Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development
Vol. 19, Issue 3, 2019
PRINT ISSN 2284-7995, E-ISSN 2285-3952

THE USE OF BLOCKCHAIN TECHNOLOGY AND CRYPTOCURRENCIES AS EXCHANGE RATE IN THE GREEK AGRICULTURAL AREA

Andreas PAPANDREOU

Alexander Technological Institute of Thessaloniki, Faculty of Agricultural Technology, Department of Rural Development and Management of Agricultural Enterprises, P.O. BOX. GR 55132, Kalamaria, Greece, Phone: +302310487035, Mobile Phone: +306940327602, Email: andreaspapandreou94@hotmail.gr

Corresponding author: andreaspapandreou94@hotmail.gr

Abstract

The purpose of this paper is to investigate the role of the new blockchain technology by making use of the derivatives of this technology such as bitcoin to interpret their application to the wider agricultural sector and to study designing a case-by-case project in the Greek agricultural sector. The methodological approach is based on the research of scientific approaches as well as on scientific bibliography and research of special purpose software. As a result of this research, it can be said that this technology, although still at an early stage, seems to have positive effects without protests and its derivatives (e.g. cryptocurrencies) can benefit rural space, both in both international and Greek.

Key words**:** *agricultural economy, cryptocurrencies, blockchain technology, agriculture development*

INTRODUCTION

Today, Greece fights as country but also as a member of Europe to retreat after a long-time financial crisis that has struggle.

Over the past few years, the euro as a currency had fluctuations in exchange rates against other currencies.

Looking at the past, however, we find that Greece did not always have the euro as its currency, which Phoenix was the first monetary unit used by the state of modern Greece. It was first presented in 1828 with 1 unit divided into 100 sub units, and was the basic monetary unit of the then Greek state. [1]

The currency is the purchasing power of the people. Purchasing power or market value of money is defined as the inverse of the general price index. That is, Purchasing Power (X) = 1 / P, where P is the price index. It expresses the quantity of products one can obtain with a monetary unit today, in relation to the quantity he could obtain at some earlier base year. [9]

On the other hand, not all countries have the same currency, so someone who wants to trade raw materials from abroad how can he succeed?

For this reason, an exchange market has been created from which the exchange rates of currencies are exported so that the traders can complete the transactions between them.

By the term foreign exchange market we mean mainly the closed inter-banking cycle of the largest commercial banks and investment banks and all over-the-counter money transactions, i.e. deposits in different currencies (foreign exchange) as well as highly liquid financing products such as short-term derivatives in currency , among these banks (it is estimated that about 50% of the total volume of transactions is among the major very large banks), but also all other transactions between smaller "players" (smaller banks, institutional investors). [6]

But what happens when there is a lack of decentralized administration, such as the absence of banks as regulators in the financial system, and what kind of impact does this have on the foreign exchange market?

The answer to this question is given by the technology called Blockchain. According to Mr. Antonio Grasso, Founder and CEO of Digital Business Innovation, Blockchain is the technology of the future.

"In 2019, technology will move beyond initial investments in cryptocurrencies and will begin to deliver real business value in the form of smart contracts.
In the next 12 months, smart contracts will eliminate the need for intermediaries (and the costs involved), and allow day to day transactions to run smoothly. They add a level of business logic, allowing organizations to make effective use of the blockchain in productive ways that improve workflows and processes.
This may mean introducing technology into order processes, pricing, or payment processes - and generally in all transactions involving individuals and data.
As the regulations and security that support these smart contracts become stronger in 2019, their adoption will increase.
In turn, this phenomenon will allow businesses to become more decentralized autonomous organizations (DAO), a model that aims to create full transparency.
A DAO is essentially an organization whose operating procedures and protocols are automatically implemented by encoding them in the form of a computer program."[2]

MATERIALS AND METHODS

The material used for this research is the sources of knowledge of the international financial system and the functioning of finances in combination with the information systems and the structure of the Greek rural area.
The methodological approach followed is based on the research of scientific approaches as well as on scientific bibliography and research of special purpose software.

