

## БЛОКЧЕЙН: НОВЫЕ ВОЗМОЖНОСТИ ДЛЯ РЕАЛИЗАЦИИ КОНЦЕПЦИИ УСТОЙЧИВОГО РАЗВИТИЯ В ПРЕДПРИНИМАТЕЛЬСТВЕ

## BLOCKCHAIN: NEW POSSIBILITY OF REALIZATION THE SUSTAINABLE DEVELOPMENT CONCEPT IN ENTREPRENEURSHIP

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А. Ясинска-Биличак\*

Опольский технический университет

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A. Jasińska-Biliczak\*

The Opole University of Technology

## РЕФЕРАТ

*БЛОКЧЕЙН, ПРЕДПРИЯТИЯ, УСТОЙЧИВОЕ РАЗВИТИЕ, ИННОВАЦИИ, ПЕРЕДАЧА ЗНАНИЙ*

*Блокчейн – понятие, которое характеризуется не только как инновация или технология, но и включает множество научных дисциплин. Несомненно, наибольшее влияние блокчейн может оказать на экономику, особенно в области инноваций и предпринимательства. Цель статьи – изучение блокчейна как части концепции устойчивого развития. При обсуждении проблемы определена роль и место технологии блокчейна в передаче знаний среди предприятий. В статье представлен обзор литературы в области устойчивого развития, а также инноваций, передачи знаний и предпринимательства (анализ литературных источников). В результате анализа литературы по проблеме исследования можно утверждать, что блокчейн, как интернет на раннем этапе своего существования, имеет возможность стать технологией, распространенной среди предприятий в будущем. Также существует мнение, что блокчейн – коллективная собственность. Но самый главный фактор – это влияние на развитие предприятий посредством безопасной передачи знаний.*

## ABSTRACT

*BLOCKCHAIN, ENTERPRISES, SUSTAINABLE DEVELOPMENT, INNOVATION, KNOWLEDGE TRANSFER*

*Blockchain is not only the innovation or technology, it is very wide notion including lots of scientific disciplines – but without doubt it may have the biggest influence at the economics, especially innovation and entrepreneurship. Article's aim is the study of the issue of the blockchain idea as the part of the sustainable development concept. To illustrate such undertaken problem there will be discussed the role and a place of blockchain technology in spreading knowledge among enterprises. For achievement of this aim there will be used the literature review from the scope of sustainable development as well as innovation, knowledge transfer and entrepreneurship (desk research). After such stated analysis it is possible to state that blockchain has got the possibility, as an internet at its early beginning, be the common technology used by enterprises in the future. There is also a value that blockchain is usually owned by the public. But the most important is its influence at enterprises development by knowledge transfer security.*

## INTRODUCTION

Enterprises are frequently faced with potentially lucrative contracts that require either scale or expertise beyond their individual scope. This motivates them to form short term collaborative networks. These networks have been studied under the guise of virtual organisations, such as

in Mowshowitz [1]. They are also the subject of the sustainable development concept being effective for present and future resource management in its economic dimension; for equality and eliminating disproportions in the access to resources available in a given territory in its social dimension; for integrating the building and planning of functional

\* E-mail: [a.jasinska-biliczak@po.opole.pl](mailto:a.jasinska-biliczak@po.opole.pl) (A. Jasińska-Biliczak)

environmental areas and reducing pressure on the environment in its environmental dimension; and for its effective, clear, and participational management in its institutional dimension [2, 3].

According to McGowan [4], creative activity, understood also by its competitiveness, where strong emphasis is placed on implementing the idea of the innovative process, as well as defining it as a constant process, begins with noticing the opportunity, yet ends up in making a decision about implementing this idea and accessing it [5]. The traditional means of supporting the formation and coordination of such networks have been derived from centralised work flow based techniques designed for large companies [6]. In consequence, alternative techniques are needed and the recent rise of blockchain and distributed ledger technology (DLT) offers a highly promising alternative solution.

