

GLOBAL DIGITAL ECONOMY. BLOCKCHAIN TECHNOLOGY AND PUBLIC ADMINISTRATIONS

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Abstract

We are in the midst of a technology revolution, dominated by computers, the Internet of Things, digital economy and digital governance. Propagating new technology in all areas of life is shaping a new type of society, a new way of governance and a new public administration. The governments of the more developed states have begun to allow the implementation of new technologies in their administrative systems, in order to make them more efficient and to simplify the services offered to all citizens. It is a very important step in this technology revolution, probably the last step in this process, to integrate the digital economy into administrative systems. The digitization of the administration and the governance process implies a number of advantages that we cannot ignore, but these advantages are accompanied by a series of disadvantageous possibilities and unforeseen situations, which greatly slow down the digitization process. Blockchain technology is being discussed and successfully implemented in various fields. It is often associated with virtual currencies and online transactions, usually referring to branches of the private domain, being used mainly by large companies or influential businessmen. Given the numerous benefits of implementing the technology in as many of the moments of everyday life for the Romanian citizens, it is desirable to implement them in the public administration in the near future. It should become a priority the implementation of modern technology at national level, especially in the shadow of the latest global events, which prove the indisputable need for it, whether it is blockchain or not.

Keywords

blockchain, technology, cryptocurrencies, bitcoins, public administration, eGovernance

JEL Classification: H7

Introduction

We are in the midst of a technology revolution, dominated by computers, the Internet of Things, digital economy and digital governance. Propagating new technology in all areas of life is shaping a new type of society, a new way of governance and a new public administration.

The economic crisis has influenced consumer behavior globally and has contributed to the migration of large enterprises to the online environment, using Internet-based systems to increase efficiency, lower operating costs and the ability to operate in real time between different platforms (Oprescu and Eleodor, 2014; Lincaru et al., 2018).

Today, the digital environment is part of our daily lives, whether we like it or not. The tools that the internet and technology make available to us are part of our routine. For instance, applications from companies such as Uber, Lyft or TaskRabbit connect customers around personal services such as transportation. You can sell fruit from your neighbor's garden. In Oakland and Berkeley, you can buy a home-cooked meal from your own neighbors, and this are just a few examples (Scholz, 2016). The digitization of the economy is considered an essential driver of innovation, economic growth and societal change, but it represents a major challenge for the international tax system (Olbert and Spengel, 2017). The digital economy is not just an era of new or revolutionary business models, but rather the evolution of existing models, products and services (Bonnet and Westermann, 2015 in Olbert and Spengel, 2017). The key difference between digital and traditional economies, in terms of knowledge use and knowledge production, is the reduction of barriers using the Internet (McAuley et al., 2010). The digital economy refers to an economy based on integrated digital technologies (Harish, 2018). Currently, discussions in the economic field focus on the use of the online worlds and online platforms that allow transactions with such currencies. At the same time the digital governance should support the economic activities and create a friendly environment and a coherent legislation (Grigorescu et al., 2018).

Literature review

The most revisited works on the subject of new technology, for example "blockchain", are some articles published online on specialized websites that offers information about technology and tech instruments. Even this movement of publishing scientific papers only in the online space, highlights the fact that the society already embraced the new ways of technology and is using it accordingly.

The Internet, in the end, has become the largest possible market of all: content of goods, capital, labor and information. More precisely, it is a new global economic space and a virtual reflection of economic globalization (Zekanović-Korona, 2014).

Around 2008, a new possibility in the digital world appeared, described in a bold work: "Bitcoin: A Peer-to-Peer Electronic Cash System" (Nakamoto, 2008). In this innovative work, Satoshi Nakamoto¹ presents an alternative version of online payments, based on the "peer-to-peer" version of payment, i.e. the elimination of financial entities and the creation of a direct link between the parties, which can be traced by them in a digital information chain. This type of online transaction is carried out without costs and without the intervention of third parties, based on the digital signature.

Blockchain technology is an organized form of storing information in the online environment. It is a digital database in constant development and storing of information. This information is usually represented by users' financial transactions. Transactions are fast and efficient and can be tracked by users (Alton, 2016).

