

Digitalization of Economic Activity Management and Sustainable Enterprise's Development

Oksana Davydova, Nataliia Kashchena, Tetiana Staverska, Hanna Chmil

Abstract—Digital globalization and Ukrainian integration into the global economic space have speeded up digitalization and determined it as a driver of increased competitiveness, economic activity and sustainable development of economic entities. Steady modernization of existing and creation of new digital and information technologies necessitates changes in the format of business models of business entities, approaches to their management. Radical changes in the strategy of business development and enterprise management processes under the influence of digitalization in the near future will become necessary prerequisite of viability and development in the digital ecosystem «state – business – society». In view of this, the purpose of this work is determined as study of the world experience and prerequisites for the transition of enterprises to digital management and development of the reference model of the economic activity and enterprise development digitization management. The approach to the digitization of economic activity management and sustainable development of domestic enterprises is proposed in the work with taking into account the world experience of business administration digitalization. It is substantiated that the enterprise management digitalization requires the definition and rethinking of forms, trends, methods, technologies and digital engineering tools, innovation policy and corresponding corporate culture, communication mechanisms between all management units for quick implementation of changes. The results of the work prove that the implementation effectiveness of management actions and measures for enterprise management digitalization, its activity and development depends on the selected digital transformation technologies, the possibility of relevant data information arrays forming, their analytical processing and presentation for certain decisions making in real time. The reference digitalization model of economic activity management and enterprise development is elaborated; its distinctive feature is the integration of three platforms (information, analytical and management) in one management loop, which allows obtaining the synergistic effect of the management process digital transformation at all its levels. The practical implementation of the proposed digitalization model of economic activity management and sustainable development of the enterprise allows gaining strategic benefits from business processes conversion and managing them into digital format, providing the management process optimization and the possibility of decisions making in real time.

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I. INTRODUCTION

Digital globalization is characterized by the infinity and continuity of information, knowledge, ideas and innovation flows and activates transition of the global economy to the digital format with dominance of artificial intelligence, automation and digital platforms. The latest digital technologies allow to the state, business and the population more effectively interaction and provide the sustainable development goals achievement by penetrating all spheres of the society. Steady modernization of existing and creation of new digital and information technologies necessitates changes in the format of business models of business entities, approaches to their management. At present, radical changes of the business development strategy and processes under the influence of digitalization are objective reality for a minority of market participants. However, in the near future they will become necessary prerequisite of viability and development in the digital ecosystem «state – business – society». In view of this, it is the urgent need to research and adapt the world experience of business administration digitalization to the conditions of domestic enterprises functioning. It will not only gain the strategic benefits from conversion of business processes into digital formats, but also increase the efficiency of economic activity management and enterprise's sustainable development through management process optimization and the possibility of decisions making in real time.

II. LITERATURE REVIEW

The review of the scientific literature identifies active interest of domestic and foreign researchers in the problems of providing the enterprises' economic activity and their sustainable development under digital business transformation. The works of L. Andersson, D. Bonne, Dzh. Vesterman, O. Vyshnevskiy, A. Domanskyi, N. Kolin, A. Landie, L. Lihonenko, V. Liashenko, E. Makafi, P. Monen, L. Van der Kheide, A. Khripko and others are devoted to the problematic of the digital economy formation and conditions of business structures functioning in the new format [1-6]. The theoretical basis and applied aspects of



economic activity and sustainable development of enterprises, the measurement of economic expectations and the identification of strategic guidelines for economic growth in the context of globalization are detailed in the works of A. Turylo, M. Khvesyuk, O. Shubalyi, N. Chebanova, V. Protsenko and others [7-10]. The concepts and approaches to digital management of corporate economic activity are presented in the works of S. Bruskin, S. Varna, E. Dorohan, T. Ketlin, L. Laberzh, L. Mikhov and O. Merenchuk [11-13]. However, the problematic of digitization of economic activity management and sustainable enterprise development requires in-depth study with taking into account multidimensionality and debatability of individual issues of business digitalization and the need to transform approaches to business administration.

III. THE AIM OF THE PAPER

The purpose of the research is studying the world experience and prerequisites for the enterprises transition to digital management and development of the digitalization reference model of economic activity and enterprise development management.

IV. RESULTS AND DISCUSSION

The development of digital technologies (smart devices, big data analytics intellectual applications, Internet of Things, machine learning technologies, cognitive analytics services, etc.) changes the modern world and relationships within it. Trade, information sharing and ordinary human contacts are increasingly being transformed into the digital dimension with blurring the borders between states and making the idea of digital society creating and global digital economy actual [14].

