



FROM HIERARCHICAL STRUCTURES TO NETWORKED BUSINESS MODELS BASED ON TEAM COLLABORATION

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ABSTRACT

The article examines the need for innovative management technologies and business models prompted by the already started Fourth Industrial Revolution. Followed is the connection between the factors influencing the restructuring of the hierarchical organizational structures in network based team organizational forms and the requirements to the business organizations by the new type of “sharing economy”. The added value of the Blockchain-management is searched in the creation of optimal network based organizational forms supported by an efficient team interaction.

KEYWORDS hierarchical structures, network based organizational forms, team collaboration, business model, Blockchain-management

INTRODUCTION

Under the conditions of the already started Fourth Industrial Revolution, the business organizations are facing the need of generating new business models, whereby responding to the global economic, social and production dynamics and competition for consumers, resources and information. The convergence of the physical, biological and digital sphere enables the optimal utilization of the resources and the achievement of efficiency based on accelerated transition to sustainable circular economy. The linear model of resource

consumption, based on the principle „taking – manufacturing – disposing”, should be efficiently restructured in a new, contemporary model, where there is value created and shared in an innovative way on the basis of an optimal interaction between materials, energy, labour and information. [1]

The business organizations, which integrate in their activities physical, biological and digital assets, under the conditions of the Fourth Industrial Revolution, acquire an increasingly wider reach over the sectoral and economic systems for production, distribution and consumption, and to a large degree determine the development of new business models, meeting the challenges of the environment, determined by the global macro-economic framework. Under these conditions, the economic entities are facing two major problems that are becoming imminent:

- ✓ the need of restructuring the organizational system towards network based e-management, digitalization, robotization, artificial intelligence, flexibility, adaptability and optimality;
- ✓ the need of upgrading the human resource abilities towards efficient leadership and team interaction, based on knowledge, creativity, skills to transform specialized knowledge, as well as an ability to consolidate the scarce organizational production, financial, material and non-material resources and capabilities in an efficient and competitive business strategy, bringing higher added value for the business organizations, their employees, partners and the society.

Nowadays, retaining the position on the market and the survival of the business units is increasingly related to innovation, digitalization and invention. This, however, puts the economic entities under permanent pressure, as a result of which only the most adaptable and the most flexible organizational structures, applying the strategy “always developing”, manage to remain on the market. Therefore, a necessity emerges for restructuring the organizational structure of the economic entities from a hierarchical to a network based one, which is established on the collaboration between distributed and dynamic teams. [2]

SYNTHESIZING THE FACTORS INFLUENCING THE RESTRUCTURING OF THE HIERARCHICAL ORGANIZATION STRUCTURES IN NETWORK BASED TEAM ORGANIZATIONAL FORMS

The development of digitalization and the information technologies are the main trends, which have already been determined and have marked the beginning of the Fourth Industrial Revolution. The further intensification of research and the improvement of the processes in the business organizations, as well as the advance of artificial intelligence in their management, lead to the ever more evident role of the technological and social factors in the management and optimization of the economic structures. The innovative forms, whereby value is created and shared by the economic entities, are determined by numerous factors, which either accelerate or restrain the efficient use of the material and non-material resource flows.

The factors, accelerating the digitalization processes in economy, are also related to physical changes occurring therein in respect to the production resources, transformational processes and management. That, in turn, requires a radical reformation of the business organizations and their models of production, distribution, redistribution and management. Therefore, the factors, which accelerate the development of the new type of production relations, determine the future evolution of the Fourth Industrial Revolution, and are undoubtedly related to some innovative production factors, such as:

- ✓ the advance of the sensor technologies;
- ✓ the implementation of artificial intelligence in almost all the economic areas;
- ✓ the penetration of the additive manufacturing;
- ✓ the development of robotics;
- ✓ the creation of 4D (smart) materials and products;
- ✓ the intensified application of the system “the Internet of things”.

