The essence, content and role of digital transformation in development socio-economic systems

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Abstract
The relevance of the research topic is due to the active penetration of digital technologies into all spheres of life of modern society. The business community and the governments of the countries of the world, including Ukraine, have realized the need to accelerate the processes of digitalization and digital transformation of the economy in order to achieve competitive positions in the emerging digital space of the new world economy.

The digital economy sets the vector along which socio-economic systems of micro, meso, macro levels will develop in the long term, which necessitates research and a comprehensive analysis of digital transformation processes. Previously a priority for individual innovative companies, today digital transformation has become a massive phenomenon, and related projects are vital for the success not only of individual companies, but also of regions and countries.

In this regard, a new institution is emerging in the economy, a new category of business structures in the service sector – service integrators, whose role in progressive economic development is significantly increasing, but the mechanisms of their functioning, methods of management, network service interaction with other economic entities, as well as many others the issues remain insufficiently studied, which in practice hinders the development of companies – service integrators.

The outlined circumstances determine the relevance of the research topic, both in terms of the formation and development of modern economic theory, and for the increment of the scientific and methodological base of the practice-oriented toolkit for the digital transformation of socio-economic systems.

Keywords: digital economy, digital transformation, digitalization, economy enterprise.

Introduction
The digital economy is an integral part of the economy, where knowledge of subjects and intangible production dominate – the main indicator characterizing the information society one.

The concepts of “digital economy”, “knowledge economy”, “information society” and their analogues presented in modern scientific literature, form a new socio-economic system replacing the former industrial paradigm.

In this regard, the developed countries of the world pay close attention to harmonious development of the backbone elements of the digital economy, information society and knowledge economy. The understanding of the need for the transition to an information economy has developed in Ukraine as well.

For the country in the current difficult period, it is extremely important how you can quickly...
It is uncontested way of development.

**Material and methods**

The interest of a general methodological and theoretical nature for the author's understanding of the problem under study was the fundamental works of such foreign authors as S. Ahlstrom, D. Bell, K. Bird, N. Wiener, B. Gates, D. Goldy, E. Gellner, K. Geertz, P. Drucker, R. Jensen, M. Castells, S. Kuznets, E. Lemberg, J. Lichtheim, G. McLuhan, R. Makrides, G. Mensch, A. Przeworski, D. Riesman, M. Rose, T. Stonier, E. Toffler, M. Frieden, F. Fukuyama, K. Schwab, J. Schumpeter and others (Andersen, D. Birchall, S. Jessen, 2006).

On the basis of their study, the author's theoretical and methodological concept of the study was formed. The issues of the development of the service sector and its transformation within the framework of the socio-economic system as a whole, including in connection with the development of digitalization processes, as well as taking into account the fundamental trend of the sericitization of socio-economic systems, are disclosed in the works of 6 A.A. Volkova, I.V. Kapustina, G.A. Karpova, I. D. Kotlyarova, A.A. Kurochkina, T.A. Lavrova, E.V. Pesotskaya, O.E. Pirogova, V.I. Sigova, O.A. Tretyak, S.A. Uvarova, I.P. Firova, L.V. Khorevoy, E.V. Yaluner and others. These studies served as a theoretical and methodological basis for the formation of the author's approach to the analysis of institutional and structural changes both in the service sector itself and in the national economy, due to its sericitization. The concept of the digital economy and the mechanisms of transition to it are considered in the works of domestic authors such as G.N. Andreeva, Yu.M. Akatkin, T.G. Bogatyreva, A.V. Babkin, S.D. Bodrunov, Yu.V. Vertakova, S.Yu. Glazyev, F.I. Ereshko, V.A. Efimushkin, A.V. Keshelava, A.M. Kolesnikov, V.S. Kurdyumov, V.V. Makarov, R.V. Meshcheryakov, V.F. Minakov, A.V. Oleksin, V.A. Plotnikov, M.N. Rudenko, T.O. Tolstykh, V.V. Trofimov, V.A. Tsvetkov, E.V. Shkarupeta, A.A. Engovatova and others.

