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Study of The impacts of Block Chain Technology on Private Sector Banks Performance

Teba Majed Hameed [1,*]

[1] Baghdad College of Economic Sciences University, Baghdad, Iraq

[*] teba.majed@baghdadcollege.edu.iq

ABSTRACT

Block chain considered as key technology for multiple applications including finical, health care, lifestyle, etc. The computing technology development has encouraged more technology to incorporate the block chain into their infrastructure from these technologies is the crypto currency, vehicle network and smart cities. In this paper, block chain applications in crypto currency including the Bit coin and Ethereum is discussed. Information technology systems alike machine learning based forecasting system incorporation with block chain technology has great impact on the social acceptance of the crypto currency based block chain system. Paper also discusses the impact of this technology in finical sectors e.g. private banks.

Keywords: Private banks, block chain, bit coin, ethereum, random forest, neural network, regression

INTRODUCTION

The advancement of computing technology manifested by internet network expansion and mobile communication development made big changes of human life on different scales including the financial sectors, health care, lifestyle, etc. Block chain is incorporated on markets and businesses as new technology that aimed to replace the traditional business transactions [1]. Block chain is populated as trustful technology has invaded the markets and threats the future of conventional businesses. Block chain involves various platforms such as smart contact and ledger technology as well as applications such as Ethereum and IBM Hyperledger. However, this technology is impacted by two essential considerations namely: social acceptability and back end process. From the customer point of view, involvement with block chain in markets and business platforms may require robust legitimacy and privacy agreement where costumer investment can be protected; hence, the social acceptability of block chain is limited by how the service providers may prove the integrity of technology. From the other hand, adaptation of block chain in market sectors involves creating virtual (software) based platform which create another challenge represented by the cost of technology implementation. Plenty of technologies including data mining, networking, could engineering, resource management are encountered while implementation of block chain technology. The need of robust market predictors (forecasting technology) is one of the vital demands of businesses block chain. Existence of forecasting technology may prevent large finical losses. Analysis of customers behaviors and tendencies towards buying or selling over block chain platform is the key solution for implementation for reliable forecasting technology. The social acceptability of this technology is strongly corelated to the information technology (IT) and intelligent systems which is incorporated with the platform. Customers feedback about the technology is most important factor that impact the social acceptability and popularity of the block chain technology.

BIT COIN

In the last decade, markets are boomed with new invention called crypto currency that considered as serious competitor to traditional currencies. Bit coin is first known crypto currency example which made as alternative for traditional currency as decentralized issued currency. Bit coin is inspired by cryptographic protocols ensuring that transaction is made by the owner only and not by any other unauthorized body (Fig. 1).

***Corresponding author**
Teba Majed Hameed,
Baghdad College of Economic Sciences University, Baghdad, Iraq
e-mail: teba.majed@baghdadcollege.edu.iq

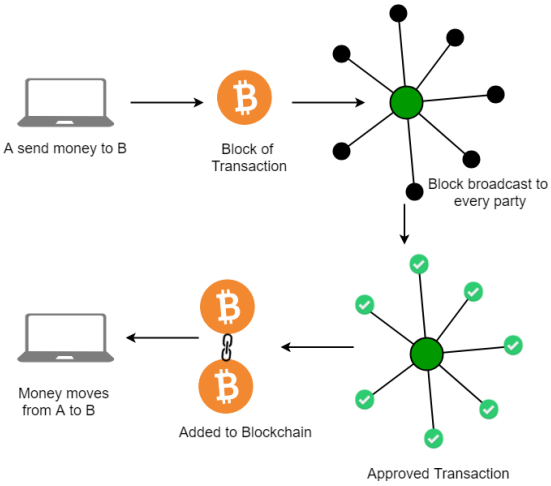

Figure 1: Bit coin based block chain system.

Instead of currency central issuing organizations, crypto currency can be issued virtually over the network nodes and can be sold or bought through the internet using terminal computer. According to [1], Bit coin is dominating around 48% of the total crypto currency world. At [2], Bit coin is impacted by the market demand making its value to fluctuate from time to time. Prediction technology of Bit coin rate is vital approach for crypto currency platform. Prediction of the future value (exchange rate) of the Bit coin is the corner stone of many researches. Different technologies were incorporated for furcating the Bit coin exchange rate including statistical models such as autoregressive analysis. The statistical models can deal with linear problems only unlikely, Bit coin forecasting is considered and none-linear problem because the future value of the currency is impacted by many factors including the customer behaviors which is random none-linear process. In order to overcome this problem, [3] is proposed using the artificial neural network (ANN) to predict the future rate of Bit coin using the previous historical data of the Bit coin exchange rates. This paper is used the historical data including the 24 factors (features) from Bit coin official website for the period between 2011 to 2018. Random forest algorithm is used for features selection, in order to determine the impact of each of those features on the rate of Bit coin. hence after, ANN is used to predict the future rate of the same. It was understood that features selection is performed to eliminate some features form the total 24 features dominated in the original dataset; using of principle component analysis (PCA) instead of random forest through conducting of several iterations for features section many enhance the accuracy of Bit coin exchange rate prediction.

