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РАҚАМЛИ ИҚТИСОДИЁТНИ ШАКЛЛАНТИРИШДАГИ ЗАМОНАВИЙ ТРЕНДЛАР:

ТАЖРИБА, МУАММО ВА ИСТИҚБОЛЛАР

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МАЪРУЗА ТЕЗИСЛАРИ ТЎПЛАМИ

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Рақамли иқтисодиётни шакллантиришдаги замонавий трендлар: тажриба, муаммо ва истиқболлар: Республика онлайн илмий-амалий анжумани маъруза тезислари тўплами. – Т.: ТДИУ, 2020. 325 б.

Мазкур тўпламда Болгариянинг Русе университети ва Россия Федерациясининг Урал давлат иқтисодиёт университети профессорлари, Ўзбекистон Республикаси Олий ва ўрта махсус таълим вазирлиги, Ўзбекистон Республикаси Ахборот технологиялари ва коммуникацияларини ривожлантириш вазирлиги, Ўзбекистон Республикаси Олий Мажлис Қонунчилик палатаси ҳамда Ўзбекистон Республикаси Давлат статистика қўмитаси ходимлари, идоралар раҳбарлари ва етакчи амалиёт мутахассислари, мамлакатимизда фаолият юритаётган Олий таълим муассасалари ва илмий марказларнинг профессор-ўқитувчилари, илмий ходимлари ҳамда мустақил тадқиқотчиларнинг давлат ва бошқарув тизимида электрон ахборот алмашинувини такомиллаштириш, реал сектор корхона ва ташкилотларида рақамли технологиялардан фойдаланишда инновацион ёндашиш, таълим тизимида рақамли технологиялардан фойдаланиш, рақамли иқтисодиётда замонавий IT-трендларни қўллаш ва рақамли иқтисодиётни ривожлантиришда хориж тажрибасидан фойдаланишга бағишланган илмий-тадқиқот натижалари маъруза тезисларида ифода этилган.

Анжуман материаллари иқтисодиёт соҳасидаги амалиётчи-мутахассислар, экспертлар, ушбу йўналишда илмий изланиш олиб бораётган профессор-ўқитувчилар, тадқиқотчи ҳамда магистрантларга мўлжалланган.

Мазкур тўпламга киритилган маъруза тезислардаги статистик маълумотларнинг тўғрилигига муаллифларнинг ўзлари масъулдирлар.

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ANALYZING INFLUENCING BLOCKCHAIN FOR THE COMPETITIVENESS OF THE SUPPLY CHAIN IN LOGISTICS

Azimov Dilmurod T.
Lecturer Tashkent State University of Economics, dilmurod.azimov@gmail.com

Annotation. *By the development of information technology and the digital economy, we can observe the emergence of a significant number of innovations in various fields of economies, some of which are prophesied to be revolutionary. The duration of the logistics cycle is determined by the time the customer completes the order. Using this indicator allows you to increase the competitiveness of the company while reducing this logistics cycle. To date, the process of cargo delivery is complicated by the low speed of the logistics cycle; long document flow and the presence of errors in it; the safety of cargo. The purpose of this article is to substantiate the influence of blockchain technology in the transport logistics system of an industrial enterprise.*

Key words. *Supply chain, Blockchain, competitiveness, logistics, efficiency, transport and information.*

Introduction

Blockchain is a powerful innovation that can change humans life. A popular industry that is the focus of blockchain technology is supply chain, which is characterized by the interaction of many organizations without an effective information exchange process (Dobrovnik, M., Herold, D.M., Fürst, E. and Kummer, S. (2018)). The main tasks of logistics include - ensuring integration, coordination of individual links in the chain: procurement of raw materials, materials, components, their delivery, storage in warehouses within the production cycle and delivery of goods to the final consumer. Besides, the lack of the ability to control the delivery process becomes one of the causes of controversial situations. Needing to improve the delivery competitiveness of an industrial enterprise determines the relevance and objectivity of the topic. Implementation of Blockchain technology (hereinafter referred to as blockchain) will solve the existing problem in the field of supply chain management.

To support high competitiveness, the supply chain must constantly evolve and become more complex. For this, it is necessary to analyze the performance indicators of the supply chain system, which reflect the effectiveness of its work from the operational, economic and technical points of view. Supply chain performance indicators can be direct or indirect, absolute or relative. Direct indicators of logistics activity are more suitable for analyzing the causes of the current situation and searching for managerial decisions. Indirect indicators of the effectiveness of the supply chain, such as profitability or payback, often associated with finances.