The priority areas for society's digitalization, which are identified this year at the G20 Summit in Osaka, Japan, are:

- development of innovations for the digital economy;
- development of 5.0 human-centered society.
- maximal implementation of the artificial intelligence technologies potential and increasing of public confidence in such technologies;
- providing free data flow with simultaneous solution of problems are related to information security and intellectual property rights protection;
- digital divide overcoming and providing the digitalization of micro, small and medium-sized enterprises;
- development of smart cities [15].

According to the data research of Pricewaterhouse Coopers the increasing of the country's digitization level by 10% leads to increasing of GDP per capita by 0,75%. The increasing of the same indicator by 10 points, according to the findings of the Academics resource, leads to decreasing of the unemployment rate by 1,02%. In addition, according to the view of Accenture Company, the digital technologies can be used as impetus for faster economic development [16]. Therefore, the digitization should be considered as important driver of economic activity growth and sustainable development.

Released in early 2019, the World Economic Forum's research results show that 84% of «Internet of Things Technologies» can provide the achievement of the UN

Global Sustainable Development Goals [14]. We believe that business decisions and technologies which can provide quantitative and qualitative regeneration of the potential of all elements of the economic system, minimize the total costs, increase the population's standard of living, its social protection and preserve the environment, play the leading role in their achievement. The revival of the national economic system in new technical and technological and organizational format, increasing its competitiveness and providing sustainable development is possible under social relations digitization at all levels. The widespread use of digital technologies in public administration allows greater transparency of government and efficient e-government, and in the economics – providing its growth through expanding markets, including e-commerce environments, competition development, creating new conditions for business development, greater opportunities for consumers' interests satisfying. Accelerating of the scientific information exchange processes gives impetus to innovations.

Ukraine's progressive integration into the global economic space prioritizes reforms, including reforms which are related to digitalization of the economics, the spread of telecommunication technologies, and the providing development of high-tech business and innovation activity. Implementation of the Government's «Digital Economy and Society Development Concepts of Ukraine for 2018 – 2020» [17] and objectives' implementation of «Digital Agenda of Ukraine 2020» [18] will allow providing:

- 1) stimulating the economy and investments attracting;
- 2) forming the basis for digital transformation of economic sectors into competitive and efficient ones;
- 3) availability of «digital» technologies and tools;
- 4) creation of new opportunities for human capital realization, development of innovative, creative and «digital» industries and business, etc. (fig. 1).

Digitization targets	Ukrainian digital trends	Digitization effect
<ul style="list-style-type: none"> ✓ Equality of personalized access. ✓ Creating advantages for sustainable development goals. ✓ Digital transformation of economic spheres and sectors as a tool for economic growth. ✓ Development of national information content. ✓ European integration and international cooperation. ✓ Standardization and interoperability of digital transformation. ✓ Increasing the level of confidence and security. ✓ Digitalization as an object of focal and integrated state administration 	<ul style="list-style-type: none"> ✓ Information (data sets) is a major source of competitiveness. ✓ Development of the Internet of Things sphere. ✓ Digital transformation of businesses and industries. ✓ Dissemination of business models of shared use economy, which operates on the base of digital technologies. ✓ Virtualization of physical infrastructure IT-systems and transition to service models. ✓ Use of artificial intelligence. ✓ Digital platforms as sources of value formation. 	<ul style="list-style-type: none"> ✓ Creation of digital infrastructure, optimization of infocommunications. ✓ Economic activity increasing. ✓ Competitiveness increasing. ✓ Innovation and investment development. ✓ Corruption overcoming. ✓ New opportunities for effective realization of human capital. ✓ The social protection. ✓ Modernization of security systems at all levels: <ul style="list-style-type: none"> - Financial safety; - Ecological safety; - Cybersecurity. ✓ Providing the sustainable development goals achievement.

Fig. 1. Opportunities and results of «Digital Agenda of Ukraine» goals realization



Digitalization leads to the emergence of new formats of doing business and, accordingly, requires the formation of new approaches to enterprise management, its activity and development, which allow forming their own ecosystem of information and communication interaction with different stakeholders, which is based on partnership, client-orientation, innovativeness and synergy. Currently, according to McKinsey consultants [6; 13], most managers don't have holistic view of digitalization. Taking into account that it is almost instantaneous, free and seamless ability to connect people, devices and physical objects anywhere, experts predict connecting to the network of about 20 billion devices by 2025, the urgency of much more powerful data analytics (because of the ability to get them quickly from a variety of devices and the growth of data volume), as well as the expansion of business processes and management decisions automation.