Under these conditions, the factors preventing the optimal development of the business organizations in the new economic realities, determined by the Fourth Industrial Revolution, are:

- ✓ the existing hierarchically structured organizational structures;

- ✓ the absence of sufficient information resource in the economic entities in respect to the new realities;
- ✓ the inability of the human factor to adequately meet the occurring or already occurred changes in the organizational environment.

These factors lead to specific deterring of the processes of restructuring in the economic entities, owing to which they fail to respond timely to the changes in the environment and lag behind in respect to their own optimality and competitiveness.

The research and analysis of the factors having an impact on the optimal development of the business organizations prompt the generation of the conclusion that there is an urgent need for restructuring the economic entities' structure from strictly hierarchical to network based and established on team collaboration. This restructuring is possible, however, only and solely on the basis of business models balanced between the digital and material world, leading to optimal business structures and management.

BUSINESS MODELS RESTRUCTURING THE HIERARCHY IN THE BUSINESS ORGANIZATIONS INTO NETWORK TEAM COLLABORATION

The processes, prompted by the advance of the Fourth Industrial Revolution and the new type of economy, provoke deep transformations both in the external, and in the internal environment of the business organizations. The main restructuring activities in the inter-organizational aspect should be focused on the change of the economic entities' management systems, as well as on upgrading the qualification, competences and abilities of the human factor therein. [3, 4] In that sense, it can be stated that there are the prerequisites in place for fundamental reconsideration of the currently existing business models in the organizations, and the generation of new, restructuring algorithms, leading to optimal efficiency of the processes therein.

The contemporary conditions require the connection into one single system of the capabilities of:

- ✓ the innovative production factors, such as digitalization, robotics, artificial intelligence, innovations, smart materials;
- ✓ the traditional production factors, such human resources, capital and land;

- ✓ the innovative production technologies, such as 3D and 4D printing, the Internet of things, network platforms.

The wide scale penetration of the digital into the material sphere, as well as the transition from “ownership of assets” to “access to assets” is only a part of the transformation of the economic reality from an “ownership economy” to a “sharing economy”. This requires the incorporating of the business processes within the economic entities into specific block chains, which combine powerful cryptographic algorithms with systemic decentralized computing capacity representing a method for transferring content (information). Blockchain in the business organizations should be the knowledge with accurate recording in time and space, providing information about the values, assets, prerequisites and dangers of the environment (both internal and external). The Blockchain-management requires the networking of computers, which together follow, analyze and design the development of the processes in a business organization, where, during their operation, they upgrade their own systemic architecture through the ability to analyze the environment and undertake actions, which enhance the possibility of achieving certain goals. The optimality of the Blockchain-management undoubtedly results from the invested artificial intelligence in the technological Blockchain and is related to:

- ✓ the ability to share, the programmability, cryptographic protection and reliability of the Blockchain;
- ✓ the possibility to register, monitor and optimize assets and activities in greatest details;
- ✓ the efficient use of under-utilized assets;
- ✓ the reduction of costs (transaction, friction and threshold costs);
- ✓ the increase of competitiveness of the business organizations;
- ✓ the optimization of the periods of time for performing a certain activity, process and operation;
- ✓ the increasing of the speed and scale of the change for the business and the economy;
- ✓ the generation of substantial value for the units and business organizations sharing resources, as well as for the economic system in general;
- ✓ the application of collaborative innovations.

The hierarchical business structures in the organizations are associated with clumsiness and bureaucracy, demotivation of the employees to achieve top results and show initiative, reduced capacity to introduce innovations and carry through creative business relations due to the numerous management levels. The hierarchy delays the business processes in the organizations; it involves more costs resulting from the more complicated hierarchical relations and communications in the structure of the economic entity; it leads to non-optimal usage and sharing of resources between the various hierarchical levels and units; and impedes the process of applying flexible and adaptive management.

The lack of speed, sustainability and convertibility of management in the hierarchical business structures leads to a lack of relevance between the business strategy and the requirements of the environment. This, in turn, makes management inefficient from the perspective of the strategic needs of the economic entities, which often lose their competitiveness and finance.