In the modern supply chain, when choosing the optimal routes and transport, computer processing of the initial data (orders, cargo parameters, fleet, etc.) is necessary, this is due to the constantly growing volumes of data on the state of the control objects. Data on asylum sent to the control center in the "closed" form of

satellite and manual processing of the flow of information is time-consuming, resulting in a loss of efficiency of decisions and increase the number of errors. A possible solution to this problem in supply chain systems could be the introduction of blockchain technology. A blockchain is a continuous sequential chain of blocks (linked list) that contains information in accordance with certain rules. Most often, copies of blockchains are stored and processed independently on different computers [A.O. Borisov, N. Zakharova, 2016 p. 240).

Literature review

Previous studies show that there is no standard definition for product traceability. According to Bulut et al. (2008), The International Standards Organization of standards (ISO 9001: 2000) defines traceability as "the ability to trace the history, application, or location of an entity using recorded identifications". Tracing refers to backward follow-up of products and tracking relates to the forward monitoring of products. Few researchers (Manos & Manikas, 2010) have also mentioned that product traceability is mostly connected with quality and safety assurance but rarely connected with business development and logistics improvement. However, the ability to combine the qualitative product information with logistics information has been consistently missing in the existing product supply chain infrastructure. Using sensors and IoT devices installed at every checkpoint (value addition on the product) throughout the supply chain, this issue can be addressed by continuously tracking both quality information and physical product movement. In a blockchain network, every product becomes an asset, and every IoT update serves as transactions performed on the asset. Thus, with a unique product ID, any kind of product can be traced and tracked for quality assurance and logistical activity.

Product traceability studies have been performed for more than two decades, and they reveal different drivers that contribute to the continuous attempts to improve traceability in the supply chain. Concerns from customers regarding safety and quality have also been a significant factor for businesses to introduce traceability. Increase in customer purchase power and more awareness over product quality and calorie consumption has forced businesses to introduce specific tags like organic, cage-free or gluten-free in its products.

E-commerce has put enormous challenges for the retailers to rethink how they could provide an omni-channel retail environment to its customers while efficiently operating their supply chain. Omni-channel requires that the retailer must enable operations (browsing, purchasing and returns) in multiple channels – online, mobile, store, click and collect and so forth. Hence, retailers are the first to experiment and adopt new technologies and new management systems in the entire supply chain to create a more efficient, responsive and transparent distribution channel. These technologies have helped in enhancing product traceability, reduce paperwork and control the bull-whip effect in the supply chain.

Background literature provides evidence for the potential benefits of using technology to enhance product identification, food safety and quality measurement, packaging and software development.

Another important reason for adopting technology is to attract customers and simplify their shopping experience. Next generation concepts like the Amazon go store

in Seattle does not feature a cashier or checkout lines. Instead, it uses camera, sensors and sophisticated AI software to charge the customers via their amazon app on their smartphone. In-store services like a bakery (bakery sales will approach $18.4 billion by 2020, a 45 percent increase over 2010 (the Madison, Wis.-based trade group estimates).

Currently, there are 21 and growing number of companies using blockchain for asset management, identity management and critical document authentication like passports, birth certificates, online account logins creating a digital ID, which combines decentralized blockchains with identity management (Elena Mesropyan, MEDICI, 2017). However, very few companies like Provenance, Hijro, Blockverify, QuickBooks, Everledger, and Skuchain are focusing on improving product provenance in a wide range of products like fish, luxury goods like diamonds, expensive handbags and tracing the origin of pharmaceutical drugs.

An IT-enabled product tracking system was also proposed, which utilizes all the logistics information to improve the supply planning and overall logistics operations. The current architecture that has been predominantly used in today's product chains as shown in figure 3-2 uses a centralized database that collects information regarding product characteristics only when it reaches the distributor and then subsequently to the retailer. It is primarily applicable in a centralized retail supply chain where the retailers own their distribution network and logistics. Information regarding the product in upstream stages from processor until the farm is maintained as database silos in the form of excel sheets and hard copies. Streamlining data capturing, data sharing and data security is a prerequisite to constructing an end-to-end tracking system, could be either a conventional IT system or a blockchain.

