qualified electronic signature;
- digital document – when data is stored by electronic means in one or more separate places, combined and visualized when accessing the document and verified by an ID code / QR code with access to the original in the electronic register;
- electronic-digital verification document – when an electronic or digital document is visualized on paper or other media, as well as displayed electronically on technical devices without significant loss of information content with the possibility of identifying it (using mandatory requisites) and verifying its authenticity and integrity (using a qualified electronic signature or an existing ID code with access to the original in the electronic register).

Such gradation will allow for a clearer definition with regards to the scope of application of electronically generated documents, as well as their place and role in terms of both economic feasibility and legal legitimacy.

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