

## DEFINING THE CONCEPT “DIGITAL LEADERSHIP”

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**Abstract:** *The new economic realities, prompted by the already started Fourth Industrial Revolution, require new qualities, knowledge, skills and competencies from the human resources. The development of the artificial intelligence, the virtual and augmented reality, the additive manufacturing and robotics lead to the differentiation of large bulks of data, blockchain networks, systems regulated by the Internet of things, cyber-physical systems. All that generates the undisputable need for a new type of leaders, defined as digital due to the necessity to operate with resources and assets in the dynamic digital environment. On this basis, the article is an attempt to fill in a gap in economics literature related to defining the concepts “digital leadership” and “digital leader”.*

**Keywords:** *leadership, leadership style, leadership potential, higher education institutions.*

**ITHEA Keywords:** *A.1 Introductory and Survey; J.7 Computers in Other Systems*

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### Introduction

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The shift of the focus from the linear model of utilizing the goods, based on the principle “purchase – use – disposal” to the circular economy model, which follows the principle “designing – manufacturing/processing – distribution – use / sharing / borrowing / reuse / repair – collecting waste – recycling”, has been influenced by the unprecedented to date penetration of the digital sphere into the material one. At the same time, the development of the sensor technologies, mechatronics, artificial intelligence, additive manufacturing, the Internet of things, intensifies and accelerates the transition from “ownership of assets” to “access to assets”. Thus, there is a radical change in the economic reality

outlining itself over the years to come, which could be defined by economic theory as a transformation of the economic system based on ownership into an economic system driven by resource sharing.

The ever more evident and vehement digitalization of the entire economic system and the already started on-line sharing of the goods lead to radical reconsidering of the currently existing economic, social and socio-political doctrines. Launching business activity predominantly in digital environment requires new models and tools for managing the economic, social and socio-political development. Therefore, under the conditions of the Fourth Industrial Revolution, there is an ever more urgent lack of leaders, who should have skills to operate in digital environment, manage multinational teams and organizations, the members of which are based in real time at different geographical locations on the planet.

The demand for a new type of leaders with skills for electronic leadership is defined also by the European Commission, according to which Europe needs 50 000 new digital leaders every year. It should be clarified at this point that it does not refer to IT specialists or managers, but to professional with interdisciplinary training and abilities to manage teams and/or organizations in a new, even more dynamic global environment – the digital one.

Object of study in the present article is leadership in the organizational environment, whereby organizations define, plan and strive to achieve their strategic orientation targets.

Subject of analysis and synthesis in the study is defining the concept “digital leadership” as a prerequisite for accomplishing the mission, vision and goals of the organizations.

The objective of the study is to distinguish the essential characteristics of the concept “digital leadership” from the familiar to date definitions for “leadership” and “leader”.

The tasks of the paper come down to:

- ✓ a retrospective analysis of the major leadership theories;
- ✓ a synthesis of the definition of the concept “digital leadership”;

- ✓ differentiation of the digital leader’s characteristics from the well-known in literature definitions of the concept “leader”.

The restrictions set out in the present article are:

- ✓ the author does not dwell on the factors, which determine the emergence of digital leadership in the real-life economic turnover;
- ✓ the potential manifestations of various leadership styles in the digital environment are not studied.

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### **Nature of the problem**

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The turbulent development of technologies and innovations, the ever more evident and persistent presence of artificial intelligence in people’s everyday life and its turning now into an integral part of economy, the creation of new “smart” materials, machines and technologies, evoke the necessity for a new type of specialists, new type of managers, new type of staff, who would be able not only to manage the digital processes, but also to integrate in that management optimal coordination and efficiency of the human resources, who work in the digital space from different geographical spatial dimensions. The complexity of the forthcoming processes, which gradually evolve and pass from the “human – machine” ecosystem to a blockchain network, and from the blockchain network to a cyber-physical system (Figure 1) requires the search for a new type of leaders having integrated knowledge and competencies, allowing them to work in a digital environment, while managing machines, technologies, systems, processes and people. Thus, the economic reality gradually determines the search by the business organizations of digital leaders, who would contribute to obtaining added value of a new type.