Research Methodology

The implementation study will be carried out in accordance with the methodological documents. The purpose of the implementation is to develop software for the formation of a single information field based on blockchain technology. The author recommends highlighting the following stages of blockchain implementation in a modern industrial enterprise:

- Assessment of the possibility of implementing blockchain in the enterprise. At this stage, the following information about the enterprise is required - the number of employees, turnover, industry, length of the production cycle, number of customers, availability of warranty periods and service conditions. Based on this data, programmers process the received data and calculate the timing of the implementation of blockchain technologies in the company, its cost, economic efficiency and risks. Based on the received blockchain analysis, the enterprise decides on the need to introduce technology;

- Development of a blockchain system for the enterprise. At this stage, the company can use two options. First, blockchain algorithms have been developed for each industry and enterprise size, which can be used for adaptation at the level of a specific organization. The availability of a ready-made kernel of the program allows reducing implementation costs by up to 70% and accelerating the implementation of blockchain technologies. The second is the adaptation of the algorithm by order of the enterprise. In this case, the enterprise provides all the information about the required

blockchain system of administration of the platform, which further adapts the existing templates for an individual enterprise. The choice of the necessary option is carried out by the enterprise management based on the interests of the management, the specifics of work and the level of information confidentiality;

- Introduction of a blockchain system at an industrial enterprise. At this stage, the system is launched and its effectiveness evaluated. It is being finalized as part of the identified deficiencies or opportunities for improvement;

- Monitoring the implementation of blockchain technology. An enterprise implementing the technology of a distributed registry monthly can generate a report on the implementation of the blockchain system. Based on this report, the system formulates recommendations for improving the blockchain system and their economic feasibility;

- Participation of the enterprise in the blockchain community through the synthesis of implementation results and the exchange of information with partner companies within the framework of its industry or related fields of activity. The exchange of information allows you to popularize the company as a technological leader and attract new customers, partners or investors. The information collection function allows you to integrate best practices in the field of blockchain and make the company one of the leaders in the field of distributed registry technologies. The first stage is focused on creating a test version of the platform, which will include the accounts of enterprise employees and system administrators. In this version, company representatives will be able to assess the prospects for introducing blockchain in their organization by registering on the site and filling out credentials about the organization.

This approach allows us to assess the blockchain prospects for the enterprise at the early stages of implementation, or to diversify the risks by implementing the blockchain as part of a separate business process.

The second stage includes the main part of the implementation process. At this stage, the team is developing and publishing a test version of the blockchain project. A separate personal account for programmers is being formed, where standard blockchain algorithms, a single development environment, as well as an automated error checking and detection system will become available to specialists. At this stage, a full-fledged project functionality is being formed, where, along with a preliminary assessment of the characteristics of the implementation of the blockchain, enterprises will be able to form orders for the implementation of the blockchain and get the first results as part of the test mode of the project. The third stage of implementation includes the approval and testing process. Based on the results of the discussion, a weekly agenda is formed to adjust the platform, complement work mechanisms and introduce improvements and additions. Typical algorithms will be supplemented by separate solutions for key sectors of the economy and social activities. In addition, a system for the operational adjustment of customer blockchain projects will begin to function based on the operation of the feedback system and daily project evaluation during implementation. This will maximize the compliance of the implemented algorithm with the real priorities of the customer.

The fourth stage is scaling up the project. It is focused on adjusting the team and moving to expand the project by attracting new customers. The existing basic version

can be supplemented by a system of automated selection of performers based on their experience in project implementation, average work speed and preferred industries for projects. The project is further debugged based on feedback, processing the results of the implementation of blockchain projects at the enterprise.

Research Results

According to the proposed method for the implementation of blockchain technology for an industrial enterprise:

- Assessment of the possibility of implementing blockchain in the enterprise[1]. At this enterprise, the number of employees is 7,767 people, revenue is 79.9 billion a year, net profit is up to 7.1 billion a year, the industry is industry, the average length of the logistics cycle is 10 days, there are internal logistics problems. Based on these data, we decide on the implementation of blockchain technology;

- Development of a blockchain system for the enterprise. We apply the algorithm with the availability of a ready-made kernel of the program, which allows you to reduce implementation costs by up to 70% and accelerate the implementation of blockchain technologies. For the implementation will also require staff training, additional computers, the purchase of a software product;

- Introduction of a blockchain system at an industrial enterprise. At this stage, the system is launched and its effectiveness evaluated. For evaluation, it is necessary to calculate the performance indicators of transport and information logistics before and after the implementation of blockchain technology;

Analysis and discussion

The fields of application of blockchain technology in the modern economic system are constantly expanding. The largest multinational corporations give priority to digital technologies and make capital investments in relevant developments, including the creation of a blockchain system and its implementation in the construction of the supply chain. These companies include the manufacturer and supplier of hardware and software, IBM, Walmart distribution network, Amazon e-commerce leader, multinational companies Unilever and Nestlé, forwarding company UPS and others.

