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IMPACT OF LEGAL REGULATIONS ON THE CAPITAL MARKET IN CONNECTION WITH THE DEVELOPMENT OF BLOCKCHAIN TECHNOLOGY[2]

1. INTRODUCTION

The law has always born on various areas and aspects of life, including the financial market, since every legal decision bears financial consequences. Amidst the rise of technological revolution, the emergence of the concept of blockchain, cryptocurrencies, artificial intelligence, big data and digital reality, undeniably the law acting as legal provisions has an impact on the prospective trends of the Polish economy and capital market. Finance and law have been intertwined for centuries, in the modern world this link has become all the more relevant, for it determines the economic development of the Republic of Poland.

The use of *blockchain* technology in the capital market may be observed in the planned and implemented legislative amendment. Still the Blockchain Capital Market Platform initiated by KDPW plays a special role, and the e-Voting application made available within its framework. It indeed restructures the financial market segment, that is the capital market.

Regulatory impact on the capital market due to *blockchain* technology development requires interdisciplinary research, ranging from finance and economics to law and management.

2. *BLOCKCHAIN* TECHNOLOGY

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In his book *"Blockchain jako innowacja systemowa"*, Professor W. Szpinger stated from the very beginning, while introducing the reader to the approach of this publication, that distributed registry technology, otherwise known as *blockchain*, is a major innovations in the digital economy[3]. When observing technological developments, including the progress of digitisation nowadays this statement must be utterly accepted.

Most people, both at home and abroad, link the idea of *blockchain* with cryptocurrencies. Whereas such reasoning is not erroneous, *blockchain* must not be identified as cryptocurrencies. Indeed, the *blockchain* concept has many more applications and options than just a distributed system (database) on which trade in cryptocurrencies is stored. The distributed register technology offers many practical applications, the number of which is constantly growing, especially in the capital market, where it may replace the existing infrastructure, looking ahead.

In the wake of progressive digital transformation, companies and organisations are seeking practical applications of new technologies. While enumerating the most promising technological solutions, which are able to provide the necessary functionality required by the regulator and undeniability while maintaining the privacy of shared data, one must mention *blockchain* technology. Respectively, the financial sector, including the capital market, may create new structures and properly respond to emerging challenges, and streamline current, time-consuming and inefficient processes of actions taken.

Blockchain technology can be defined as safe and automatic transfer of values, and in simple terms *blockchain* can be defined as Internet of values[4]. The specificity of a registry created as a *blockchain* is that individual events are registered chronologically within a cryptographically encrypted block, with blocks chain-connected. Each event is confirmed by a unique digital signature that guarantees the integrity of the entire database. The digital signature of the predecessor is placed in the body of the block, so any unwanted change in the content of the register triggers the incompatibility of the block in question and all the following blocks in turn. Fraud attempts, hacker attacks or errors are immediately detected and replaced with

[3] W. SZPRINGER, *Blockchain jako innowacja systemowa*, Warszawa 2019, p. 13.

[4] As rightly pointed out by Professor W. Szpinger, *blockchain* technology transforms the existing "Internet of information" into the "Internet of values". – W. SZPINGER, *op. cit., p.* 73.

correct copies, ensuring that *blockchain* technology guarantees the highest standards of security and business trust.

With its innovativeness, blockchain technology definitely challenges legal framework. How does it affect the capital market?

3. CAPITAL MARKET LAW

3.1. CAPITAL MARKET DEFINITION

To commence reflections on the capital market, any market economy is anchored to the market: all buy and sale trade in various goods[5]. The financial market fostered from the development of money and the willingness of relevant entities to invest free funds. People with financial surpluses (also known as investors) started to invest them towards certain benefits. Over time, the financial market became a mechanism for trade financing. The term "trade financing" refers to the creation of flow-through opportunities, that is raising of additional cash by companies to finance and develop their business[6]. The most common division of the financial market is the division into[7]:

3) money market, where traders finance their current operations for a maximum period of one year;
4) capital market on which the transactions in question are concluded are financial instruments with a maturity of more than one year and with the intention of earmarking these funds for development purposes. The funds from the issue of these instruments may be allocated to the issuer's development activities.

The capital market is one of the cornerstones of the national economy. A buoyant and effective capital market, a segment of the financial market, is above all an opportunity for a lower capital price for businesses, increase in transparency of business trade and optimisation

[5] W. DĘBSKI, *Rynek finansowy i jego mechanizmy. Podstawy teorii i praktyki*, Warszawa 2014, p. 13.
[6] *IBIDEM*, p. 18.
[7] *IBIDEM*, p. 19-20.

of allocation of savings of citizens in the domestic economy[8]. We should agree with opinion I. Srok, that the capital market for the development of Polish enterprises is, first of all[9]:

9) "a source of long-term capital to finance development and riskier projects than bank financing;
10) diversification of asset financing sources through long-term equity;
11) reduction of the company's debt ratio as a result of raising equity capital from the stock exchange market - equity instruments (share capital is included in the equity of a joint-stock company);
12) increase in the company's credibility towards customers, suppliers and financial intermediaries, including banks;
13) relatively low cost of raising capital vis-à-vis the foreign market – relevant for SME;
14) of key importance for innovative companies, and SME, having difficult access to bank credit and foreign capital;
15) market valuation of the company on the public market;
16) marketing and image effects".