ETHEREUM

Another form of block chain technology that not related to the crypto currency is represented by Ethereum and so-called as smart contracts (Fig. 2). This technology involves insertion of block chain technology into other concerns alike verification of voting process, documents authentication system, etc. this technology is brought up by Buterin a 22 years old Russian developer. Ethereum is decentralized smart contract platform involves fully programmed applications with dispensed downtime and fraud activity. Ethereum as an smart contract platform is having various usages such as creating of digital trading tokens which is termed as digital currency, contribution to the crowdfunding projects by contracts creations of the participants or users and creating of voting forums where participants/users can vote on any designated issue. This multipurpose technology is considered as serious competitor of the Bit coin which may take the lead of crypto currency in coming future [4].

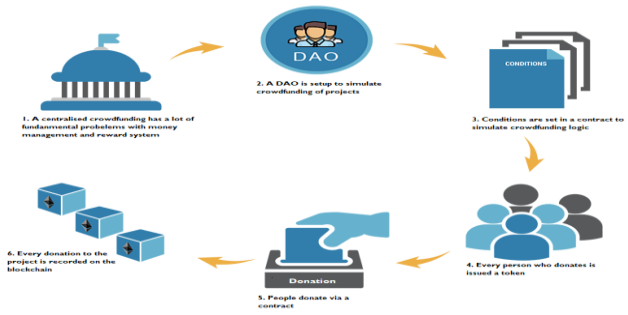

Figure 2: Ethereum block chain architecture.

This technology is an open source platform allowing different users to share the computational power over the network and supporting technologies alike internet f things (IoT) which facilitates business requirements at lower cost. The computational power of Ether/Ethereum is represented by cumulative powers determined by each terminal computer (user) participating into the Ether network. at [5], price prediction of the Ethereum crypto currency is made using two different machine learning approaches

*Corresponding author
Teba Majed Hameed,
Baghdad College of Economic Sciences University, Baghdad, Iraq
e-mail: teba.majed@baghdadcollege.edu.iq

namely support vector machine (SVM) and linear regression (LR). Data of previous closing price of the Ethereum is used for training the both models, cross variation techniques is also used to provide more consistency over the training process of both models. accuracy score is being measured from both models and results shown that support vector machine is outperformed over the linear regression. SVM is scored with 96% accuracy while LR scored with 85.46 %.

DISCUSSION

In previous sections the both Bit coin and Ethereum technologies were discussed in terms of the usage and applications. It was realized that most researches that conducted on those interests are keen on implementation of forecasting technology where the future value of the crypto currency can be predicted. The state of the art is manifested by optimizing the accuracy of the prediction methods in order to gain maximum social acceptance of block chain technology. The facts obtained from the reviewed papers can be listed as below:

a) The leading crypto currency is Bit coin which is considered as first innovative digital currency made over the internet network.

b) crypto currency is a digital currency with decentralized issuer which can be made and exchanged through he internet network.

c) the value of crypto currency is restricted by the social acceptance and the market demand same like traditional currency exchanging policy.

d) both Bit coin and Ethereum are made to provide a digital currency facility, however Ethereum is considered as smart contract technology that provide other service alongside with digital currency.

e) in order to enhance the acceptability of any of block chain technologies, IT systems including the furcating technologies must be integral part of the system.

f) machine learning and deep learning technologies such as random forest (RF), support vector machine (SVM), linear regression (LR), artificial neural network (ANN) are the most approaches used for prediction of crypto currency price depending on the previous historical data of exchange rates or other data alike economical indexes and other financial related features.

MISCELLANEOUS TECHNIQUES

Apart from the digital currency service, block chain is realized with many other applications at [6], named data network is used as block chain type network used over the vehicles network that carry traffic data and information. Using block chain technology over such type of networks is facilitating the content based data delivery in which predict the importance (value) of the information in order to priories the delivery of the same to the destination node (Fig. 3).

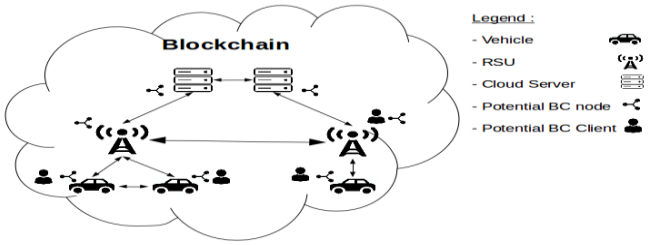

Figure 3: Block chain in vehicular networks.

At [7], smart cities are evolving technology witnessing merging of plenty of information sources. However, processing of this amount of information is posing different challenges such as latency, bottleneck bandwidth, privacy and security. Block chain technology is being integrated to the internet of things (IoT) in order to facilitate the smart city data processing as in Fig. 4.