It is expedient to study the international experience of conceptualization and practice of enterprises' successful transition to their economic activity efficiency digital management, increasing of business activity and economic growth under the globalization for providing the efficiency of enterprise management digitalization. The arguments and developments of J. Westerman, E. McCaffy, and D. Bonnie in [4] are relevant in this context. Scientists develop the conceptual framework for digital transformation of business management and identified three areas of activity for the digital technologies implementation on the base of the results of large companies (with annual turnover of up to \$ 1 billion) managers' survey from 15 world countries, each of these areas integrates three groups of digital transformation tasks:

- 1) customer experience improving: customer's understanding; use of electronic gadgets and programs (top line growth); customer touch points creating;
- 2) operational process transformation: digital automation (process digitization); worker enablement virtualization; optimization of performance management;
- 3) business models transformation: digitally business modification; creating of new digital business; digital globalization.

The implementation of specific management actions in certain areas of digital transformation requires the identification and rethinking of forms, trends, methods and technologies of digital, innovative policies and relevant corporate culture, high level of which is necessary for reliable communication between all links in the form of management for fast changes application and enterprise's digital ecosystem forming. Its creation is impossible without modernization of the management information system of the enterprise, its organizational structure and all business processes with taking into account the digital transformation of updated values, priorities and key points. Priority vectors of digital transformations are presented in Table-I.

Modernization of the enterprise's management system and its transformation into a «digit» should be done in few stages. These stages are:

- monitoring new technologies, assessment of their effect on prospects of economic activity intensification and enterprise development and identifying opportunities for digital adaptation to changes;
- identifying priority areas of digitalization and

development of appropriate measures for its implementation on each of them;

Table-I: Vectors of digitalization of enterprise's business process management

Vector	Vectors' characteristic
Omnicanality of customer service	The necessity to use the maximum number of communication channels with customers. The digital customer service system must incorporate the tools of adaptability, variability, scoring, analytics and forecasting, it allows providing prompt and easy service.
Infrastructure, partnership, collaboration	Partnering, collaborating and integrating with other companies or services opens up opportunities for business development, innovation and scaling, regardless of location.
Cross-functionality of digital databases	Creating client database allows operating information about the client in order to model his behavior, demand forecasting, formation of personal priorities and appropriate adaptation of his own products and services, with the least time and labor.
Innovations and investments	Modern methods of project analysis and management allow active search and approving new trends of business development, innovative goods and solutions. The innovative search effectiveness determines the possibility and expedience of real investment.
Data protection (Cybersecurity)	The important parameter for digital communication and electronic business models is users' confidence. It is necessary to identify the existing risks, to implement secure information and communication systems, infrastructure and platforms, to provide appropriate consulting and technological support to stakeholders in order to protect their own commercial information and personalized customer base.
Standardization and interoperability	Harmonization of standards and technical regulations solves the problem of data compatibility and rapid flow to operational control centers, which allows gaining autonomy from other entities and protect against market conditions changes.
The value of the product	Digitalization is value stimulus e of the product from stakeholders' point of view. Digital innovations give consumers the prerogative of creating and commercializing value according to size, scale and speed. Remote mode communication possibility, round-the-clock service support and ordering the product or service significantly increase the value of the product from the stakeholders' point of view and minimize the company's capital expenditures.
Professional competencies	For successful digital business modernization, it is very important to qualitatively motivate staff and prepare them for innovations implementation, because of the approach to doing business is changed radically and the company changes outdated marketing model to the customer-centric system. Both employees and management must be prepared for continuous development, training and raising the level of their skills. Digitalization creates new staffing units with relevant competencies, which is the key to human capital development.

- minimizing restrictions (financial, legal, technical, technological, personnel, environmental, infrastructure, security, etc.) and risks of business relationships forming and the ability to respond to business processes in real time;

- integration of digital initiatives which are focused on the prospect of positive effects and development of the digitalization strategy;
- assessment of possible digitalization effect, adjustment of the chosen strategy and determining future priorities.

