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DIGITAL TRANSFORMATION OF MARKET ECONOMY: INSTITUTIONAL APPROACH

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Abstract

This article discusses the processes associated with changes in markets and market economies caused by the emergence of digital economy, as well as trends in the convergence of technologies from the point of view of the institutional analysis methodology. To identify patterns that reflect these processes, this article reveals the possibilities of market transformation as result of the influence of digital technologies and analyzes new competition forms. The conclusion is made about significant changes in the previous forms of price competition, the increasing use of cross-subsidization methods and forms of non-price competition, since competition in the new conditions is combined with partnership and cooperation, the creation of alliances in order to create and promote breakthrough innovative products and services at the market. It also analyzes the convergence of platform activities, when different platform companies begin to work in the same formats. Moreover, there were examined the possibilities of monitoring the main aspects of counterparty activities, such as the pricing policy of competitors and the dynamics of customer preferences using computer algorithms. It also compares the nature of consciousness and artificial intelligence and formulates the definition of socio-economic institutions. As research method, this article uses transdisciplinary approach in institutional analysis.

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Keywords: Digital economy, socio-economic institutions, artificial intelligence, analytical reductionism, market transformation.

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1. Introduction

Currently, we can talk about the widespread transformation of the traditional market economy into a new form - the digital economy. In such circumstances, there is a radical transformation of organizational structures, markets and methods of consumption, as well as legal regulation of economic activity. Modern markets for high-tech products are increasingly less like impersonal mechanisms, the actions of which are forced to obey both producers of goods and their customers. The spontaneous market competition that prevailed in the past is more and more clearly complemented and replaced by the production and engineering patterns previously considered by Marxists in relation to the conditions of socialism. This production and engineering pattern is currently developing into a new quality of social pattern, that is, the digital revolution leads to a change in the dominant development structures - the transition from universal monetization and capitalization of resources to the comprehensive development of human potential. All these conflicting processes and problematic issues require a substantial revision of the ontology of economic reality.

2. Problem Statement

The traditional market mechanism in the context of the digital economy is turning into a transparent and visible space in its main parameters. Most of the world's population gets access to mobile services, which is facilitated by the creation of a global satellite Internet system. The Internet of things penetrates deeper into the spheres of consumption, production and circulation of goods. An uncountable number of ubiquitous sensors connected to artificial intelligence systems forms the economy of a neural network, whose users can almost instantly find the necessary information concerning all areas of life (Fernando & Jaume, 2016).

If we expand the formulation of the problem and use institutional terminology, we can talk about minimizing the negative consequences of information asymmetry, cognitive limitations and opportunistic behavior using artificial intelligence. At the present stage of its development, artificial intelligence is still far from perfect and faultless in making decisions, often associated with the vital interests and prospects of specific people. In the context of the analysis of the positive features of the digital economy, it is necessary to refrain from the impression that the Internet space with more and more developed systems and interfaces of artificial intelligence, through which emotions are already interpreted and the predicted nature of behavior, practically leaves no space for irrational behavior caused by mentality, the influence of traditions and other informal socio-economic institutions (Chan, 2014).

Although artificially created realities are increasingly affecting human consciousness, it should be borne in mind that people have always been under the control of mystification of natural, social and other processes, magical and fetishistic ideas about the world. Therefore, there is nothing unexpected in the fact that new information and communication technologies, progressive artificial intelligence are often endowed with magical properties that affect deep levels of consciousness (and subconsciousness) and not only change their qualitative characteristics, but also transform human nature itself. Deception of the Internet, Internet magic, Internet cults and other non-standard hobbies of modern man are widespread.

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However, consciousness is not information stored on a material medium that can undergo various manipulations - editing, reformatting, erasing and transferring to another medium. This is a complex cognitive process that occurs in the systems of collective human activity and is based on the experience of social (and cooperative) interactions accumulated by it. So, the memory of the past is not just the extraction of information from the neural networks of the brain, but a set of semantic images that associatively and spontaneously arise in the process of practical (and theoretical) activity. Pattern recognition, machine learning is not human experience and does not mean extraction. Machine intelligence is powerless to perceive the value of information units that can only be processed using these algorithms (Noussair et al., 2014).

A systematic understanding of consciousness as a natural, biologically, socially and culturally determined process does not allow us to reduce it to the structures and functions of the brain *through which* this process is carried out. The technologies of the fourth industrial revolution, transforming social communications and values, not only change the perception of the world and how it interacts, but also affect the nature of institutions, accelerating and directing institutional changes.

The spread of artificial intelligence in all spheres of modern man's life does not negate the leading role of individual decisions and the collective choice of ways and means of social development, which are always associated with certain institutional changes. In the context of the threats and challenges that humanity is facing, the value of collective choice is only growing. Without the formation of a planetary environmental consciousness, humanity expects a bleak future. The formation of institutions and their subsequent transformation is always caused by the evolution of individual and social consciousness, behavioral mechanisms and ways of organizing collective actions. Legal regulation only optimizes and combines the noted factors in the system of legal norms and rules.