3.2. CAPITAL MARKET LEGISLATION

Capital Market Law is an academic and educational discipline, concerning complex legal regulations dedicated to capital market issues, which consists of sets of standards belonging to various branches of law, in particular civil, administrative and criminal law. Three areas, which stipulate the capital market law, may be identified, namely:

4) process of offering securities by issuers to investors;
5) disclosure obligations of public companies;
6) rules of work of capital market institutions.

Many a time, motivated by numerous threats (risks) on the capital market, legislator tends to specifically legislate this market, in particular in order to ensure protection of the interests of

[8] T. CZERWIŃSKA, A. Z. NOWAK (ed.), *Rynek kapitałowy – efektywność i ryzyko*, Warszawa 2016, p. 7.
[9] I. SROKA, *Rynek kapitałowy…,* red. T. CZERWIŃSKA, A. Z. NOWAK, p. 19.

trading participants on the capital market[10]. A. Chłopecki specifies the following legitimate threats[11]:

5) risk of collecting incorrect information resulting in making an erroneous investment decision;
6) risk of capital loss;
7) risk of improper management of entrusted capital;
8) risk of imposing burdensome contractual conditions on investors by other entities.

Capital market law increases the economic importance of large public limited liability companies with dispersed shares and affects the freedom to dispose of publicly traded shares[12]. Importantly, public trading in shares may be held in the form of stock exchanges, dealer networks (by way of illustration NASDAQ - United States Stock Exchange) or electronic share trading systems.

The capital market legislations primarily seeks to build investors' trust in the market and to develop the most effective capital market[13]. The legal provisions governing the capital market are also designed to ensure a high level of safety for participants in organised trading on this market.

The capital market is to perform tasks from the development of the Polish economy. It must therefore be reformed and adapted to the current technological revolution. Moreover, the development of the capital market and its bringing into conformity with new international standards inevitably results in legislative changes to be enforced[14].

4. APPLICATION OF *BLOCKCHAIN* TECHNOLOGY IN THE CAPITAL MARKET

In pursuit of the reason for the changes on the capital market, one can quote the words of Richard Buckminster Fuller: In pursuit of the reason for the changes on the capital market,

[10] A. CHŁOPECKI, *Źródła i cele regulacji prawa rynku kapitałowego* [in:] *Prawo rynku kapitałowego*, A. CHŁOPECKI, M. DRYL, Warszawa 2017, p. 1.
[11] *IBIDEM*, p. 1-2.
[12] T. SÓJKA, *Prawo rynku kapitałowego. Komentarz*, Warszawa 2015, p. 30
[13] H.D. ASSMANN (w:) H.D. ASSMANNM R.A. SCHUTZE, *Handbuch des Kapitalenlagerechts,* Munchen 1997, p. 6; et T. SÓJKA, *op. cit*., p. 31.
[14] Et: A. JAKUBIAK, *Prawo rynku kapitałowego*. *Komentarz*, ed. T. SÓJKA, Warszawa 2015, p. 27.

one can quote the words of Richard Buckminster Fuller: "You will not change anything by fighting. with the reality around you. To change it, build a new model that will make the current one obsolete". The financial market and capital market, its segment, is undergoing drastic transformations both in Poland and on a global scale, in the wake of innovation, changes in business and economic models. The current state of the global financial market is presented as: "a system which pumps trillion of dollars flow every day and which serves billions of people, but which is confronted with a multitude of problems, generating additional charges and delays, creating friction through unnecessary and cumbersome paperwork, creating opportunities for fraud and crimes. As many as 45% of financial intermediaries such as payment networks, stock exchanges and money transfer services struggle with financial crime every year[15]. *Blockchain* technology has opened up new perspectives for non-confidential transactions and information exchange[16]. It addresses the causes of market inefficiencies such as system obsolescence, centralisation, which made the financial market resistant to change and vulnerable to failures and attacks[17]. Moreover, the literature distinguishes five basic principles that underpin *blockchain* technology and contribute to financial market changes, namely[18]:

6) distributed database which makes transaction fully accessible to each party thereto with no intermediary;
7) *peer-to-peer* transactions;
8) principle of transparency associated with pseudonymisation - each transaction and its amount is visible to each entity that has access to the system. The *blockchain* user has an alphanumeric address, their identifier;
9) record irreversibility principle - once the transaction is effected and added to the database and the accounts is updated, the record cannot be changed;
10) calculation logic - users can independently create rules and algorithms that will automatically perform transactions between nodes.