A blockchain is a growing list of records that are encrypted. Each block contains a cryptographic trace of the previous block, a timestamp and transaction data. By design, a

¹Satoshi Nakamoto is a pseudonym under which the paper was published in 2008.

blockchain is resistant to changing data. It is an open, distributed registry that can record transactions between two parties effectively and in a verifiable and permanent manner (official site “blockgeeks.com”).

The name “Blockchain” represents the digital form that the system creates from the information collected. It can be said that the information entered by the users is formed in blocks. Several blocks of information are linked together by a chain. Each block represents a slice of financial transactions. When a new transaction occurs, a new block is created next to the previous one (Alton, 2016). The information gathered is not necessarily public. Users can set the desired level of confidentiality. Blockchain offers more freedom in transactions and shorter execution times as legal rules do not affect users, as they do not have to respond under the authority of a national government (Alton, 2016).

A blockchain is, in simple terms, a series of immutable records of data that are managed by a cluster of computers, which do not belong to any entity. Each of these blocks of data (i.e. block) is secured and linked to each other using cryptographic principles (i.e. chain) (official site “blockgeeks.com”).

Advantages of blockchain (Alton, 2016): transactions are fast; it is not based on the actions of other people, removing human errors that might have occurred; increased accessibility for everyone; increased protection of transactions; decentralized environment (transactions can be made anywhere in the world).

Disadvantages (Alton, 2016): is a new technology that experts still do not know how the world will evolve or affect in the coming years; high costs for creating the systems for this technology; the security systems are not infallible; there is no option for return or reversibility; human error is still possible, at the user level.

A blockchain does not involve transaction costs, but only the cost of infrastructure. This is a simple but ingenious way of transmitting information in a fully automated and secure manner. Part of a transaction initiates the process by creating a block. This block is verified by thousands, probably millions of computers distributed around the network. The verified block is added to a chain, which is stored throughout the network, creating not only a single record, but a unique record with a unique history. Forgetting a single record would mean falsifying the entire chain in millions of cases, which is practically impossible (official site “blockgeeks.com”).

Bitcoin is a digital currency that does not exist in physical form and operates independently, allowing users to use it in transactions, without having to resort to banks, in a simple and accessible way. The link between Bitcoin and blockchain is a very close one, with blockchain representing the infrastructure for Bitcoin. Bitcoin only works through blockchain technology, while the latter is not conditioned by the presence of Bitcoin (Alton, 2016).

Advantages of Bitcoin (Alton, 2016): this type of currency It cannot be counterfeit; cannot go through the inflation process, as a classic currency; users can trade any amount anywhere in the world; transactions have very low costs. Disadvantages (Alton, 2016): transactions with Bitcoin require user responsibility; transactions cannot be blocked.

As Bitcoin became popular, other cryptocurrencies began to develop (e.g., alt-coin) and appear on the market, producing competition and developing new networks to support them (Luther, 2015).

Bitcoin critics often say that its long-term goal of being an apolitical and valuable global store is unrealistic. It could be said that this currency could pose a threat to sovereign currencies, which would cause governments to close it, but this article (Lucian, 2019) mentions that this would be impossible. An argument in support of this idea is that Bitcoin is a decentralized network, which works permanently and does not have an abrupt end, like most platforms used today (Lucian, 2019).

Methodology

The hypothesis of the paper is: Blockchain technology is a starting point for the modernization of public administrations, and its implementation is increasingly necessary so that the national government can keep up with the important events of the society it is serving.

The research method chosen is the descriptive one, based on the specialized literature, verified by empirical procedure. By analyzing these studies and reports, I want to show the importance of implementing a new technology in public institutions, highlighting examples of good practices already in other states.

Results and discussions

States such as China and India have tried to ban the popularization and dissemination of this new technology, but without success. Internet-related industries present many difficulties with China's political economy (Hong, 2017). According to the example provided by US law enforcement institutions, governments cannot prohibit people from using Bitcoin, as it is a binary string inscribed on their computers, but can make it much more accessible and difficult to trade. The regulations in this regard would be comparable to banking restrictions, unlike anything else specifically created for the cryptocurrency industry (Lucian, 2019).