When defining the concept “digital leadership”, the starting point should be the definition of the concept “digital environment”, which is most often determined in literature as virtual, simulated space created by using one or more computers or mobile devices.

The said definition has two cumulatively present elements:

- ✓ virtual space;

- ✓ one computer or mobile device, or a network of computers or mobile devices.

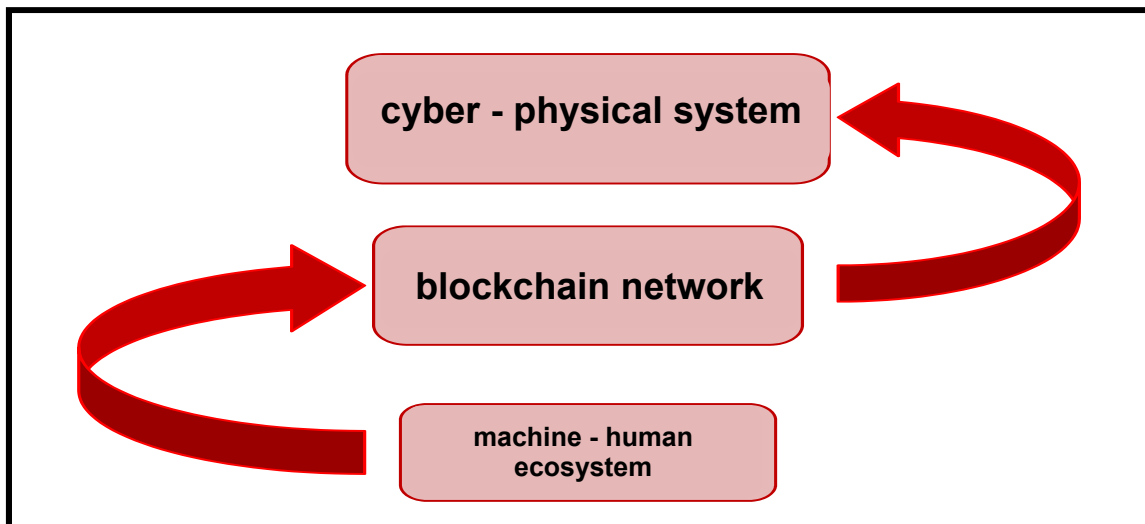


Figure 1. Evolution of the processes in digital economy author's adaptation

Therefore, the analysis shows that a digital leader should:

- ✓ operate in the virtual space, where simulation of processes, phenomena and operations is a tool for forecasting, analysis and evaluation;
- ✓ plan, organize, coordinate and supervise the work of one or several computers or mobile devices;
- ✓ motivate the human resources, who ensure the work of those computers or mobile devices.

For the fulfillment of those functions that the digital leader has, the latter should:

- ✓ know the principles of working in the digital environment;
- ✓ apply the technologies and tools, which are used in the digital environment;
- ✓ have management knowledge and competencies;
- ✓ integrate into a unified and integral system the work of the people and the work of the machines;

- ✓ lead the team or the organization to the accomplishment of the strategic orientation targets;
- ✓ facilitate through his/her conduct in the digital environment the achievement of added value for the team or the organization.

The aforementioned functions, which a digital leader should fulfill in the digital environment, require studying, analyzing and synthesizing the knowledge, skills and competencies, which the leader of a new type should have. It is namely on this basis that the concept "digital leadership" can be defined for the theory.

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### **Theoretical review and analysis of the definitions of the concept "leader" over time**

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The historical review of the definitions of the "leadership" concept leads to the views of the Scottish writer, philosopher and historian, Thomas Carlyle, who in 1840 laid the theoretical basis of the so-called concept of the great man, which is also considered to be the first leadership theory. According to it, leadership is inborn and it is not possible to develop a person in a natural way up to a degree, where that person would become a leader.

