

JEL classification: A1

BLOCKCHAIN – THE NEW INSTRUMENT OF SAFE KNOWLEDGE TRANSFER

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ABSTRACT

BLOCKCHAIN, ENTERPRISES, INNOVATION, KNOWLEDGE TRANSFER

Blockchain is not only the innovation or technology, it is very wide notion including lots of scientific disciplines. But the most important is its influence at enterprises development by knowledge transfer security. There is also a value that blockchain is usually owned by the public.

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 (1997). 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 (Mehandjiev and Grefen, 2010). In consequence, alternative techniques are needed and the recent rise of blockchain and distributed ledger technology (DLT) offers a highly promising alternative solution.

BLOCKCHAIN

Gartner (2018) define 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 to the chain, hence it received

the name of a blockchain (Global Blockchain Benchmarking Study, 2017). By design the blockchain is immune to any existing record change, making the records immutable once written in the blockchain (Furlonger & Valdes, 2017). 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 in reducing their overhead costs by hosting services on the blockchain instead of buying software licenses and hiring personnel (Kuznetsov, 2018). 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 (Lovelock and David Furlonger, 2017) (Europe has invested nearly \$200 million in 2017 (IDC, 2018)),
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 (IDC, January 2018)),
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 (Coinmarketcap, 2018),
4. European start-ups have raised \$1.76 billion in capital through an Initial Coin Offerings (ICO) over the last 3 years (Atomico, 2018). 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 centers, outsourcing, or even nabbing talent before they've graduated college (Financial Times),
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 (IDG Connect, 2018),

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) (Digital Transformation Scoreboard, 2018).

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 (Swan, 2015; Tapscott & Tapscott, 2016): 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» (Allen, MacDonald & Potts, 2016), in a way that resembles the dot-com boom of the late 1990s, where the formula was «X, but on the internet» (Davidson, De Filippi & Potts, 2016). 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 strategies¹, (Monterde A., Calleja-López A., Aguilera M., Barandiaran X.E. & Postill J., 2015).

The adoption of DLTs will have profound effects on the nature of companies and in the entire processes within the value chain of the enterprises²: 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 (Tapscott & Tapscott, 2017).

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

¹ As in reports: <https://www.ft.com/content/b5b1a5f2-5030-11e7-bfb8-997009366969> 3.

² The value chain also known as Porter's Value Chain Analysis is a business management concept that was developed by Michael Porter. In his book *Competitive Advantage* (1985), Michael Porter explains Value Chain Analysis; that a value chain is a collection of activities that are performed by a company to create value for its customers. Value Creation creates added value which leads to competitive advantage. Ultimately, added value also creates a higher profitability for an organization.

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 for 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.

REFERENCES

1. Davidson, Sinclair and De Filippi, Primavera and Potts, Jason, Economics of Blockchain (March 8, 2016). Available at: SSRN: <https://ssrn.com/abstract=2744751> or <http://dx.doi.org/10.2139/ssrn.2744751>.
2. Furlonger D. & Valdes R., Practical Blockchain: A Gartner Trend Insight Report, Gartner Inc., 2017.
3. 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>.
4. Lovelock J.D. & Furlonger D., Three things CIOs need to know about blockchain business value forecast, Gartner Inc., August 2, 2017.
5. MacDonald, T., Allen, D.W.E. & 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>.
6. Mehandjiev, N. & Grefen, P., Dynamic Business Process Formation for Instant Virtual Enterprises 1st ed. Heidelberg: Springer 2010. (Advanced Information and Knowledge Processing).
7. Monterde A., Calleja-López A., Aguilera M., Barandiaran X.E. & Postill J., Multitudinous identities: a qualitative and network analysis of the 15M collective identity, Information, Communication & Society, 2015, DOI: 10.1080/1369118X.2015.1043315.
8. Mowshowitz. A 1997. Virtual organization. Commun. ACM 40, 9 (September 1997), DOI=<http://dx.doi.org/10.1145/260750.260759>.
9. Swan M., Blockchain. Blueprint for New Economy, O'Reilly Media, 2015.
10. Tapscott, D. and Tapscott, A., Blockchain revolution: how the technology behind bitcoin is changing money, business, and the world. Penguin 2016.
11. Tapscott, D. & Tapscott, A., Blockchain Revolution, New Global Studies, 2017, vol. 11, issue 1, <https://EconPapers.repec.org/RePEc:bpj:nglost:v:11:y:2017:i:1:p:47-53:n:1>.
12. Atomico, «The State of European Tech», 2018.

13. Digital Transformation Scoreboard 2018, see: <https://ec.europa.eu/growth/toolsdatabases/dem/monitor/sites/default/files/DTS%202018.pdf>.

14. Financial Times, <https://www.ft.com/content/e49e5310-4923-11e7-919a-1e14ce4af89b>.

15. Global Blockchain Benchmarking Study 2017, see: https://www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/2017-09-27-ccafglobalbchain.pdf.

16. IDG Connect, <https://www.idgconnect.com/abstract/29326/a-suite-guide-blockchain-2018>.

17. Why Blockchain matters to small businesses, Nikolai Kuznetsov, the Entrepreneur, 9th January 2018.

18. IDC, «New IDC Spending Guide Forecasts Western European Blockchain Spending to Grow to \$1.8 Billion by 2021», 2018.

19. IDC, January 2018, <https://www.idc.com/getdoc.jsp?containerId=prEMEA43543718>.

20. <https://coinmarketcap.com/charts/>, 2018.

UDC 338.138

INTEGRATION OF ARTIFICIAL INTELLIGENCE INTO MARKETING

ИНТЕГРАЦИЯ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В МАРКЕТИНГ

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ABSTRACT

COGNITIVE MARKETING, ARTIFICIAL INTELLIGENCE, NEURAL NETWORK, CUSTOMER, MARKETING RESEARCHES

The main aspects of integration in an artificial intelligence into marketing are considered in article. The analysis of such concepts as cognitive marketing and

АННОТАЦИЯ

КОГНИТИВНЫЙ МАРКЕТИНГ, ИСКУССТВЕННЫЙ ИНТЕЛЛЕКТ, НЕЙРОННЫЕ СЕТИ, ПОТРЕБИТЕЛЬ, МАРКЕТИНГОВЫЕ ИССЛЕДОВАНИЯ

В статье рассмотрены основные аспекты интеграции искусственного интеллекта в маркетинг. Проведен анализ таких понятий как когнитив-