Around 2014, the focus shifted from Bitcoin to Blockchain technology behind the currency. People have realized that Blockchain can be separated from currency and can be used with other tools or other types of transactions in the online environment. The fact that it is a technology that presents confidence, intimacy and security, makes it suitable for any industry. However, the adoption of Blockchain in different sectors is still difficult, with a major change being observed in 10-20 years (Srivastava, Kumar and Saraswat, 2018).

Blockchain knowledge was named among the top ten employee skills in the near future, according to the most recent LinkedIn survey conducted in the Asia Pacific region (Chepkova, 2019). The opinions of over 4 thousand employees were analyzed regarding the learning of new skills that could be essential in the coming years. Specifically, it has been the fastest growing in Singapore and has been ranked in the top 3 in China, Japan, Taiwan, South Korea, Hong Kong and Vietnam.

However, the results of the report are not surprising. While there is still some controversy regarding cryptocurrencies and their regulation, the general attitude towards distributed ledger technology (also called shared ledger or DLT) is far more positive. The situation seems to be particularly favorable in Asia, where blockchain is enjoying government support, such as in Singapore, through the "Ubin" project, based on DLT.

The Ubin project has effectively restored the institutional infrastructure in Singapore by implementing blockchain platforms. The project is carried out by the Monetary Authority of Singapore in partnership with blockchain institutions and companies (official site "consensys.net").

In 2019, to demonstrate the project's applicability, the central banks in Singapore and Canada made the first blockchain-based digital currency transfer. The Monetary Authority of Singapore sent funds to the Central Bank of Canada without a third party (official site "consensys.net").

Currently, there are numerous cases of blockchain exploitation in the financial, retail, law, security and education sectors. Interest in the blockchain and its benefits continue to grow in different industries. This means that, in the near future, even more mainstream companies will be looking for experts capable of implementing blockchain solutions in their business models. IoT (Internet of Things) facilitates the sharing of devices, vehicles, buildings and others, by incorporating sensors connected to a network, which makes it possible to collect data and exchange it. Moreover, by integrating blockchain technology into the IoT architecture, an immutable register of shared transactions is created, without the need for a third party (Huckle et al., 2016).

Conclusions

Examples of machines with artificial intelligence that succeed people, are becoming more and more frequent. Although these robots will not take control of our lives very soon, there is a growing fear that they will soon replace us in our workplaces.

The general tendency to reduce workers to an undifferentiated mass that can be easily replaced is inherent in capitalist production relations, according to Marxist theory. It is in the interest of capital to have a working class whose abilities are as generic and substitutable as possible. Workers who have only generic skills are cheap to hire and can be easily replaced (Huwus, 2014).

Similar discourses on the implications of computerization for jobs, whether pessimistic or optimistic, have been articulated many times so far, the debate often being resumed by the latest technological developments (Valenduc and Vendramin, 2016).

This variant in which the non-specialized workforce would be successfully replaced by artificial intelligence raises many questions to the governments of the nations, the most ardent being the salaries of the people. A controversial solution is the existence of a basic universal income that ensures a minimum income for every citizen. The solution is imperfect and not just because it forces us to rely entirely on the government. Also, there is no unified decision on how to finance this, be it tax increases or other methods (Moeller, 2019).

Through cryptocurrencies, the quantum economy can define a financial network without borders, without cash, which operates on the basis of reliable mathematical calculation. Chances and uncertainties need to be “copied” in order for such networks to work at full capacity. Quantum quantification, despite being years away from being possible, makes a completely new paradigm likely. Problems of scalability and mass use could be easily solved as the computing power accelerates. Today, the real limit is our binary world (Lucian, 2019). The end result of this technological breakthrough would be a cashless financial network operating in real time. Such a global, decentralized system could accurately assess uncertainty and weigh the countless inputs present in an economy. The end result would be a trustless “super-computer”, which is not based on any location - a decentralized global network that would facilitate the free flow of money, as we treat information, today (Lucian, 2019).

Although it is a long way to go, it can be said that the blockchain sector will certainly play a major role.

At European level, there are some initiatives in this regard. Countries such as France, Germany and India are seeking to introduce blockchain technology into their financial systems, officially and on the basis of a legal framework.