Under the conditions of opposition between the additive manufacturing and the traditional type of production, digitalization and hierarchy of management, robotization of the processes and bureaucratic communication, the hierarchical organization structures are not able to react and respond quickly to the very dynamically changing global environment. That brings forward as a main priority for the hierarchically structured economic entities the development of their ability to adapt in an economy of uncertainty. This is achievable only and solely if the business organizations continuously study, research and analyze the environment, and subsequently, apply the strategy of “perpetual beta stage”, by constantly maintaining and developing their innovativeness.

Under the conditions of intensive digitalization imposed by the already started Fourth Industrial Revolution, the small and medium-sized enterprises have substantial advantage to the hierarchical organization structures. That advantage results from the speed and flexibility of their reaction to the dynamics of the external environment. The hierarchical structures are faced with two possibilities, generated on the basis of the “beta stage” philosophy:

- ✓ using the advantages of the scale by investing in their own ecosystem of start-up business organizations, which leads to retaining the leadership in the respective sector, and to more efficient and flexible operations [5];

- ✓ building “smart factories” based on smart manufacturing, integrating the philosophy “from one end to the other”, where all the activities, processes and operations are digitalized.

These two opportunities, which can ensure for the hierarchical organization structures the retaining of their positions, would be impossible without the implementation of the “platform strategy”, which manages their internal organizational environment on the basis of the relation between network based computers and shared information, and distributes tasks between teams collaborating both in the real-life and in the digital environments. Undoubtedly, that leads to decomposing the hierarchy in the business organizations down to networked structures, comprised of teams, which share information and support each other.

In its essence, the network based organizational structure, which consists of relatively equal in status partnership units, builds a new open and liquid structure. That provides grounds for the generation of new information driven business models, which create new sources of income for the economic entities through the fast and timely access to information, through the possibility to view the processes in a wider context, as well as through basing the analysis on “software intelligence”.

Nevertheless, if the hierarchical organization structures are decomposed down to a unification of numerous fluid organizations in the ecosystem for the creation of value, or they are restructured in automated Skynet-structures, these new organizational units are open and liquid, and lead to the generation of business models, focused mainly on the application of the new technologies in view of the more efficient use of the resources, the reduction of costs and the restriction of the harmful impacts on the natural environment. These contemporary business models turn the human factor into a strategic competitive advantage and require essentially new competences, skills and abilities from the human resources. That determines, in turn, also a change in the organizational culture, which should be focused on flexible team interactions, new methods of measuring and paying for the labour, innovative strategies for the attraction and retaining of intelligent, qualified and talented human resources. Therefore, under the conditions of the Fourth Industrial Revolution, the business models would be efficient and would lead to an optimal structure if they integrate in their flexibility capacity Blockchain-management, based on digitalization, artificial intelligence, qualification and motivation of the human factor, effective use of the production resources and technologies, efficient communication and synergism.

CONCLUSIONS

The transition to a “sharing economy”, additive manufacturing and digitalization leads to the necessity of collecting, studying, researching, analyzing and managing of large bulks of data in the contemporary business organizations. The survival of the economic entities under the conditions of hyper racing for resources and tight competition resulting from the already started Fourth Industrial Revolution is unthinkable without their optimal restructuring. The reorganization, however, is related to the integration into the organizational system of traditional and innovative production factors with inventive manufacturing technologies, as well as to a substantial change in the structure of the economic entities.

Under the conditions of restructuring and evolving of the organizations in line with the challenges of the environment, the added value from the introduction of Blockchain-management should be found not only in respect to the quick access to information, multi-stage analysis and flexibility in decision making, but also concerning the generation of business models for optimal network based organizational systems supported by the collaboration of a multitude of efficient teams. Therefore, the outlining trend for the coming years is related to the search of the optimal management of the business organizations in building a balanced management system, integrating the human, technological, production, financial and digital factors.

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