Also, among the domestic authors who investigated certain sectoral aspects of digital transformation, including those related to its implementation in the service sector, it should be noted such authors as R. Abdeev, S. Andreev, I. Aristova, L. Berezovets, V. Belous, D. Verzilin, A. Galchinsky, V. Gorbatenko, T. Ershova, S. Kaschavtseva, I. Koliushtko, T. Maksimova, A. Rakitov, A. Sosnin, L. Chupriy, etc. Analysis of the results presented in the works of the above authors, made it possible to form an applied toolkit for the study of digital transformation and the formation of an institute of service integration (Christian Møller, 2017).

In modern market conditions, it is obvious that systemic transformations and actions aimed at the development of digital economy in domestic socio-economic systems of all levels. The idea of digital transformation has embraced the whole world, it is now one of the most popular topics of discussion, but in reality, this is far from a new concept, discussion about it has been going on for several decades.

We agree with the point of view that digitalization of the economy represents is a modern form of manifestation of a more fundamental pattern of its informatization. Despite the relatively good development of the category in question, in the scientific field and the business community to the present time has not formed a stable understanding of the essence and content the term "digital transformation". (Christian Møller, 2017).

At the same time, it is important to note that the content of the term "digital transformation" has evolved along with the change and development of technology. For a long time, digital transformation meant translation into digital format or digital storage of traditional forms data. This is also...
one of the directions of digital transformation, its interpretation in the "narrow sense". However, in the modern world, this concept is much broader than the translation of data into digital format. When businesses and organizations recognized the full potential of using digitized data, and they began to develop processes for this purpose.

Most executives agree that digital transformation is necessary to fight competition, keep pace with technology and changing consumer expectations. However, many do not confident in where to start and what digital transformation entails. In other words, a theoretical study of its “broad interpretation” is required.

Results and discussion

Let's start with the fact that within the concept of “digital transformation” there are many terms with different interpretations. In this case, the key terms are those that have the same sound in English language, but radically different in content, which is clearly manifested in publications:

- digitization – is the transformation of information "from physical media to digital". Within the framework of digitization, there are no changes in the quality and content of information, it simply converted into electronic form for further processing in digital format, which allows you to improve existing business processes by adding information in digital format.

- digitalization (digitalization) is initially the creation of a new product in digital form. Therefore, the key difference between digitalization (digitalization) is the creation of a new innovative product with new functionality and consumer properties. And if digitization is in first of all, it is aimed at improving existing business models and changing business processes, then digitalization (digitalization) allows you to get a significant breakthrough in business and new competitive advantages. Digitalization is already an element of the 4th industrial revolution (Industry 4.0).

Today, there are many definitions of digital transformation. Some experts are categorically against "freezing" of this concept and its concretization in a stable definition, justifying this by the fact that the evolution of digital technologies continues, and the content of this term evolves along with them. And this is undoubtedly, however, in our opinion, to outline the boundaries of the essence and content of the term “Digital transformation” is not only an important task, but also extremely necessary at the present stage of development of the digital economy, allowing form a common understanding, and, accordingly, highlight the main directions of digital transformation.

A November 2016 PricewaterhouseCoopers (PwC) survey also revealed inconsistencies in definitions by businesses and companies’ digital concepts. More than three out of ten business and IT leaders around the world refer to digital as all technology-related activities innovation, 29% say digital is synonymous with IT, 14% define digital as a user-centered technology activity, and another 14% say digital refers to all investments which the company spends on integrating technology into the business. Only the obvious conclusion of this survey is that there is no consensus. Just 6% of PwC survey respondents said digital “goes beyond technology and reflects a line of thinking embracing continuous innovation, making decisions on an equal footing and integrating technology into all aspects of the business. "Most companies and executive authorities are now focused specifically on the digitalization of key processes and in most of them perceive digitalization as a new round of automation and informatization, as we indicated above.

In this regard, it is necessary to distinguish between digitalization and digital transformation versus automation.

Automation is "one of the areas of scientific and technological progress, using self-regulating technical means and mathematical methods for the purpose of freeing a person from..."
participation in the processes of receiving, transforming, transferring and using energy, materials, products or information, or a significant reduction in the degree of this participation or the complexity of the operations performed. Almost all spheres of human life and activities are automated. Automation allows you to increase labor productivity, improve product quality, optimize management processes, remove a person from industries hazardous to health”.