RESULTS AND DISCUSSIONS

Blockchain technology arises from a network of people who create and share something in common. The main feature of this network used in chain technology and computer language belongs to the network category under the Peer-to-Peer network.
The network is decentralized and distributed equally. This means that there is no person in the network who is superior to someone else in any way, so there is no priority (of any kind) of one person over someone else.
Blockchain Technology

Fig. 1. Blockchain Technology Symbol
Source: [5].

The faces of the participants in the network are not the same, but they are equal with each other in relation to any process of election and / or choice between them. Statistically speaking, if a subject is elected, this election will give equal success rates to each of these persons and this will be done at random.
All faces of the blockchain network create and share a file together. The process of creating and preserving this file is determined and controlled by a Constitution of Rules, called the Consensus Protocol. These rules are based on the essential need for the existence of trust between these persons. What this phrase means refers to the need for proof of trust between network members only in exceptional cases, if not at all possible.
The compilation of a compact consensus protocol removes the creation of conditions that lead to the need to demonstrate to network members their honesty with regard to their participation in the network, and thus the right to coexist there. [4]
The most famous application of Blockchain is Cryptocurrencies.
Cryptocurrencies
Hidden Currency is a peer-to-peer decentralized electronic form of money based on the principles of cryptography to secure the network and verify transactions. Most encryption uses a Distributed Database as the pillar of their system, the so-called Blockchain. The bitcoin presented in 2009 became the first successful decentralized currency. Due to the open nature of his

software, many developers have been allowed to experiment with his code and modify it. Since then, a multitude of new encryption has been created in which efforts have been made to improve or add functions such as faster transactions, greater anonymity, and so on. [7]

Export Cryptocurrencies

But let's just give a few words about acquiring these cryptocurrencies and let's take as an example the bitcoin that is the most widespread (the process is the same for all encryption).

Bitcoin, because it is decentralized, needs the contribution of random computers from across the globe to confirm the transactions that are made globally. This process requires a huge amount of computational power. New bitcoins are issued every ten minutes, which are given as a reward to those who contribute to the confirmation of transactions, according to the contribution of each. Those who confirm transactions to receive some reward are called miners and the mining process, respectively.

Each transaction made with Bitcoin passes a validation check and then is placed in a block along with other completed transactions.

Each block that is created has a direct relationship with the previous one and with all the other blocks. This creates a block chain.

The relationship of each new block with the predecessor is determined by a mathematical algorithm, but it is difficult to create.

Each time a new block is created, a number of new Bitcoins are automatically generated, which are shared by those who have solved the algorithm according to each contributor, this process is called Mining. [5]

And in this way the cryptocurrencies are obtained.

Bitcoin

Fig. 2. Bitcoin Symbol
Source: [3].

The first historical application of the blockchain technology was the Bitcoin digital coin, by Satoshi Nakamoto. In this paper a solution was proposed to a famous problem of Mathematics by applying this solution in the financial sector. It was possible for a community of people to build a network of computers and through this network to carry out financial transactions between themselves with mathematically proven security of their property and at the same time there is no central power that can intervene in any way they would like, which govern whether or not all of these transactions are carried out. [8]

Bitcoin is therefore the most famous of all these cryptocurrencies as well as the first one. It is the virtual currency that over the last few years has reversed the data in the trade and despite the predictions of the opposite is constantly being strengthened. [3]

At the same time, however, Bitcoin displays a broad list of other currencies that also rely on blockchain technology. But none of them have succeeded in achieving Bitcoin's parity.

Currency Rates

Bitcoin like any other currency (conventional or virtual) is a stock market, that is, its value is based on supply and demand and hence its exchange rate is formed.

Current Exchange Rates

US Dollars Exchange Rate

Fig. 3. The course of exchange of bitcoin in Dollars.
Source: [3].