The applied artificial intelligence is the most effective digital management transformation technology; it bases on big data tools and allows visualization, cross-cutting planning, modeling and correction of business process management in real time. In addition, this technology, by integrating with analytics applications and services for work with smart devices, hybrid networks and other components of the digital world, allows optimizing business processes management infrastructure and provides the creation of digital platforms for the accumulation of information, its analytical processing and transmission for decisions making.

On the base of above-mentioned, we propose the reference model of digitalization of economic activity management and enterprise development (fig. 2), which provides the creation in one management system loop of information, analytical and management infrastructure in the form of appropriate platforms, and bases on the integration of a large number of functional and specialized and information and communication technologies which allow providing comprehensive solution of digitalization tasks of the individual business processes management processes and enterprise in general.

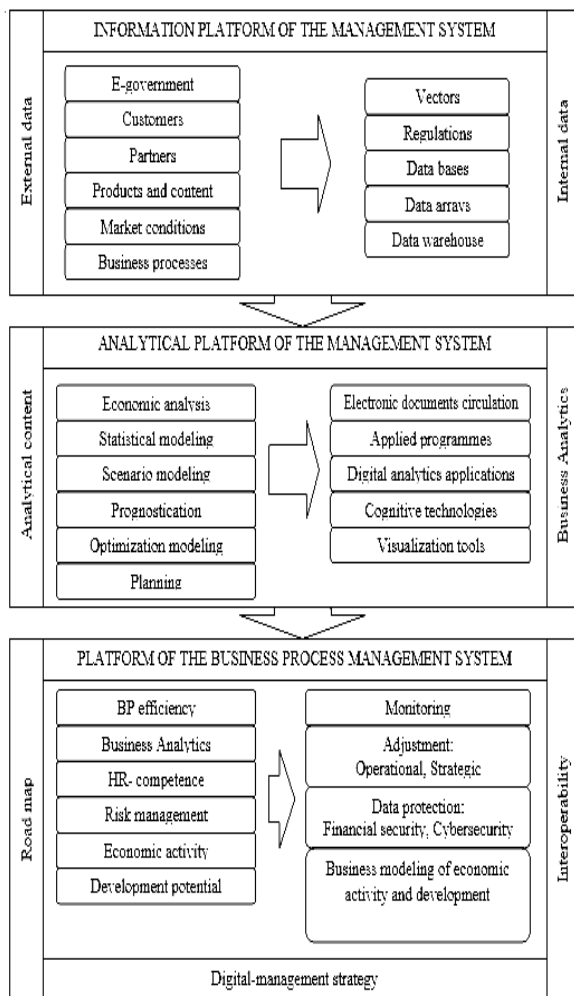


Fig. 2. Reference model of digitalization of economic activity management and enterprise development

The model operation mechanism is based on the use of freely disseminated information content (social networks, Internet resources, market information, etc.), own databases (in particular, client base), open software of analytical platform and integration platform of business process management which implements:

- data integration technology which provides consistent sharing of data which are produced by information systems, despite the fact that their own data structures were designed independently of one another, didn't contain fully information for solving complex problems as a whole, and they were not available to other information systems;
- digital applications integration technology which provides consistent sharing of integrated system functions, even though their functionalities were also independently designed, didn't include fully sets of functions which were needed for solving complex problems as a whole and they were not available to other information systems.

The implementation of the proposed approach to the digitalization of economic activity management and enterprise development provides unquestionable advantages in the form of: increased productivity through the digitalization of business processes; improving the management efficiency; transparency, simplicity and timeliness of interaction with stakeholders at all levels of management; acceleration of automation of production processes; expansion of production selling channels; opportunities to use of world markets.

V. CONCLUSION

The results of the study show that with taking into account the current trends of globalization and information systems and digital technologies development, the today priority task is creating the favorable environment for the digitalization of public relations in all spheres. It is noted that business administration digitalization is driver of economic activity growth and sustainable development of business entities. It is established that the implementation of priority targets of digitalization provides digital infrastructure optimization of management and infocommunications, modernization of security systems, creation of business entities ecosystems, their competitiveness increasing, economic activity stimulation and sustainable development goals achievement.

It is proved that the implementation effectiveness of management actions and measures for enterprise's management digitalization, its activity and development depends on the selected digital transformation technologies, the possibility of forming information arrays of relevant data, their analytical processing and presentation for making certain decisions in real time. The reference digitalization model of economic activity management and enterprise's development is elaborated, the distinctive feature of which is the integration in one management loop of three platforms (information, analytical and management); it allows obtaining the synergistic effect of the management process digital transformation at all its levels.



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