*Corresponding author
Teba Majed Hameed,
Baghdad College of Economic Sciences University, Baghdad, Iraq
e-mail: teba.majed@baghdadcollege.edu.iq

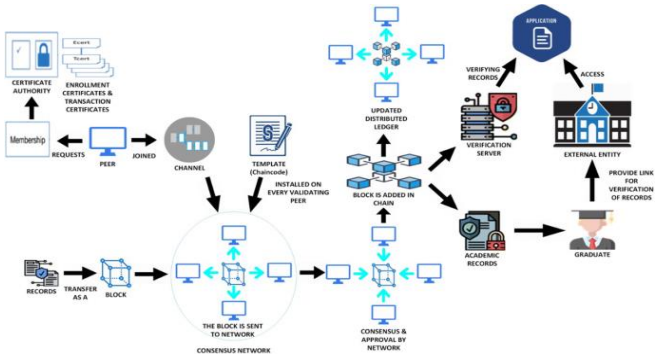

Figure 4: Smart city based block chain technology.

BANKING SYSTEMS

Because block chain technology enables people to track their transactions, banks have been able to give their customers power over their financial information.

Despite the fact that the idea of cryptocurrencies, which is still very new, has challenged many norms, block chain technology continues to be the foundation of Bit coin. That has been shown to be the biggest advancement. A different moniker for the distributed ledger is the block chain. Dealing with financial transactions is the definition. The banking sector, which contributes significantly to the global financial system, is expected to become more dynamic and tech-savvy. IBM (2016) revealed that 200 banks from about 16 countries participated in a survey and interview process and that 66% of banks should have incorporated new technology by the year 2020. Additionally, block chain technology is being used more frequently than anticipated.

Similar findings were made in a 2016 Accenture research of 32 commercial bank professionals, which found that 90% of participating institutions are presently looking at possible uses for block chain technology in payments. This shows how heavily the industry is reliant on technology and how important model adoption is to speed up the adoption cycle. [9] highlighted the factors that affect how firms accept and use new technical breakthroughs and offered a helpful adoption model for the new technology. Associations between these components and organisational adoption trends were also discovered. The recently developed adoption model will also aid in removing obstacles preventing the current global financial industry from adopting block chain technology [10].

Transparency, immutability, and trustworthiness are the three characteristics of block chain technology that best fit these definitions. Without a question, the use of block chain technology has improved financial services. The effects of this technology are clear when looking at how block chain is used in the banking industry. The model that explains the mode and operational procedures is the foundation upon which the block chain's structure is formed. A file cannot be used to store Bit coins or other digital money; instead, the block chain's transaction log serves as a representation of them. Customers may now perform transactions at low cost, move assets safely, and get secure transaction settlements thanks to technology. [11]. Table 1 lists the six stages needed for a secure currency conversion based on block chain technology.

The introduction of block chain technology, which has a wide range of possible applications, has altered the structure of the modern Internet. The banking sector uses block chain technology to deliver two Internet-based services, the "Internet of Value Exchange" and "The Internet of Information Sharing." Many organisations, businesses, academia, and governments are interested in the potential financial applications of block chain technology. The technology is used by many businesses, but the financial sector employs cryptocurrencies like Zcash, Bit coin, Ethereum, and others. [12].

Due to its advantages in terms of security, block chain technology will act as the cornerstone for many business platforms. The digital property management company securely stores and tracks financial data records on the block chain network. In order to improve banking services, which would require altering the business models for both its customers and the banking sector, block chain technology is crucial.

Rejeb et al. asserted that the adoption of block chain technology had improved the efficiency of the banking sector [13]. Transactions only take a few seconds, which increases the efficiency of trade expansion. Block chain technology, a word for the computer code that symbolises the steps in a transaction, makes smart contracts possible. Due to the usage of digital identity in block chain technology, data is kept private when tracking transactions.

*Corresponding author
Teba Majed Hameed,
Baghdad College of Economic Sciences University, Baghdad, Iraq
e-mail: teba.majed@baghdadcollege.edu.iq

CONCLUSION

Crypto currency is one of the essential applications of block chain technology which involves digital currency creation and exchanging over internet network. hence, using the cryptography protocols ensures the authenticity of the crypto currency transaction over the network. this paper discussed Bit coin and Ethereum as leading crypto currency and smart contract technologies. Bit coin is leading digital currency that made around 48% of the total crypto currency market. Machine learning and deep learning technologies such as random forest (RF), support vector machine (SVM), linear regression (LR), artificial neural network (ANN) are the most approaches used for prediction of crypto currency price depending on the previous historical data of exchange rates or other data alike economical indexes and other financial related features. From the other hand, The impact of block chain technology on the banking sector is a game-changing invention that enhances the relationship between clients and banks.

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*Corresponding author
Teba Majed Hameed,
Baghdad College of Economic Sciences University, Baghdad, Iraq
e-mail: teba.majed@baghdadcollege.edu.iq