Pursuant to the concept of the leadership qualities, a leader possess sustainable in time essential qualities, which distinguish his/her personality from the other people.

The concept of the leadership participation defines the leader as an opportunity to show a certain style of behaviour, which has an impact on the efficiency, productiveness and performance of the employees or followers.

Pursuant to the charismatic leadership concept, the outstanding qualities of a leader form the personal vision and attractiveness of the latter, and prompt the people around for support, following and recognition.

According to the leadership behaviour concept, a leader may bring about with his/her conduct either satisfaction of the employees with their work, or staff turnover in a business organization.

Pursuant to the situational leadership concept, the efficiency of a leader's behaviour in the business organizations is directly related to the occurring of a certain situation and the various situational variables, which characterize it.

The concept of transactional leadership determines the leader as a proponent of respect, influence and authority as regards the employees or followers.

The concept of transformational leadership is based on the influence of the leader over the co-workers, as a result of which they are involved in the organization development process.

With attributive leadership, the leader interprets the co-workers' behaviour according to the “signals” that they send and according to the context of the specific situation, thus forming on this basis his/her own leadership style.

With the GRID leadership concept, the leader is defined as two-dimensional – depending on integrating in oneself an orientation towards the co-workers or followers, and a focus on results.

Three-dimensional is the leadership pursuant to the German Synercube concept – it is related to the focus of the leader on the results, the organizational culture and the employees or followers.

Defining the leader as six-dimensional is according to the smart leadership concept, pursuant to which the leader has specific qualities, the results that he/she achieves are measurable, his/her actions are in line with the strategic organizational orientation targets, he/she realistically evaluates the environment, where he/she operates and is always limited timewise. Pursuant to this concept, leadership is demonstrated from the external environment towards the internal one. The measures for the leader's style are his/her focus on result, people, organizational culture, parameters of the external environment, variables of the internal environment and identification of the leader with the organization.

Following this review of the development of the definitions of the “leader” concept, the following major characteristics of the leader may be summarized:

- ✓ the leader influences the views and the activities of his/her employees or followers through his/her certain personal characteristics or through his/her behaviour ;
- ✓ the leader creates prerequisites for achieving team collaboration and manages teamwork ;
- ✓ the leader focuses his/her efforts and the team’s potential on achieving a particular organizational goal;
- ✓ the leader has a long-term orientation towards meeting the strategic orientation targets of the organization.

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### **Synthesizing a definition of the “digital leadership” concept**

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In view of the accuracy of the analysis and synthesis of a definition of the “digital leadership” concept, a brief review should be made of the concepts, which define digital leadership to a large extent. Such concepts are:

- ✓ digital economy – a combination of related digital technological solutions, facilitating the development of automation, integration and data exchange in real time in the production processes, generating value added rate (economic and/or social), which is times higher compared to the traditional economic system;
- ✓ digital business organization – an enterprise from any sector of the economy, which on the basis of digital technological solutions improves its business and production processes, as well as its intellectual resources, and, as a result of this, generates value added rate (economic and/or social), which is times higher compared to the traditional economic entities.

The surplus value of the digital economy and the digital business organization results from the capabilities of the cyber-physical systems to optimize the business and production processes along the entire value chain by applying the principles of:

- ✓ resource efficiency – minimizing the production costs per unit of goods;

- ✓ resource productivity – maximizing the production on the basis of the available resources.

Typical for the high-technology economy, and hence for the digital economic unit, is the high-speed and large-scale development, which leads to a radical change of the business models and the traditional value chains. An essential characteristic of the high-technology economic systems is the impressive development of technologies, innovations, robotics and the artificial intelligence, which determines the emergence of new forms for creating value and employment.