The exchange rate of the dollar bitcoin is a basic parity as most exchanges choose the dollar as the basic currency.

The Exchange Rate is 1BTC = 3.963,35 $ USD

Euro Exchange Rate

Fig. 4. The course of exchange of bitcoin in Euros. Source: [3].

The exchange rate with the euro as the main contractual currency of the European Union is another important paradigm with which the stakeholders should be familiar.

The Exchange Rate is 1BTC = 3.497,66 € Euro

Historical Flashback in Exchange Rates

The exchange rates have not always been kept at the same level, and this is derived from the graph below, from which we see the changes per year in the Bitcoin value.
At 2017 was a landmark year for bitcoin as its exchange rate hit 1 bitcoin = $ 20,000

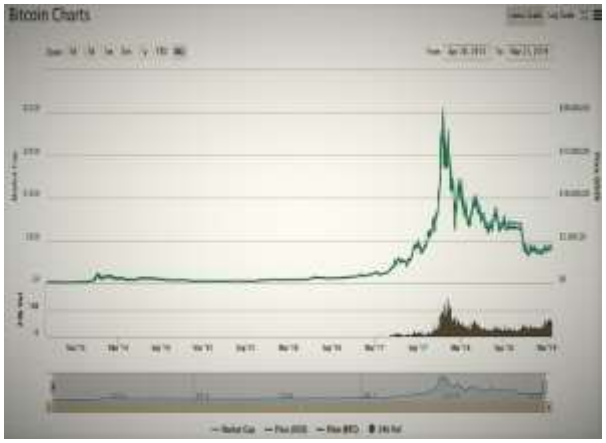

Fig.5. The course of exchange of bitcoin. Source: [3].

Applications in rural areas

The above finds applications in rural areas in both the financial part, which will be listed below in a project, as well as the ability to automate processes through Blockchain technology.

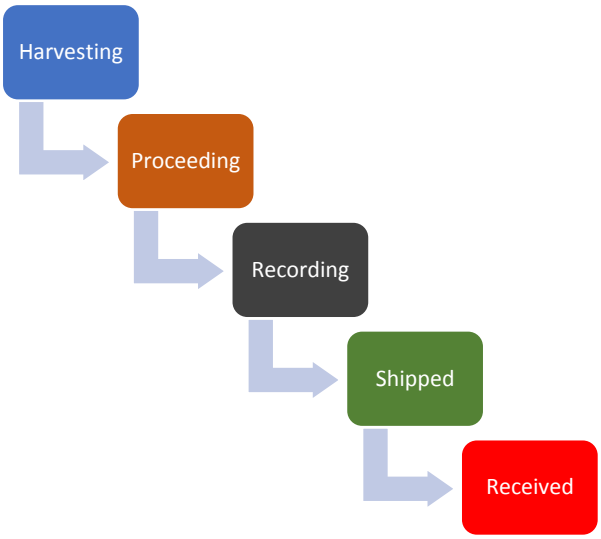

Fig.6. Blockchain Process in Agriculture Sector
Source: Created by researcher.

Other advantages arising from the use of the above-mentioned technology and its derivatives are:
i. The speed of international transactions
ii. Low transaction costs
iii. User control
iv. Portability and backups
v. Transparency of transactions
vi. The existence of subdivisions of digital coins
vii. The irreversible nature
On the other hand, it is worth mentioning the negative ones that are:
a) The risk of password loss
b) Unclear legal framework
c) Network security
d) The dangers of young people
Consequently, on the basis of the above, this technology is applied in the rural area through food safety and hygiene, quality preservation, and environmental protection.
The main advantage is the ability to safely manage traceability data in a chain that reaches the consumer as a consumer, that is, the consumer is able to use a barcode already on the packaging, with his cell phone to see from which producer the agricultural product was produced, when it was harvested.
Equally important is that through this chain, the food safety inspector of the Greek State Service can have credible data to keep the chain up to the consumer, ie it has the

potential for a frozen food, for example, to keep cool the chain of refrigeration broke throughout the transport or at some point, which meant that the temperature of the food increased, which made it dangerous for the consumer.