3. Research Questions

The institutional structure is internally complex, rooted in the thinking and actions of the relationship system of human communities. The following levels are highlighted in it: individual stereotypes, that is, a normal way of thinking; collective beliefs and actions, i.e. socially recognized codes of conduct; organizational forms of representing relations between people, that is, laws, regulations, organizational and managerial structures. At the same time, the nature of bilateral institutions consists of a value-semantic "core" (as a cultural phenomenon) and a normative-positive "shell", which is built by the subjects of the cultural-historical process and expresses (forms) this "core" with varying degrees of success. The institutional system loses its ability to provide dynamic socio-economic development and sustainable economic growth in the context of cultural degradation (in the broad sense of the word), destructive changes in the value-semantic "core" (Bierbrauer & Boyer, 2016).

The role of information and communication technologies in shaping the culture of modern man is difficult to overestimate. In a networked society, there is a mutual intersection of the fields of economics, power, and culture, so that the symbolic universe is organized in a complex way. At the same time, it should be borne in mind that "the global digital communication system, although it reflects the relations of power, is not based on the spread down one dominant culture. It is diverse and flexible, free in the content of its

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messages, depending on the specific configurations of business, government and culture" (Kastels, 2016, p. 450).

It is important to emphasize that the reduction of the main causes of economic development to the dynamics of objective forms of economic activity, such as economic growth or an increase in real incomes of the population, impoverishes economic analysis and expands the scope of intangible and ideal development factors. These factors include institutions. The recognition of their value-semantic, ideal nature completely changes the usual perspectives of studying economic dynamics (Boffa et al., 2016). In this regard, it is obvious that, for example, government appropriations intended to ensure the growth of public welfare become fictitious, becoming virtually private under the influence of the group interests of the bureaucratic bourgeoisie. In such conditions, favorable opportunities are created for the regular appropriation of corrupt rents and the capitalization of corrupt income invested in profitable assets (Armin et al., 2018). In essence, the institutional system disables development drivers.

Consequently, it is necessary to prepare for perception and use the idea of the aggregate causality of economic development, in which culturally determined “habits of thinking” play no less role than material factors. The aggregate process is the accumulation of changes in all interacting elements of the system that change its very nature. Simplifying models are not able to reliably explain qualitative changes in the system that are the result of a complex system development process that generates unpredictable states, gradual breaks (jumps), and transitions to new levels of complexity. All processes of self-organization and development are cumulative. “Mathematics is suitable for studying the world around us only to the extent that we are aware of its boundaries. ... Every economist should be aware that the model is a fiction” (Sedlachek, 2016, p. 98). The role of modern mathematical modeling of socio-economic processes should be understood taking into account the boundaries or limits of applicability of analytical tools for cognition of social complexity, which always includes the unknown, unstructured, unformalized (not amenable to mathematical calculation) and intuitively understood, Using model calculations that simplify reality, to build integrated social practices and economic policy models is unacceptable.

4. Purpose of the Study

Unlike the traditional markets of the classical market economy, modern markets are highly transparent. At the same time, electronic commerce brought transparency both in price and in the properties of the product (Kirillovskaya et al., 2016). Today, various digital platforms serve as intermediaries for all transactions of market agents whose main task is to extract, analyze and use user data. This is the main asset of global Internet companies. Platforms mediate markets for goods and services, penetrate the consumer and industrial Internet of things, are equipped with many sensors and many applications and tend to monopolize, competing fiercely with other platforms. And this is by no means a virtual competition, since huge financial resources are invested in the development of fixed assets and network infrastructure. The main objective of the investment is artificial intelligence, which provides a key competitive advantage. The largest digital platforms earn most of their global online advertising revenue (Srnichek, 2019).

However, the prospects for the technological boom in the Internet industry are mixed. The rapid development of new formats is due to the presence of excess and cheap capital, tending to profitable use. At the same time, sluggish economic growth in recent years has reduced the flow of advertising revenue to

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global Internet corporations. The package of free services provided by cross-subsidization can be revised to increase the cost of services, which will lead to the disappearance of equal access to the benefits of the Internet economy and create a digital divide. Perhaps in the long run, some segments of the Internet economy and related infrastructure will be socialized. “Despite capitalists around the world, significant livelihood resources for large metropolitan areas, such as data centers, utilities and emergency services, transportation systems, etc., will become public property that will be controlled by centralized intelligent systems.” (King, 2018, p. 211). The solution to the problem of digital inequality is manifested in partial socialization or the creation of post-capitalist digital platforms (Srnichek, 2019).

