

Innovative Transformation and Electronic Signature as New Instruments for Global Economic Advancement

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Abstract: Development of mankind in the last centuries is characterized by rapid technological development and advancement that make possible and realistic the fairy tales' mystic world of flying carpets, magic mirrors, moving pictures, mysterious powers and est. Digital technologies significantly improve the efficiency of economy through dramatically reduction of the cost of business relations and transactions. New technologies give additional opportunities to businesses to act more easily at global level and access the foreign markets. At the same time, electronic transactions have considerably expanded during the past decades. One of the important aspects that support the development of digital business operations, is the online verification of contracts or important documents necessary to prove the validity of online transactions. E-signatures represent modern means to accelerate online business processes and thus, make accounts receivable and accounts payable, as well as close deals faster by removing transaction barriers and invoicing issues. The paper analysis the benefits of e-signature and the impact is make on economic development on both national and global level. The paper discusses and the current legislative normative acts and juridical base which recognized Electronic signatures and concludes that despite the certain difficulties in term of application of digital signature future global developments will inevitable lead to the wider use of digital technologies and consequently broader application of digital signature.

Key words: digital signature, technology, global development

I. Introduction

Development of mankind in the last centuries is characterized by rapid technological development and advancement that make possible and realistic the fairy tales' mystic world of flying carpets, magic mirrors, moving pictures, mysterious powers and est. Today we are witnessing the fourth industrial revolution that is fundamentally different from the previous three, and that creates the new environment of digital world. Fourth Industrial Revolution is the key issue on modern development agenda in academic, political and economic circles (Schwab, 2016). Success of the country in science and research significantly defines the level of national welfare (Sepashvili 2016). However, just exiting of higher educational system and generating researchers do not mean higher positions in R&D (Bedianishvili 2018).

Digital technologies significantly improve the efficiency of economy through dramatically reduction of the cost of business relations and transactions. Unprecedented spread of digital enterprises entails new practice of social, mobile, analytics and cloud (SMAC) technologies to achieve greater productivity. At the same time, unprecedented growth of digital consumers, in its turn, boost even wider usage of SMAC technologies and thus, lead to a new era of digital economy and digital world (Mermanishvili 2019). In contemporary global development digital technologies force business to adapt novelties to survival in the transformed global industrial space against the tough international competition (Sepashvili 2019).

New technologies give additional opportunities to small and medium businesses to act more easily at global level and access the foreign markets. OECD and WTO data demonstrated that, due to the cross-border activities relatively small business had an access to more customers. Study showed that offline sellers mainly exported to one markets meanwhile in case of 60% of online purchasing, such kind of firms were selling to two or more markets. Moreover, new internet platforms, such as Upwork and Freelancer, make possible for entrepreneurs and businesses to offer services online. (OECD and WTO 2017). As United Nations Conference on Trade and Development (UNCTAD) data shows, the share of those buying from abroad rose from 15% in 2015 to 21% in 2017 (UNCTAD 29 March, 2019). However, most internet buyers yet prefer to purchase goods and services from

domestic firms. Consequently, cross-border business-to-consumer sales reached \$412 billion in 2019, consisting approximately 11% of total B2C e-commerce. This is a 4% growth to previous year numbers (UNCTAD, 2019).

Electronic transactions have considerably expanded during the past decades. In 2018, 1.8 billion people purchased goods online. During the same year, global e-retail sales amounted to 2.8 trillion U.S. dollars and estimates demonstrate an increase up to 4.8 trillion U.S. dollars by 2021. (Clement 2019). According the UNCTAD, the value of business-to-business e-commerce exceeded \$15 trillion and with business-to-consumer e-commerce reached at \$1.2 trillion in 2013. The gross value of the cross-border e-commerce reached \$300 billion in 2015. Estimates predicts to growth rate by roughly 25% annually through 2020. (DHL Express, 2016). In 2017e-commerce sales grew by 13% globally, and reached \$29 trillion, as UNCTAD (29 March, 2019) number shows.

One of the important aspects that support the development of digital business operations, is the online verification of contracts or important documents necessary to prove the validity of online transactions. To say in other words, possibility to provide an approval or consent online when digital trade and exchange is occurring, is key to develop e-commerce. In this context, the electronic signature is an excellent tool to affirm the legal value and validation of online business operations. E-signatures represent modern means to accelerate online business processes and thus, make accounts receivable and accounts payable, as well as close deals faster by removing transaction barriers and invoicing issues. Signatures can be gathered in a matter of minutes, increasing operational efficiency. Moreover, the use of electronic signatures provides greater quality of viability as it provides more transparency: well-designed digital processes and e-signatures can show every detail and changes of the transaction (Adobe 2017).

Paper-based documents and handwritten signatures have been used to support commercial transactions for centuries in both in national and cross border cases. Therefore, countries had already developed appropriate legislation to deal with different commercial activities such as regulating a contract's terms, termination, execution, its conditions of validity, legally binding proof of consent and est. Meanwhile, electronic documentation and electronic signature are yet the new and modern mean of business operations. They create certain inconvenience and difficulties in practice. Online transactions entails numerous problems for both national and cross-border transactions. First of all, not every country of the world has the appropriate legislation or regulations for electronic signatures and electronic transactions. The second serious problem relates with identification of the persons or parties who are conducting contract or signing the agreement, as well as with confidence that the information is valid and is not changed. These aspects are crucial in online transactions. Moreover, the technologies and methods used for online transactions are numerous and vary according the countries. For global use and international application they should be interoperable to ensure that they are globally acceptable in every country (Sepashvili 2020).