On the background of the presented major characteristics of the digital economy and the digital business organization, there could be synthesized the core knowledge, skills and competencies, which the digital leader should have:

- ✓ the digital leader should be skilled in the field of computer systems and technologies, mechatronics, robotics and artificial intelligence;
- ✓ the digital leader should have business knowledge, insight and potential;
- ✓ the digital leader should know and apply the mechanisms of strategic business leadership and the leadership in an organizational environment.

Therefore, it can be summarized that the digital leader is a system of integrated interdisciplinary knowledge, skills and competencies (Figure 2), which can be generally differentiated in two main groups:

- ✓ social, economic, legal and management knowledge, skills and competencies in the field of:
  - leadership in the business organization – achieving certain organizational goals through team collaboration, which is planned, organized, coordinated, motivated and controlled on the basis of trust by a particular person, who has specific distinguishing personal and organizational characteristics - leader;

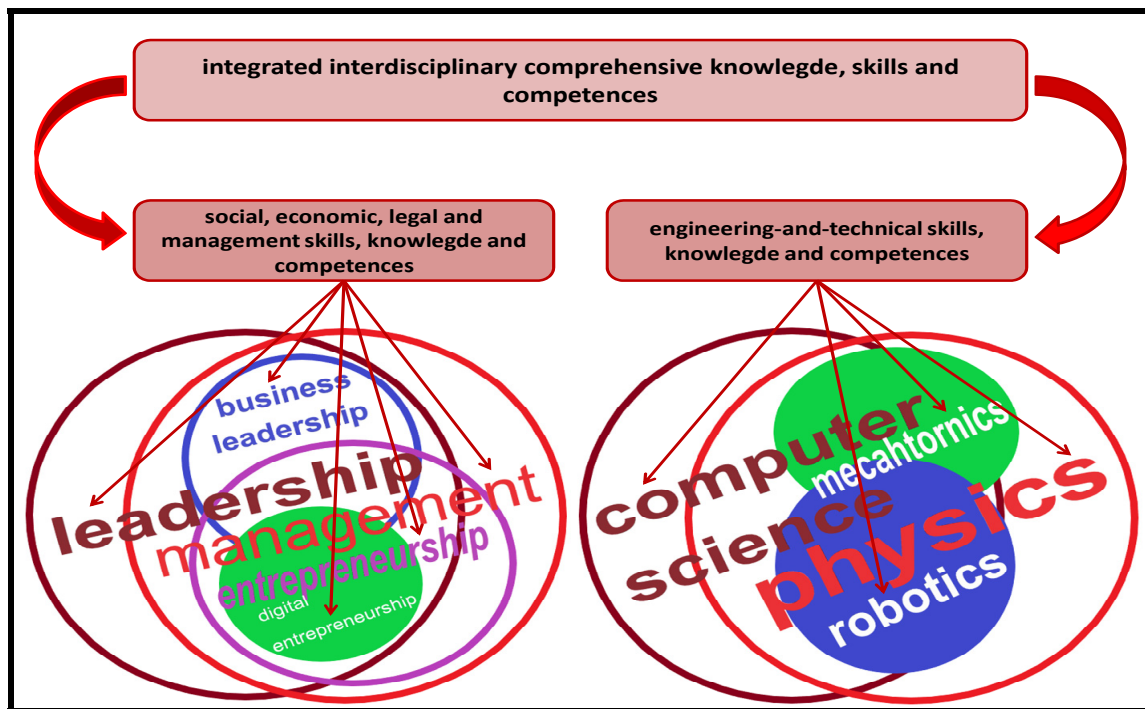


Figure 2. Knowlegde, skills and competences of the digital leader

author's adaptation

- strategic business leadership – achieving leadership by a certain business system (economy, sector, organization, team) in a certain environment, according to a particular criterion or a system of criteria;
- management – goal setting, administering, maintaining and developing the systems and structure of a certain economic entity on the basis of permanent monitoring and control;
- entrepreneurship – the readiness to take risks, adapting to the novelties, making use of the opportunities of the environment (both internal and external);
- digital entrepreneurship – the possibility to create new organizational forms, products or services, while undertaking a certain risk, and by using team collaboration and information-and-technological systems.