Digitalization, in turn, is a process aimed at digitizing all information (and even material) resources (creating digital copies) and the formation of network interaction platforms in order to obtain a predictable and guaranteed result for any control action using automation tools.

The Boston specialists Consulting Group noted that “digitalization is the use of online opportunities and innovative digital technologies by all participants economic system – from individuals to large companies and states”.

Digital transformation is the introduction of modern digital technologies in business processes of socio-economic systems of all levels.

Digitalization of processes is relevant not only at the level of individual enterprises: entire industries choose this path of development for themselves as the only opportunity to meet rapidly changing conditions the surrounding world.

In economics, there are many definitions of the concept “Socio-economic system”. In order to conduct further research, we will use the definition of the socio-economic system as an integral set of interconnected and interacting social and economic institutions (subjects) and relations on the distribution and consumption of material and non-material resources of production, distribution, exchange and consumption of goods and services. Accordingly, with this approach, enterprises and organizations of all forms of ownership and sectors of the economy (and their associations) can be fairly attributed to socio-economic systems, various funds, banks, territorial entities (region, district, municipality) and their authorities, and other institutions, the main the system-forming factor of which is a person.

The term “digitalization” is used to describe the transformation, which goes further than simply replacing an analog or physical resource with a digital or information one. For example, books do not just turn into e-books, but provide a whole range of interactive and multimedia files of independent significance. Accordingly, in the socio-economic system, processes can become online dialogues between parties that have not even communicated directly before.

So, in a business context, an organization that wants to go digital should focus on automating processes in order to make them more efficient. eMarketer defines digital transformation as the process by which business leaders take advantage of the opportunities and benefits of new technologies to digitally transform their companies: their operating activities, products, marketing, culture and goals for future growth.

Technology is a means of transformation, not an end in itself. The focus should be on setting a goal for the future and then creating strategies based on this vision.

Within the framework of our study, the definition of digital transformation as a process of integrating digital technologies into all aspects of the business activity of the socio-economic system requiring fundamental changes in technology, culture, operations and principles of creating new products and services. For the most efficient use of new technologies and their prompt implementation in all spheres of the socio-economic system, it is necessary to abandon the previous foundations and completely transform the processes and models of work.

Digital transformation requires a shift in focus to the edge and increased flexibility in the data center that must support the edge. This process also means phasing out outdated technologies that can be costly for the socio-economic system to maintain, as well as
changing the culture that must now support the acceleration of digital transformation.

Digital transformation ensures the fullest possible disclosure of the potential of digital technologies through their use in all aspects of business – processes, products and services, approaches to decision-making. It is important to emphasize that digital transformation will never be just the availability of technology as such is sufficient.

In order for the digital transformation process to be complete, clearly needed formulated business objectives and data. Thus, digital transformation can only be considered at the intersection of all three measurements (formulated business problem, data availability and proper technologies).

Thus, digital transformation involves a fundamental rethinking of how an organization works and how it interacts with the environment. The main driver of change is modern consumer – business is changing under the influence of new factors. That is why digital transformation is not only a service of consulting companies, but a fundamental process that is undergoing the world community, adapting to the new conditions and preferences of the digital economy society. Those digital transformation is not so much a technology as a change in thinking in the new conditions of a new digital economy.

Let's outline the main advantages that digital transformation brings to all business entities:

1. Optimization of processes. New technologies are enabling businesses to automate simpler processes and eliminate intermediate steps in more complex processes.

2. Search for new streams of income. With the advent of new technologies new ways of making a profit are opening up that could previously have been are not available.

3. Creation of a personalized and attractive service infrastructure. Today's customers expect businesses to listen to their input and cater to their specific needs. Modern technologies are so advanced that they can solve all these tasks. An analysis of the above advantages shows that the most they significantly manifest themselves in the provision of services, which is determined by the well-known properties of services, such as their personalized nature, focus on the interaction of the contractor (manufacturer) and the customer (consumer), intangible and – often - informational and etc. That is why digital transformation processes are most active take place in the service sector (retail trade, tourism, consulting, entertainment services, etc.), as well as in those segments of the economy that receive added value from the development of service activities (for example, in the banking sector).