At present, universal system of approaches, technologies, standards, or regulations does not exists for e-transactions. Though, the vivid benefit driven from digital economy push couriers to seek for solution of this problem. The United Nations Commission on International Trade Law (UNCITRAL) has taken steps to standardize the approaches and increase legal rules to govern e-transactions, e-signatures and digital authentication. The main legislation regulating these problems include:

- UNCITRAL Model Law on Electronic Commerce (MLEC) (1996)
- UNCITRAL Model Law on Electronic Signatures (MLES) (2001)
- United Nations Convention on the Use of Electronic Communications in International Contracts (ECC) (2005)
- UNCITRAL Model Law on Electronic Transferable Records (MLETR) (2017).

Currently, many countries adopted legislation to deal with e-transaction, though regional disparities still exist. According to UNCTAD, 145 countries have passed such laws, of which 104 are developing or transitioning economies. Almost half, 46.3%, of African economies, 72% of Asian, 81.8% of Latin American and Caribbean and 97.6% of developed economies have adopted e-transactions laws (UNCTAD, 2015).

The first legislative normative act which recognized Electronic signatures in the EU was the Directive on a Community framework for electronic signature (eSignature Directive) adopted in 1999. Recently, the EU established a new legal framework for electronic identification, signatures, seals and documents by issuing the Electronic Identification and Trust Services Regulation (EU regulation 910/2014/EC - also known as eIDAS Regulation) in 2014. The eIDAS Regulation replaced an EU e-signature directive. Since 1 July, 2016 eIDAS Regulation is in force. The Regulation offers the terms of using for three levels of signatures: basic, advanced and qualified e-signatures. While all types of signature are legal, acceptable and valid, only qualified e-signatures are legally identical to handwritten signatures. These are also the only types of signatures mutually recognized by all EU member states. Qualified electronic certificates are based on qualified certificates which are issued by a Certificate

Authorities accredited and supervised as designed by eIDAS Regulation (EU Commission 2016). At the same time, The EU is adopting strong and sound security requirements for digital signature to ensure its reliability.

Electronic signatures are used in a variety of situations. The qualified electronic signatures can be used in any situation, as their legal effects are equivalent to the ones of handwritten signatures. Usually they are used in any case, even cross-border, where handwritten signatures are used, such as:

- Administrative procedures (tax declarations, requests for birth certificates, etc.)
- Transactions (e-commerce, online banking, etc.)
- Contracts (sales, employment, lease, insurance, etc.)

The eIDAS Regulation replaced an EU e-signature directive issued in 1999. The previous one was implemented in different ways by member states and lack interoperability in an extent that would support single digital market creation within the EU. In practice, some of members also would not recognize each other's e-signature laws. The result was a complex environment for business and consumers to work in, as e-signatures and certification tools underpinning digital signatures were not applicable across the entire space of the EU (Commission 2015). Even currently, the eIDAS regulation is in full force across all 28 member states, the majority of companies in the private sector are either lagging behind, as the implementation of the regulation involves strong security and other requirements to guarantee legislative validation of the e-signatures and e-seals.

Over 23 million small and medium enterprises are operation in the EU, though majority of them are less affected by the eIDAS. The regulation is mainly implemented through public services and government agencies that widely apply new opportunities offered by the regulation. The regulations introduces new terms and concepts including electronic devices, and data types — certificates, identifications, signatures, timestamps, seals, creation data and devices — each are divided into 3 assurance levels. The regulation is too complex and contains no less than seven implementing acts and 30 norms, specifications technical standards, etc. this creates certain difficulties for business to adopt and widely introduce in daily operations. Despite the vivid advantages of the digital signature, business and individuals yet heavily rely on paper and hand-written signature. Many still lack confidence and trust in electronic processes. Though the speed of implication of the electronic signature is growing rapidly.

II. Conclusion

The 4th wave of industrial revolution at the beginning of 21st century creates digital space that combines physical, biological and virtual world. Information and communication technologies are the backbone of this evolution. Today more than ever future of countries depends on how national governments, businesses and individuals handle digital technologies. This political goal equally concern variety of issues such as physical infrastructure for internet networks, regulatory frameworks, business readiness, consumer skills and est.

But the digitalization would be impossible without appropriate confidence of online verification of contracts or important documents necessary to prove the validity of online transactions. In this context, the electronic signature is an excellent tool to affirm the legal value and validation of online business operations. E-signatures represent modern mean to accelerate online business processes and thus, make accounts receivable and accounts payable. To support creation of universal system of approaches, technologies, standards, or regulations for electronic validation – digital signature - the United Nations Commission on International Trade Law had issued the main legislation that are approved by the majority of countries to regulate these issues and to be interoperable. In the EU eIDAS regulations and supporting technical and security standards and requirements are issued to provide the comprehensive framework to use the digital signatures and seals in order to facilitate and support business to act in modern digitalized global economy, where new technologies are gaining the higher speed. Despite the certain difficulties in term of application of digital signature due to the technological novelties requiring appropriate physical infrastructure, complex and comprehensive soft-wares, strong and strict security requirements, skills and knowledge, changing of cultural and behavior attitudes, future developments will inevitable lead to the wider use of digital technologies and consequently broader application of digital signature.

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