METHODOLOGY

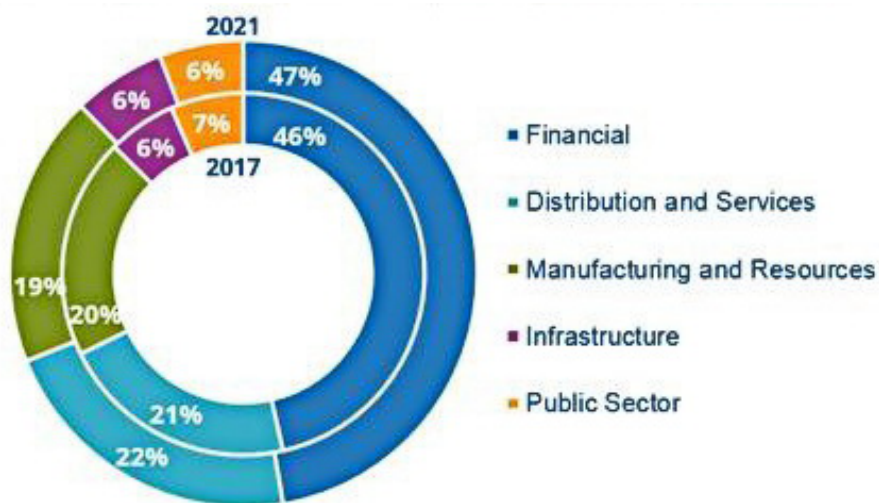
Presented research has got a character of pilot research. Its aim is the study of the issue of the blockchain idea as the part of the sustainable development concept. To illustrate such undertaken problem there will be discussed the role and a place of blockchain technology in spreading knowledge among enterprises. For

achievement of this aim there will be used the literature review from the scope of sustainable development as well as innovation, knowledge transfer and entrepreneurship (desk research).

BLOCKCHAIN AS ENTREPRENEURIAL DEVELOPMENT INSTRUMENT

Gartner [7] defines blockchain technology as “an expanding list of cryptographically signed, irrevocable transactional records shared by all participants in a network. Each record contains a time stamp and reference links to previous transactions. With this information, anyone with access rights can trace back a transactional event, at any point in its history, belonging to any participant”. Blockchain technology has evolved from early applications such as bitcoin to offer the potential to represent assets digitally, enable new forms of value exchanges and to interact/transact without a central authority or a middleman. Blockchain provides a powerful mechanism for blowing traditional and centralized models (such as that of the firms) to bits.

Blockchain is a set of records, called blocks, which contain a timestamp, list of data variables and are each referenced to its predecessor record by a cryptographic hash. The linking to the predecessor makes the whole set look similar



Source: IDC Worldwide Semiannual Blockchain Spending Guide, 2017H1

Figure 1 – Spending by Sector, spending shares 2017, 2021

to the chain, hence it received the name of a blockchain [8]. By design the blockchain is immune [9] to any existing record change, making the records immutable once written in the blockchain [10]. The full blockchain (or its every part) is stored in distributed nodes, usually owned by the public. They are not related to any specific entity (as a majority rule), making the blockchain virtually impossible to destroy and / or hack. Presently it is the very intrinsic value.

The security aspect embedded in blockchain opens up the possibility to “disintermediate” many business activities, removing the middlemen, reducing costs and simplifying processes. Blockchain’s ability to achieve remote, autonomous consensus between users, could help enterprises to reduce the costs (including security costs) and the time needed to bring products and transactional services to markets, to simplify administrative process as payment, billing, and contracts. Blockchain enabled smart contracts could be a more economical option for enterprises than traditional ones and could help companies improving their processes in terms of time and money by simplifying invoices, salary payments, inventory management and making sure payments are made on time, thus reducing the hurdle of cash flow for small businesses.

Blockchain and DLTs could thus support enterprises [11] in reducing their overhead costs by hosting services on the blockchain instead of buying software licenses and hiring personnel [12]. Some recent facts illustrate the fast-growing importance of this technology:

1. \$176 billion is Gartner’s forecasts regarding blockchain’s business growth in value-add by 2025 [13] (Europe has invested nearly \$200 million in 2017 [11]),

2. Western Europe will be the second largest region worldwide regarding blockchain spending. The initial investment in proof-of-concept cases will nearly triple its 2018 spending, reaching \$1.8 billion by 2021 (the US are expected to invest more than \$4 billion by 2021) [14],