Enterprises and organizations, both in the service sector and in other sectors economies are rapidly replacing traditional interaction processes with digital ones, using the most modern technologies. Very often, transformation occurs not because organizations decide so, but because it is, they need to survive.

Organizations that welcome and are ready for change and are able to adapt to more flexible working models have great potential for success. This is due to the fact that digital transformation covers all aspects of the business and offers effective ways to improve it along with the development of digital technologies.

Big data and advanced analytics enable more accurate and fast solutions – from preventive production repairs to prevent fraudulent transactions.

However, the most difficult change for traditional sectors of the economy will, in our opinion, not so much the creation and integration of technologies, how much is a fundamental restructuring of corporate culture and organization. The iterative, adaptive approach, higher risk tolerance, characteristic of the entrepreneurial mentality, are largely alien well-established approaches to big business management. It's hard to accept that the structure of any industry and
company should be perceived today as a main variable, not a constant.

In this sense, the ongoing changes are akin to the approach to cost analysis adopted in microeconomics. As you know, in a short period it is customary to distinguish fixed and variable costs, while the latter in literature is often called “decisive”, because the management of the company can influence them. At the same time, there are those in the cost structure that are perceived as constant - these are fixed costs. But when going to over a long period, all costs become variable. There are no more fixed costs, management gets more freedom of action, because can affect all aspects of the business, without exception, related to costs. But, on the other hand, this situation leads to fears of growing uncertainty, which could lead to a market failure firms.

In the term “digital transformation”, it is expected that the greatest difficulties for traditional business are caused by “transformation” – a consistent conscious restructuring.

Today, digital transformation is penetrating all sectors of the economy at different rates.

It should be noted that the effect of digital transformation in different industries is different. It is obvious that high-tech industries, initially highly digitalized, lend themselves to digital transformation most easily. However, there is no doubt that digital transformation will affect all sectors of the economy. Thus, digital transformation for modern socio-economic systems is:

1. A growth driver that ensures the building of digital business models by: stimulating growth within and outside the main business of the organization; identifying and creating new digital business models; ensuring long-term competitiveness;

2. A tool for increasing efficiency based on the transformation of the business operating model into digital technologies by: optimizing business processes at all levels and reducing costs; rational use of existing competencies and infrastructure; digitalization of the entire value chain and modernization of the IT architecture;

3. The basis for breakthrough innovation, which is the basis for the creation of a corporate incubator and venture capital by: identifying promising opportunities for growth in the future; proactively creating conditions for access to the latest and complementary technologies; positioning as a long-term partner.

While adopting new technologies is a riskier approach than using existing systems and devices, the potential and return on investment will be significant in our opinion. The four technological foundations of digital development, on which it is advisable to build the process of digital transformation, traditionally include: – “big data”, implying an explosive growth in the possibilities of storing and processing data in all types of computer systems, the future basis of artificial intelligence; – sociality – the need to involve a large number of users performing different roles; – mobility – the availability of information from any point in space; – cloudiness is a way of storing data. (Drucker P.F., 1992).

Their combination can significantly reduce the cost of business processes, analytically adapt products to the needs of each specific client (customization) and deliver goods and services when and where they are needed. We want to focus on customization, because it is a prerequisite for the rapid sericitization of economic activity, which is manifested in the economies of all countries of the world, even underdeveloped ones, and in the developed ones it is one of the key development trends.

Thus, digital transformation turns out to be closely related to the advanced development of the service sector, observed from the last quarter of the twentieth century to the present. The three biggest impacts that organizations embarking on a digital transformation journey around the world are seeing are cost savings, improved service and product quality, and increased productivity. 61% of companies say that digital technology has contributed to increased competition in their business from
new entrants. Today, 44% of companies in the world have a digital development strategy.

The survival strategy of enterprises and companies in the age of digital transformation includes a shift towards building multiple partnerships with independent third parties to build a sustainable ecosystem around the digital platform.

That is, in fact, we are talking about the development of network forms of interaction, within the framework of which enterprises, in contrast to traditional schemes of industrial cooperation, exchange not material products, but services.