In a motion for a resolution of 2018 (European Parliament, 2018), the European Parliament brings to the Commission important issues related to the benefits of implementing blockchain technology, and draws attention to the need to regulate it. There are also big differences regarding the digitization of the Member States and the need to reduce these disparities.

The European Parliament believes that digitization will allow a much more efficient and transparent exchange of information. Moreover, access to all necessary information would be created for logistics operators, manufacturers, laboratories, administrations and beyond (European Parliament, 2018). The Parliament encourages The Commission to work with Member States to adopt, among other things, appropriate information and communication technologies, to collaborate with relevant stakeholders to examine and develop a framework for resolving interoperability and compatibility issues between blockchain systems (European Parliament, 2018). It is hoped that the European Union will support and collaborate with stakeholders in the process of standardization and security of blockchain technology, to establish and regulate this technology mainly for industry and commerce (European Parliament, 2018).

Although in most cases the introduction of blockchain is discussed only in the financial services sector, the applications of this technology are much more diverse (official site “cisco.com”).

For example, in the health field, providers can use it to safely manage electronic medical records. Doctors can request permission to access the patient's medical history, then they can record new data, making them available to other network health professionals. In this regard, the Metlife Health Organization (Singapore) has turned its attention to Blockchain technology for storing all medical documents in a secure place (official site “tradesilvania.com”).

Another area where new technology can be introduced is electronic voting. Maintaining data integrity and voting fraud can be solved with Blockchain technology. There are public entities that already apply electronic voting. A government agency in Thailand (National Electronics and Computer Technology Center) is using Blockchain technology. The user data is transmitted directly from the voters to the polling stations without being fraudulent (official site “tradesilvania.com”). The same is true of Estonia, which voted on the Internet in 2005 during national elections (official site “e-estonia.com”).

Another possible use would be the agricultural field, respectively the land book offices. A large-scale implementation of blockchain technology in the land domain would mean significant logistical savings, eliminating the need for storage spaces and waiting time. Concrete details could be recorded about the time and conditions under which the property was transferred. Thus, any interested person could access the blockchain network to see the legal status of a building, without having to go through a bureaucratic procedure (“hotnews.ro”).

Analyzing all these possibilities regarding the most suitable sectors for the implementation of blockchain technology, it can be said that its adoption will be a very important point in the evolution of the government and in the future of public administrations.

At the national level, the situation of modernizing public services with new technologies is not as optimistic. Currently, in Romania there are very few institutions that can offer such services, despite the figures and results published online.

As we know, the global crisis caused by the spread of the famous virus on all continents is hindering the activity of the Romanian public institutions, especially those that have not adopted online petitioning tools. In such situations, when social contact is avoided, the possibility of administrations to provide online public services is crucial. Those entities that successfully accept and use distance work help communities and protect them at the same time.

For example, the use of online citizen registration platforms not only saves them time and resources, but also protects them against the spread of the virus to both petitioners and office workers. Moreover, the internal course of a petition could be conducted exclusively in the online environment, reducing the resource consumption of institutions and helping the environment, by using electronic signatures, online databases, online payments and smart electronic forms.

In Romania, there are currently several initiatives to use online tools in large cities such as: Alba Iulia – the program Civic Alert, whereby citizens make petitions and can check the status of tickets in real time on the City Hall's website (apulum.ro); or Cluj - the application "My Cluj", through which they can send their notifications directly to the City Hall. As of 2018, the city enjoys the existence of the first virtual public servant, Antonia, with the help of which Cluj residents can register 90 types of applications, from a distance, without physically moving to the general register of institutions (primariaclujnapoca.ro).

However, the rest of the counties of the country are not as open when it comes to using the online environment, being limited only to official communications on the websites of the institutions and to the use of virtual mail for some of the resolved petitions.

Given the numerous benefits of implementing the technology in as many of the moments of everyday life for the Romanian citizens, it is desirable to implement them in the public administration in the near future. It should become a priority the implementation of modern technology at national level, especially in the shadow of the latest global events, which prove the indisputable need for it, whether it is blockchain or not.

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