3. \$600 billion: The size of the entire cryptocurrency market by the end of 2017, according to CoinMarketCap. Consider the pace of growth over the last 12 months: it started the year at just \$16 billion [11],

4. European start-ups have raised \$1.76 billion in capital through an Initial Coin Offerings (ICO) over the last 3 years [15]. This puts Europe ahead of all other continents,

5. the number of blockchain-related LinkedIn job postings more than tripled over the last year. Organizations badly in need of blockchain developers are setting up training centres, outsourcing, or even nabbing talent before they’ve graduated college,

6. 13 percent of Senior IT leaders surveyed by IDG Connect research have clear and current plans to implement blockchain. Based on this statistic, plenty of CIOs decided to take time to investigate blockchain [16],

7. blockchain is the 2nd most popular technologies and technological solution on online media channels in 2017 (cybersecurity is 1st but artificial intelligence comes 3rd) [11].

Presented graph illustrates possible spreading of blockchain technology in economy sectors.

Blockchain, as being the part of new, innovation instruments supporting enterprises development [17], may be seen as the part of their cybersecurity, which, according to latest sources: [11] “has never been more essential, as companies have more digital valuable assets than ever before”.

#### DISTRIBUTED LEDGER TECHNOLOGIES (DLTS)

The Distributed Ledger Technology (DLT) ensures that distributed copies of identical records are immutable and traceable, enabling management, governance and execution of partnerships and contracts across entities. The DLTs applications are growing and the expectations are numberless [18, 19]: from digital currencies to distributed autonomous organizations, corporations and societies (DAOs, DACs and DASs), from blockchain government to blockchain science, and from digital art to digital identity verification. Some have suggested that much of the entrepreneurial development on this growing field takes the form of “X, but on the blockchain” [20], in a way that resembles the dot-com boom of the late 1990s, where the formula was “X, but on the internet” [21]. Part of the current challenge resides in navigating the moving waters between realistic descriptions, plausible expectations, and technophilic and techno utopian hype, frequently tied to business strategies [22].

The adoption of DLTs will have profound effects on the nature of companies and in the entire processes within the Porter's Value Chain Analysis of the enterprises [23]: how they are funded, organized and managed, how they create value, and how they perform basic functions such as marketing, accounting, and incentivising people. It allows companies to eliminate transaction costs and use resources on the outside, as easily as resources on the inside [24].

#### CONCLUSIONS

DLTs are still recent and fast evolving and proliferating, thus, the complexity of integration becomes a key barrier to entry for developers and SMEs that do not necessarily have long-term competency and exposure to DLTs. This also results in higher costs of technology adoption. There is a lack of secure environments where SMEs can test DLTs-backed applications in operational

conditions. There is also a lack of awareness in European SMEs of what is actually available in the market and therefore potentially transferable for SME uptake, what means that there is a lack of knowledge to use such systems.

It is possible to point the benefits of using the blockchain technology in enterprises such as cost reduction, time efficiency, simplicity of use, openness and immutability as well as functionality. These benefits are inducing to spreading knowledge about this technology towards enterprises and to developing research in this area. Blockchain has also got the possibility, as an Internet since its early beginning, be the common technology used by enterprises in the future. The blockchain research should be extended, even in international dimension, for possession of the knowledge about its real usefulness for the enterprises and its influence at entrepreneurship.