Thus, digital transformation requires a complete overhaul of the classic corporate model of the 20th century. During this process, it is important to harness the creativity and energy of the people in the enterprise who are going through digital transformation as individuals.

Today's workers, under constant pressure from rapidly increasing digitalization, are looking for ways to secure their future by participating in the end result of the organization's activities. Unleashing their potential by empowering them to experiment, make strategic decisions and become de facto entrepreneurs directly involved in creating a value proposition for customers is a key approach to digital transformation of socio-economic systems. Let's take a look at the key stages of digital transformation.

Despite the differences in the digital transformation processes of each individual socio-economic system, there are a number of key, common to all stages, reflecting the essence of the digital transformation process (Delivering Digital Infrastructure Advancing the Internet Economy, 2014):

1. Create a plan that takes into account all the business needs of the organization. At the beginning of the digital transformation process, it is very important to determine the directions of development, as well as the set of technologies that will help in this development. At the same time, organizations must take an inventory of their resources, highlighting those that require modernization. At this stage, it may even be necessary to re-prioritize projects in response to new business needs, as well as identify gaps and gaps that can become an obstacle to digital transformation.

2. Teaching employees to work with new technologies. This process can be challenging because, in traditional business models, employees only had to know certain systems that they planned to use for many years to come. For the success of digital transformation, employees must be prepared for any changes to work processes, if these changes are necessary to improve efficiency and productivity. This readiness means both the ability to think creatively, and the knowledge of the potential of new technologies, and the ability to use them with maximum efficiency.

3. Rejection of outdated technologies in favor of innovative ones. Very often, organizations spend a lot of money only to support and maintain their outdated technologies, which are no longer profitable and are not able to support the digital processes in demand in the market. This is because upgrading old technologies is difficult and too expensive. The retention of old technologies also hinders the development of the organization as a whole.

The maintenance of old technologies is a lot of valuable resources that could be spent on technologies that are easier to use, for improving the quality of customer service and / or accelerating data analysis.

The systematization and generalization of the existing in theory and practice views on the essence and content of digital transformation, allowed us to form the author's idea and interpretation of such a phenomenon of modernity as “digital transformation”, to reveal its essence and determine its role in the development of economic systems.

First, it is important to emphasize that the digital transformation of a socio-economic system at any level is a complex and lengthy process with a long-term return on investment.
It requires a strategy, business model and process overhaul, new infrastructure, new software, optimized service mix, effective implementation mechanisms, training programs, and robust ongoing support. Second, digital transformation requires strong and professional leadership - only this can be the driver of major change. (Delivering Digital Infrastructure Advancing the Internet Economy, 2014).

Third, a clear understanding of what elements of the socio-economic system require transformation is required. Organizations around the world are experimenting – and reaping the benefits of digital transformation. In the author’s understanding, digital transformation is a process of radical transformation of the concept and format of functioning of socio-economic systems of all levels, through digitization – transfer of all resources into digital format, implementation and formation of a pool of digital technologies, digitalization – creation of network platforms for the integration and interaction of users of digital technologies, in order to achieve sustainable and long-term existence in the dynamic conditions of the digital space.

Digital transformation is an element of a more global trend of servicing the economy, because interaction within the digitalized segments of the economy occurs mainly through the exchange of services and the co-production of services by its subjects.

In relation to Russian organizations, this definition implies the transformation of business models and processes, organizational and cultural environment and other elements of the organization as a socio-economic system, based on the effects of using the potential of digital technologies in order to revolutionize the consumer value and availability of manufactured products and services.

We propose to somewhat distinguish between the often-identified concepts of “digital transformation” and “digitalization”, and by digitalization in the future we mean the socio-economic process preceding digital transformation and forming its basis, the essence of which is to restructure and transform communication channels around the digital technologies used (setting as called digital interaction). (Drucker P.F., 1992).

In conclusion of our analysis, we note that the digitalization race in the modern economy is in full swing, and, accordingly, the digital transformation of business and society is inevitable, it’s only a matter of time. Therefore, those economic structures that will be the first to start digital transformation will receive undeniable competitive advantages in the near future.