Based on a review of articles of scientific publications published in Russia and abroad, it is possible to determine the main areas of research in the field of blockchain:

- theoretical and methodological aspects of blockchain research; determination of the essence and mechanism of construction;

- the advantages and risks of using blockchain, the impact on the growth of business activity of business entities;

- blockchain as the basis for the development of smart contracts in business (Куприяновский В.П., Синягов С.А., Климов А.А., Петров А.В., Намиот Д.Е, 2017, p. 136-147);

- legal regulation of relations arising from the use of blockchain and crypto currency technology related to circulation (the issue of legal regulation of relations using a distributed registry system in logistics and supply chain management has not been considered);

[1] https://azot.uz/en/menu/istorija

- the use of blockchain technology in the state and commercial sphere, including in individual industries and fields of activity.

Conclusion

According to the results of the study, the following conclusions were obtained:

- The logistics system at the enterprise is one of the most complex and with this clearly working mechanism. Enterprises that have switched to organizing the production cycle system in accordance with the principles of logistics can rationally organize production processes;

- studied the basic concepts associated with the system and organization of transport logistics of an industrial enterprise. Despite the wide variety of interpretations of the basic concepts, it was concluded that the study will use interpretations of such definitions as logistics, transport logistics, system, transport, and transport logistics system;

- a comparative description of transportation models is presented, the most progressive cargo transportation model to date is demonstrated. The main stages of the transport-technological scheme were also demonstrated;

- the orientation of the introduction of blockchain technology to the technological side of logistics reduces risks and significantly increases stability since it forms its practical orientation. The introduction of blockchain technology in the industry is beneficial for increasing the efficiency of the workflow, data storage, managing the supply of goods, reducing errors in the document flow and its duration, reducing the duration of the logistics cycle;

- after reviewing the review of world and Russian experience in implementing the blockchain, it was concluded that entrepreneurs and authorities are constantly finding new ways and means of applying technologies in the modern economic system.

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ҚИШЛОҚ ХЎЖАЛИГИДА РАҚАМЛИ ПЛАТФОРМАЛАРНИ ШАКЛЛАНТИРИШ

Гулямов Саидаҳрор Саидахмедович
Кадрлар малакасини ошириш ва статистик тадқиқотлар институти кафедраси мудири, ЎзР ФА академиги, и.ф.д., профессор

Абдуллаев Мунис Курбонович
Рақамли иқтисодиёт ва ахборот технологиялари кафедраси мудири, доцент (PhD), m.abdullayev@tsue.uz

Аннотация. *Мақолада “Рақамли Ўзбекистон-2030” ва унинг йўл харитаси доирасида рақамли иқтисодиётнинг муҳим таркибий қисми сифатида агросаноат комплекси учун рақамли платформани яратиш зарурияти асосланмоқда. Рақамли платформанинг қишлоқ хўжалигининг турли йуналишларига мос келувчи субплатформалари ва турли хил амалий вазифаларни ҳал қилишга хизмат қиладиган дастурий иловалар тавсифланган. Рақамли платформани ривожлантириш босқичларининг кетма-кетлиги таклиф этилади. Рақамли платформалар қишлоқ хўжалигини жадал ривожлантиришга имкон беради деган хулосага келинди.*

Аннотация. *В статье в соответствии с стратегией “Цифровой Узбекистан-2030” и его дорожной картой рассматривается необходимость создания цифровой платформы для агропромышленного комлекса как важного компонента цифровой экономики. Описана последовательность этапов развития Цифровой платформы, в которой описаны подплатформа цифровой платформы, подходящая для различных областей сельского хозяйства, и программные приложения, служащие для решения различных практических задач.*

Annotation. *The article, in accordance with the “Digital Uzbekistan-2030” strategy and its roadmap, considers the need to create a digital platform for the agro-industrial complex as an important component of the digital economy. The sequence of stages of development of the Digital Platform is described, which describes the sub-platform of the digital platform, suitable for various areas of agriculture, and software applications that serve to solve various practical problems.*

Калит сўзлар. *Рақамли платформа, амалий дастурларнинг интерфейси, қишлоқ хўжалигидаги буюмлар интернети, катта маълумотлар, саноат*