#### REFERENCES

1. Mowshowitz, A. (1997), Virtual organization. *Commune. ACM* 40, 9 (September 1997), DOI=<http://dx.doi.org/10.1145/260750.260759>.
2. Malik, K., Jasińska-Biliczak, A. (2018), Innovations and Other Processes as Identifiers of Contemporary Trends in the Sustainable Development of SMEs: The Case of Emerging Regional Economies, *Sustainability*, 10(5), pp. 1–17.
3. Benda-Prokeinova, R., Dobes, K., Mura, L., Buleca, J. (2017), Engel's approach as a tool for estimating consumer behaviour, *E & M Ekonomie a Management*, Vol. 20, Issue 2, pp. 15–29, DOI: 10.15240/tul/001/2017-2-002.
4. McGowan, P., Innowacje i przedsiębiorczość wewnętrzna, *In Praktyka kierowania*, 1st ed.; Stewart D.M., Ed.; PWE, Warszawa, Poland, 1994, pp. 281–283.
5. Jasińska-Biliczak, A., Sitkowska, R. (2014), Influence of small and medium enterprises sector at the change of innovation potential of Polish regions, *Grant Journal*, (3/01), pp. 57–61.
6. Mehandjiev, N. Grefen, P., Dynamic Business Process Formation for Instant Virtual Enterprises 1st ed. Heidelberg: Springer 2010. (Advanced Information and Knowledge Processing).
7. Gartner A., Blockchain-Based Transformation: A Gartner Trend Insight Report, 2018, available at <https://www.gartner.com/doc/3869696/blockchainbased-transformation-gartner-trendinsight?docdisp=share&srcId=1-4398736771>.
8. Hileman, G., Rauchs, M., Global Blockchain Benchmarking Study 2017, September 22, 2017, available at SSRN: <https://ssrn.com/abstract=3040224> or <http://dx.doi.org/10.2139/ssrn.3040224>.
9. Merkevicus, J., Davidaviciene, V., Radeliuniene, J., Buleca, J. (2015), Virtual organization: Specifics of creation of personnel management system,

- E & M *Ekonomie a Management*, Vol. 18, Issue 4, pp. 200–211, DOI: 10.15240/tul/001/2015-4-014.
10. Furlonger, D., Valdes R., *Practical Blockchain: A Gartner Trend Insight Report*, Gartner Inc., 2017.
  11. Bernat, M., Bruska, A., Jasińska-Biliczak, A. (2017), *Influence of the Cultural Background at Small and Medium Sized-Enterprises Innovations in Regional Dimension* (No. 12/2017).
  12. Kuznetsov, M. Why Blockchain matters to small businesses, the *Entrepreneur*, 9th January 2018.
  13. Lovelock, J. D., Furlonger, D., Three things CIOs need to know about blockchain business value forecast, Gartner Inc., August 2, 2017.
  14. La Croce, C., Heath, M., *New IDC Spending Guide Forecasts Western European Blockchain Spending to Grow to \$1.8 Billion by 2021*, IDC, Milan 2018, p. 4.
  15. Probst, L., Lefebvre, V., Martinez-Diaz, Ch., Bohn, N. U., PwC and Klitou, D., Conrads, J., CARSA, (2018), *Digital Transformation Scoreboard 2018. EU businesses go digital: Opportunities, outcomes and uptake*, European Commission, Luxembourg, pp. 7–21.
  16. Atomico, *The State of European Tech Survey*, 2018, p. 11.
  17. Jasińska-Biliczak, A., Kowal, J., Hafner, J. (2016), *Innovative Capacity in Small Regional Enterprises in Transition Economies: An Exploratory Study in Poland*.
  18. Swan, M. (2015), *Blockchain. Blueprint for New Economy*, O'Reilly Media.
  19. Tapscott, D., Tapscott, A. (2016), *Blockchain revolution: how the technology behind bitcoin is changing money, business and the world*. Penguin.
  20. Allen, D. W. E., MacDonald, T., Potts, J. Blockchains and the Boundaries of Self-Organized Economies: Predictions for the Future of Banking (March 18, 2016), available at: SSRN: <https://ssrn.com/abstract=2749514> or <http://dx.doi.org/10.2139/ssrn.2749514>.
  21. Davidson, S., De Filippi, P., Potts, J. (2016), *Economics of Blockchain*, available at: SSRN: <https://ssrn.com/abstract=2744751> or <http://dx.doi.org/10.2139/ssrn.2744751>.
  22. Monterde, A., Calleja-López, A., Aguilera, M., Barandiaran, X. E., Postill, J. (2015), *Multi-tudinous identities: a qualitative and network analysis of the 15M collective identity*, *Information, Communication & Society*, DOI: 10.1080/1369118X.2015.1043315.
  23. Porter, M. E. (1985), *The Competitive Advantage: Creating and Sustaining Superior Performance*. NY: Free Press.
  24. Tapscott, D., Tapscott, A. (2017), *Blockchain Revolution*, *New Global Studies*, vol. 11, issue 1, <https://EconPapers.repec.org/RePEc:bpj:nglost:v:11:y:2017:i:1:p:47-53:n:1>.

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