Blockchain technology, also because of its chainlike character, makes it possible to make the control of organic products more reliable. As mentioned above, the Greek State Food Safety Authority can check whether the products are organic or there are residues in the soil from pesticides. This can be accomplished through dedicated sensors, where they will send information to a computer, which in turn will transmit the information to the central server of the Ministry of Rural Development.

This process can also be followed for environmental protection, as well as the levels of groundwater contamination caused by pesticide residues.

Blockchain technology and its derivatives therefore find a clear application in rural areas.

Project: Creating Cryptocurrencies Mining Unit

Based on the above, a Project that could be implemented is the creation of an extraction unit of cryptocurrencies with the main purpose of financial independence of a rural unit through the reduction of its expenses.

That is, the farmer will export cryptocurrencies that will exchange with money at parity and will pay expenses, raw materials or fuels, etc.

This is possible with the following excerpt:

1) Mining Ring as a mining machine = 5.000 €

2) Pc Built = 1,000 €

3) Autonomous Photovoltaic System 26 KW / h per day = 15,000 €

Total 21.000 €

As far as the number 3 is concerned, we are avoiding electricity charges where, in the case of Greece, this is 0.08500 € = 1 kW / h, so we would have a current charge of 122,40 € per month. From such a system a farmer may have an additional income of 350 € per month.

If the acres are more and decides to multiply the investment with larger photovoltaics as well as with more robust computing systems, then when the cost of the initial investment is clearly increasing, the monthly income of the producer, who will not have to spend time and will have additional income that can be used to buy raw materials but also automate processes in cultivation.

CONCLUSIONS

In conclusion, we can say that cryptocurrencies have many advantages, which are more than the disadvantages they present. In short, it is a technology at its beginnings, and it is surely now slowly revealed, but based on the evidence we need to give it time and space to reveal things that will make people's lives easier and will serve both the academic and scientific space.

It is also worth mentioning that Greece has the ESPA program, which is a state-owned tool for financing enterprises with EU funds, which are offered for business development purposes. From this program, there is the possibility for farmers to raise capital to develop their production through precision agriculture. Unfortunately, it is a frequent phenomenon in Greece, money goes for this purpose and farmers buy luxury cars, so through Blockchain technology the state can be sure that the money goes for their real purpose, but this is left as a resource for scientists of the future to study ways to develop such a function.

REFERENCES

[1]Bountalis A.,2016, Money in Greece, 1821-2001. The History of an Institution, MIG Publishing, Athens, pp. 6.

[2]Chrisikopoulos N., 2019, From decentralization to artificial intelligence: the trends that will dominate in 2019, Vol. 9, Issue 3, pp. 1.

[3] CoinMarketCap. : https://coinmarketcap.com/currencies/bitcoin/, Accessed on March 5, 2019.

[4]Davalas, T., 2018, What is Blockchain Technology? A complete guide for beginners, Vol. 4, Issue 6, pp. 3.

[5]Goranitis, J., 2017, What is Blockchain and why will banks change forever? Vol. 17, Issue 1, pp. 1-7.

[6]Levantakis, I., 2003, International Macroeconomic & Finance. Stamoulis Publication. pp. 64.
[7]Mazer, J., 2019, Demystifying Cryptocurrencies, Blockchain, and ICOs, Toptal, Vol. 1, Issue 1, pp.5.
[8]Nakamoto, S., 2009, Bitcoin: A Peer-to-Peer Electronic Cash System, White Paper, Vol. 1, Issue 1, pp.1-9.
[9]Papathanasiou, M., 1973, Memorandum of Political Economy. Athinai Publication. pp. 17.