Blockchain Platform for the Capital Market is a business project carried out on the initiative of the National Depository for Securities with a technological supported of IBM Polska. The website of the National Depository for Securities contains definition and the reason for the introduction of the Platform. As mentioned there, the Blockchain Platform for the

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[15] https://hbr.org/2017/03/how-blockchain-is-changing-finance [access: 23.1.2019].
[16] V. DHILLON, D. METCALF, M. HOOPER, *Zastosowania technologii blockchain*, Warszawa 2018, p. 36.
[17] Zob.: https://hbr.org/2017/03/how-blockchain-is-changing-finance [access: 23.1.2019].
[18] V. DHILLON, D. METCALF, M. HOOPER, *op.cit.*, p. 233; et: https://hbr.org/2017/03/what-initial-coin-offerings-are-and-why-vc-firms-care [access: 23.1.2019].

Capital Market is an innovative, open and fully secure infrastructure for the capital market, developed in blockchain technology based on Hyperledger Fabric solution using a private network model designed for the financial sector. Hyperledger is a blockchain structure, an open platform that enables blockchain concept to develop by identifying and addressing important features of an open standard for distributed ledgers[19]. HLF features[20]:

- non-repudiation of transactions, once completed, - in HLF each transaction is signed digitally by the organizations,
- actions may be fully audited, once completed - transaction log has the form of a chain of blocks in HLF, hence each registered transaction in the log leaves an indelible trace,
- effectiveness - in HLF it breaks records in the speed of transaction execution;
- clear terms of transaction execution - HLF is a type of contract/agreement, but in the form of a deterministic software code (no room for free interpretation of individual clauses of the contract);

The *Blockchain* Platform for the Capital Market aims to reduce the costs of and streamlining securities transactions. It changes the existing capital market infrastructure, as dedicated, independent applications supporting the development of innovative and cost-effective network nodes may be created in a distributed register. This Platform is the KDPW's response to the growing needs of the capital market, in particular in the area of post-transaction services. Effective and secure post-transactional infrastructures guarantee uninterrupted work of financial markets, for it is essential to rely on opportunities afforded by new technologies in their creation.

4.1. E-VOTING

The e-Voting application has been the first of the services that the National Depository for Securities will make available to the *Blockchain* Platform for the Capital Market in mid-2019. It is aimed at increasing investor involvement in voting on resolutions adopted at General Meetings of Shareholders. With this application, votes at GMs may be cast via electronic means

[19] W. SZPRINGER, *op.cit.*, p. 111.
[20] https://www.linkedin.com/pulse/produkcyjne-u%C5%BCycie-hyperledger-fabric-hlf-w-polsce-robert-kleniewski/ [access: 24.1.2019].

of communication, so shareholders could cast their votes in a cheaper, safer and easier way than before.

This application is intended to contribute primarily to increasing the accessibility, responsibility and transparency of all participants participating in the programme in voting at the General Meeting. *Blockchain* technology will provide a common, decentralised register containing a list of voted resolutions, the number of registered participants and the number of votes held by them, as well as data on the results of voting. This register will ensure full auditability of vote[21]. Further, votes will be cryptographically protected, so the *blockchain* network will materially alleviate the risk of tampering with voting results[22].

For capital market participants such as NDS, public companies, banks and brokerage houses, e-Voting will ensure a common insight into the data on voting rights exercised in near-real time and will also provide access to reliable electronic (remote) voting results. The e-Voting application will be integrated with the National Depository for Securities application, currently providing issuers with a list of entities entitled to participate in the General Meeting. Aside of issuers and shareholders, e-Voting Stakeholders will include entities maintaining securities accounts, which could integrate with the service of maintaining securities accounts thanks to e-Voting on the *Blockchain* Platform.

The positive features of the *blockchain* technology solution for the capital market and the development of e-Voting applications are as follows:

- infrastructure strengthening;
- efficiency and automation;
- data security;
- voting process optimisation;
- efficiency and greater involvement of investors.

One can take a closer look at the last of the above items, since e-Voting is expected to boost investors' involvement in the company's affairs. According to the research of the Association

[21] W. SZPRINGER, *op.cit.*, p. 257.
[22] https://www.ibm.com/blogs/think/2017/10/poland-blockchain/ [access: 24.1.2019].

of Individual Investors, 90.3% of investors do not attend General Meetings[23]. Individual investors fail to attend the General Meeting for a variety of reasons:

8) 44.9% - time shortage;
9) 28.1% - no impact on the procedure;
10) 20.0% - ignorance of the rules of participation;
11) 17.9% - high travel costs;
12) 17.3% - lack of interest;
13) 16.7% – no on-line attendance;
14) 12.3% - burdensome procedure.

The above percentage share of reasons why investors miss General Meetings imply the lack of time as that the paramount reason. In view of high travel costs and lack of on-line participation, the introduction of e-Voting would eliminate the real problems faced by investors.

5. SUMMARY

Given international competition, the Polish capital market will not develop without strong local actors, banks and investment firms, neither without an efficient and effective infrastructure. Convenient and secure infrastructure can be created by using *blockchain* technology. The capital market is changing, and, consequently, so will have to legal provisions towards new challenges and realities.

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