- ✓ engineering-and-technical knowledge, skills and competencies in the field of:
  - computer science;
  - physics;
  - robotics;
  - mechatronics.

The aforementioned interdisciplinary knowledge, skills and competencies require bringing forward the summarization that digital leadership represents a unified and integral concept, based on the integrated comprehensive use of the information-and-communication technologies and human resources.

Alongside the strictly specific and realistic, in respect to the needs of the environment, knowledge, skills and competencies, the digital leader should also have certain quality characteristics, such as analytical thinking, ability to solve problems, ability to motivate, ability to assess risk, creativity, innovativeness, vision. These qualities of the leader lead to synthesizing the main boundaries of digital leadership as well, namely: unified, integral, systematically running process in the virtual space for analyzing a particular situation, building and coordinating relations between people, departments, organizations, planning and developing a vision, managing change, adding value.

Following the theoretical research and the critical analyses presented above in the article, it can be synthesized that digital leadership is a concept leading to a higher added value for the organizational system, as well as to integrated comprehensive use of information-and-communication technologies, a set of tools and human resources in a digital environment in view of achieving the strategic orientation targets of a particular business system through team collaboration between people, working through connected in a network computers or mobile devices, accomplished on the basis of applying a specific leadership style in a virtual environment.

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## Conclusion

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The analysis and synthesis of the problematic issues related to defining the “digital leadership” concept require the summarization of the following main conclusions:

- ✓ digital leadership is a specific concept, which integrates social, economic, legal and management knowledge, skills and competencies with engineering-and-technical knowledge, skills and competencies;
- ✓ digital leadership emerges in a digital environment;
- ✓ digital leadership unifies the efforts of people working on computers or mobile devices in a network;
- ✓ digital leadership is realized in planning, organizing, motivating and controlling in a digital environment with the achievement of the organizational goals, where the relationship between the digital leader and the members of the team/organization is based on mutual trust;
- ✓ digital leadership facilitates attaining higher added value for the business system, in which it is applied.

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## Bibliography

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- [Николаева, 2018] Николаева, В. По въпроса за стратегиите и стратегемите в организациите. XVI International Scientific Conference “Management and Engineering`18”, 2018. ISSN 1310-3946, ISSN 1314-6327.
- [Nikolaeva, 2018] Nikolaeva, V. Coaching as a strategic management tool. 19th International Scientific Conference Knowledge in Practice, Vol 28.1. Social Sciences, Skopje, Macedonia, 2018. ISSN 2545-4439, ISSN 1857-923X.
- [Stoyanov, 2015] Stoyanov, Ivaylo. Theoretical aspect of hybrid research on leadership behavior of human resources Scientific Journal KSI Transactions on “Knowledge Society”. A Publication of Knowledge Society Institute, Volume VIII, Number 3, September, 2015. ISSN 1313-4787.

[Temelkova, 2017] Temelkova, Miglena. A Model determining Leadership in the Business Organizations under the Conditions of the Forth Industrial Revolution. Current Scientific Research - Collection of scientific articles. Monreal, Canada, 2017. ISBN 978-617-7214-49-5.

[Temelkova, 2018] Temelkova, Miglena. Skills for digital leadership – prerequisite for developing high-tech economy. International Journal of Advanced Research in Management and Social Sciences. Volume 7, Issue 12, December, 2018. ISSN: 2278-6236.

[Temelkova, 2018] Temelkova, Miglena. Studying the leadership style of business organizations' management under the conditions of the Fourth Industrial Revolution. Asia Pacific Journal of Research in Business Management, Vol. 9, Issue 2, February, 2018. ISSN 2229-4104.

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*Major Fields of Scientific Research: management, leadership, controlling*