**Conclusions**

In conclusion of our analysis, we note that the “digitalization race” in the modern economy is in full swing, and, accordingly, the digital transformation of business and society is inevitable, it’s only a matter of time. Therefore, those economic structures that will be the first to start digital transformation will receive undeniable competitive advantages in the near future.

The conclusions from the research carried out in this work can be the following generalizing provisions.

The digital economy is a promising reality, which is a complex integrated system of flexible technologies and communications of an intelligent society, which provides a solution to pressing economic problems, which modern society seeks to achieve.

The main features of the digital economy are continuous development, change, increased flexibility, additivity, information exchange and real-time operations, and a self-learning digital “smart” society. Achieving such a state of socio-economic systems is possible only through digital transformation, the main drivers of which today are new products and services, the latest information and management technologies,
innovative business models, and industry digital platforms.

At the same time, digital transformation is inextricably linked with the global trend of servicing the economy, on the one hand, acting as its technological basis, and on the other, generating a new segment of the service sector – digital services, which is developing at a faster pace.

In science, it would seem that such a new phenomenon as digital transformation has deep and relevant until now scientifically grounded developments in various fields of knowledge, rooted in the Soviet era.

This creates additional competitive potential and opportunities for the development and implementation of a unique digital transformation format in the country.

The study of trends, factors and conditions in which the domestic socio-economic system enters the “digital race” suggests that the growing global megatrend of digital transformation is far from unambiguous in its impact on society.

This requires the use of appropriate methodology and tools to identify and manage the risks and threats of the digital transformation of socio-economic systems in order to fully obtain the expected positive effects of the digital economy.

Thus, digital transformation is a unique instrument of the digital revolution, with the timely and correct use of which the country's socio-economic system will acquire the ability to regain the once-lost leading positions in the new digital economy. For this, the processes of digital transformation initiated in domestic socio-economic systems, first of all, must have a scientifically grounded methodological basis.

References

Andersen, D., Birchall, S., Jessen (2006) Exploring project success. Baltic Journal of Management. Vol. 1. No. 2. 127–147.

Bataev A.V., Rodionov D.G. (2018) Cloud computing: evaluation use under the crisis. 7th International Conference on Industrial Technology and Management (ICITM 2018). P. 224-228.

Brown E. (2007) Aligning Technology, Strategy, People and Projects. Strategic Project Management. 16 p. 316

Chan A.P.C., Chan A.P.L. (2004) Key performance indicators for measuring construction success benchmarking. An International Journal. Vol. 11. No. 2. 203–221.

Christian Møller (2017) What is a digital platform? 26 May 2017. URL: https://www.kognifai.com/blog/what-is-a-digital-platform

Cognitive Technologies вошла в состав транснационального консорциума OpenPower Foundation. / URL: http://finamauto.ru/driverless/714-cognitive-technologiesvoshla-v-sostav-transnacionalnogo-konsorciuma-openpower-foundation.html.

Cooper R.G., Edgett S.J., E.J. Kleinschmidt. (2001) Portfolio management for new products. Perseus Publishing, 345 p.

Data Economy 2024. (2006) URL: www.data-economy.ru 285. Davenport J. UK companies: Project-based organizations lacking entrepreneurship and innovativeness // Creativity and Innovation Management. Vol. 15. No. 3. P. 250–257.

Delivering Digital Infrastructure Advancing the Internet Economy (2014) World Economic Forum. April 2014 [Electronic resource]. URL: http://www.3.weforum.org/docs/WEF_TC_DeliveringDigitalInfrastructure_InternetEconomy_Report_2014.pdf

Dietrich P., Lehtonen P. (2005) Successful management of strategic intentions through multiple projects — reflections from empirical study. International Journal of Project Management. Vol. 23. No. 5. P. 386–391.
Don Tapscott. (1997) Growing up digital. Harvard Business Press, 317 p.

Drucker P.F. (1992) The Post-Capitalist World. The Public Interest. No. 109. P. 90–111.

Gartner Hype Cycle: Research Methodologies [Electronic resource]. URL: https://www.gartner.com/technology/research/methodologies/hype-cycle.jsp

He Ch. (2012) Modernization Science: The Principles and Methods of National Advancement. Springer, 600 p.