A radical change in the technological and institutional environment of entrepreneurship is due to the formation of a neural network economy that penetrates into all areas: business communications, government, education, research, medicine, culture, etc. In essence, a new global civilization is emerging, a new type of relationship between people. The core of the sixth technological wave is neuroeconomics. (Altunyan & Kotsofana, 2016). Its capabilities will be used and developed by entrepreneurs of a new type. The nature of entrepreneurship as the main factor in market activity and the innovation process is changing significantly. Modern entrepreneurship is represented not only by the brilliant lonely people who still set the tone in business and care about public opinion, it is increasingly stimulated by teams and organizations (including network collaboration), which include scientists, engineers, marketers, etc. However, all organizations need leaders. In this regard, typical requirements for a new generation of Russian engineers (“special forces engineers”) are “possession of advanced high-tech interdisciplinary and interdisciplinary / intermarket technologies with many work skills ... To be in the best team, an engineer must become a global innovator, leader, member of an interdisciplinary teams of highly qualified specialists, creating algorithms, technologies and innovations, are “here and now” competencies” (Arkannikov, 2019, p. 21). In fact, we are talking about a new type of business engineers with creative thinking, world-class competencies and a leading vision of global processes, that is, the most important cohort of the Russian elite that has not yet been formed in Russia.

5. Research Methods

Significant advancement of the institutional analysis of the economy towards new worldviews includes the difference and a clear definition of the concepts used: multidisciplinarity, interdisciplinarity and transdisciplinarity. Multidisciplinarity is a comparative analysis (benchmarking) and the application of different disciplinary approaches to study the same sphere of social reality, identifying explanatory possibilities, advantages and disadvantages of various conceptual schemes, and the use of additional interpretations. In essence, this is a pluralistic analytical approach. Interdisciplinarity marks a process of closer integration of scientific knowledge and means the mutual crossing of borders between disciplines, the convergence of various methodological approaches, the borrowing of analysis tools and interpretive schemes from related sciences (import tools), the awareness of the complexity, multidimensionality and irreducibility of social reality to simple grounds.

For example, Dyatlov (2016), fruitfully researching the problems of the economics of neural networks, writes about a new research subject, Neuro-Netnomics, which is formed on the basis of the principle of “integrative methodological convergence”. Transdisciplinarity (including rethinking the

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previous approaches) is a more advanced stage of knowledge integration, which leads to an understanding of the integrity of an internally complex and multidimensional element of research. Transdisciplinarity is not only interaction, the intellectual exchange of various scientific disciplines that have become familiar in the framework of interdisciplinary research. This goes much further, revising subject ontologies in the direction of a more complete and comprehensive consideration of the complex (and constantly becoming more complex) nature of the studied subject areas, their systemic connection with those aspects of social and natural reality that were either ignored or accepted as external premises from which shutdown is acceptable.

6. Findings

The actualization of the holistic vision of social reality in recent decades, which manifests itself in the widespread dissemination of interdisciplinary research and the creation of an interdisciplinary approach, has occurred as a result of fundamental transformations in all spheres of human life. The convergence of technologies and sciences transforms the basic foundations of civilizations and the ways of their understanding (through integrated knowledge systems) and makes it impossible, in principle, to conduct an isolated and unsystematic study of various aspects of public life.

The noted tendency and methodological shift in the evolution of the worldview are a fruitful way to the formation of a new integral philosophy, a convergent methodology of the social sciences, and their transdisciplinary synthesis. The latter involves an appeal to the world of human life, communicative rationality, extra-scientific experience and empirical practices, takes into account not only the value and purpose of the researcher, but also the cultural conditioning of the analyzed reality. In this regard, the nature of economic reality should be rethought on the basis of a new ontology integrated with the “non-economic” (but not “non-economic”) aspects of social, cultural and natural being: value, legal, environmental.

7. Conclusion

Thus, the transdisciplinary (convergent and integral) methodology is a comprehensive theoretical and at the same time practicable approach to cognition and change of complex socio-natural, sociocultural and socio-economic systems, implying going beyond formalized and narrowly specialized logical constructions, synthesis science and practical art, theoretical and practical mind. Economic models with this approach are considered and interpreted in the context of non-economic aspects and factors of social and natural reality. Transdisciplinarity serves as an integrative-synthetic, convergent and holistic methodology for the study of multidimensional social worlds, which leads to a knowledge of the integrity of an internally complex subject of study that cannot be reduced to simple foundations (Shevelev, 2018)

In the context of the interdisciplinary approach used in the analysis of the institutional organization and digital transformation of modern markets, one should take into account not only social relations and structures (with hierarchies of power built into them), but also cognitive models of entities that share their practical meanings. The systemic interaction of subjects also includes regulatory codes and rules, both formal and informal. Therefore, a comprehensive analysis of markets should take into account all the elements of interaction: social relations, power hierarchies, cognitive models, rules and codes of conduct.

In other words, the practice of business entities is carried out through ensembles of social relations, is regulated with the help of codes, and is penetrated by the general meaning through culture.

All social interactions (including market transactions) are "permeated" by power relations. This is a complex dialectic of economic life in which social, information and communication technologies have become decisive. The main thing in these technologies is the manipulation of people's minds: both economically significant entities and ordinary consumers of content programmed with the help of information communications.

Modern scientific knowledge relies heavily on the interdisciplinary methodology of institutional analysis, which provides a transition from fragmented interaction to a systematic unity of fundamental and applied knowledge, and also has great ideological potential.

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