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CONCEPTUAL MODEL OF IMPLEMENTATION OF DIGITAL TRANSFORMATIONS IN COMMUNICATION BUSINESS PROCESSES OF INDUSTRIAL ENTERPRISES¹

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Introduction. The globalization of world markets, together with the indisputable advantages, creates a number of problems for domestic economic entities, first of all, regarding business automation (including the construction of complex management information systems). The modern capabilities of new software products for the organization of accounting, control and analysis of financial and material resources make it possible to significantly improve both the efficiency of business management in particular and activity in general. And the basis of effective management is a well-established system of communication business processes, which, alas, has received little attention from both practitioners and theorists.

The problem of implementation of digital transformations into communication business processes of industrial enterprises lies in the sphere of state interests of Ukraine, which is discussed in the Concept of Development of Digital Economy and Society of Ukraine for 2018-2020. In particular, it states that the path to the digital economy lies through the internal market for the production, use and consumption of information and both communication and digital technologies. The digital economy is based on information and communication and digital technologies, whose rapid development and proliferation are already affecting the traditional (physical-analog) economy, transforming it from a resource-consuming economy to a resource-creating one. Information itself is a key resource of the digital economy, it generates and provides electronic-communication interaction through the functioning of electronic-digital devices, tools and systems [1].

Therefore, solving the problem of digitalization of business in general and the digital transformation of communication business processes is an important scientific and practical task.

An overview of the latest sources of research and publications. The issues of implementing business digitalization are studied by domestic theorists (Apalkova V.V. [2], Yanenkova I.H. [3] and others),

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and practitioners (Bodnar O. [4], Ferchuk O. [5] and others) due to incredible possible benefits for business entities and consumers. Thus, according to the estimates of the AIAEU (Association of Industrial Automation Enterprises of Ukraine), experts of the Digital Agenda of Ukraine Initiative and data of the National Industry Strategy 4.0, the following effects can be obtained from the Ukrainian business digitalization [6]:

- industrial production growth by 7-10% per year;
- growth of high-tech segments of the national economy up to 20% per year;
- increase in production capacity – up to 60%;
- increase in the number of orders executed on time – up to 95%;
- inventory reductions – up to 20%;
- increase in efficiency of installed equipment – up to 15%;
- reduction of equipment downtime – up to 22%;
- cost savings - up to 30%;
- additional attraction of investment to the country contributed to the development of Industry 4.0 –

both in manufacturing and in R&D centers, incubators and technology companies.

Business process management issues have been considered by Demydenko V.V. [7], Olshanskyi O.V. [8] and others, while Romanenko O.O. [9], Kurban O.V. [10], Tanashchuk K.O., Kovtunencko K.V., Bohoslovska A.A. [11] etc. have investigated the formation of a communication space. In particular, identifying organizational structures of enterprise management by the speed of communication in the decision-making processes and the level of maintenance costs of the management apparatus, Romanenko O.O. notes that it is the network structures and virtual organizations that form the basis of business ecosystems. And today, without exception, all enterprises, regardless of ownership, size and type of products, must develop strategies to facilitate organizational structures, break down organizational barriers that impede horizontal information flows [9].

Particular attention to the specific problems of business digitalization is paid by foreign researchers (for example, Imgrund F., Fischer M., Janiesch Ch., Winkelmann A. [12], Kirchmer M., Franz P., Gusain R [13], Kurzavska K. [14], Markovitch Sh., Willmott P. [15]), whole companies (ePrintit [16], i-scoop [17]) and individual practitioners (Mokrushina E. [18], Nanterme P. [19] and others).

In particular, Shahar Markovitch and Paul Willmott explored the issues of accelerating the business processes digitalization and noted that traditional IT-intensive programs are paid back only at the end of the project, sometimes years later after the start of the project. However, digitization of cross-cutting processes can increase productivity and provide a pay-back period as little as 3-5 months [15]. Therefore, to achieve maximum results, all business processes need to be digitized (including communication).

Kurzavska K. mentioned the main types of digitalization that are changing the business world. Among them are: artificial intelligence, flexible working hours, innovation, new business models and, finally, communication as one of the most important aspects of work. Without proper communication, a business cannot thrive and develop the right product. The lack of proper communication leads to misunderstandings and conflicts. Actually, there are many tools and channels through which a business can communicate with both employees and customers such as various platforms for sharing information, as well as files, documents, etc. For example, they are Skype, Slack, blogs, videos and even Facebook. In addition, anyone can communicate and exchange views with the help of blogs and websites, conferences, trainings, or business meetings. All this is possible through digitization [14].

Therefore, the introduction of digital transformation (DT) in industrial enterprises is an urgent problem today.

Setting objectives. In our opinion, despite numerous scientific publications, the problem of forming a conceptual business model that would allow for effective implementation of digital transformations in the communication processes of industrial enterprises remains insufficiently elaborated and needs further scientific substantiation.

Therefore, the **purpose of the article** is to investigate the directions and possibilities of implementing DT in the communication business processes of industrial enterprises and to form a new conceptual business model on this basis. According to the purpose, a set of the following **tasks** has been formed:

- to analyze and systematize the prerequisites for the transformation of communication business processes of industrial enterprises under the influence of globalization;
- to offer the authors' conceptual model of implementation of digital transformations in communication business processes of industrial enterprises.

Research methods. To achieve the objectives of the study, the authors have used the theoretical analysis of information sources, as well as methods of synthesis, analysis and generalization.

Basic material and results. According to the results of the trendwatching of the world economic indicators, the digitalization of the world economy is entering an active phase of development, and the systemic challenges facing domestic enterprises require them to introduce new digital technologies as drivers of their sustainable development. Necessary directions of changes in industrial enterprises in the conditions of globalization are systematized in Fig. 1 and primarily include transformations of communication business processes as a basis for effective management of a business entity.

The implementation of the mentioned directions of transformational changes at the industrial enterprises is possible only on the basis of introducing fundamental organizational changes and creating a conceptual model of DT implementation in the communication business processes of industrial enterprises. The authors' interpretation of this model is presented in Fig. 2 (where: BI – Business intelligence; KPI – Key Performance Indicators, BSC – Balanced Score Card; ERP – Enterprise Resource Planning, MES – Manufacturing Execution System, IIoT – Industrial Internet of Things).

The first block of the scheme in Fig. 2 presents the determinants and principles of digital changes. The need for their implementation in the activity of business entities is conditioned by the external prerequisites for the transformation of business processes under the globalization influence. At the same time, the relevance of its implementation at the level of an industrial enterprise is determined by the internal factors of development of the latter. The basics of the DT implementation at the industrial enterprises are laid in the principles of Industry 4.0, formulating SMART business goals and requirements that meet global trends in the development of world markets.

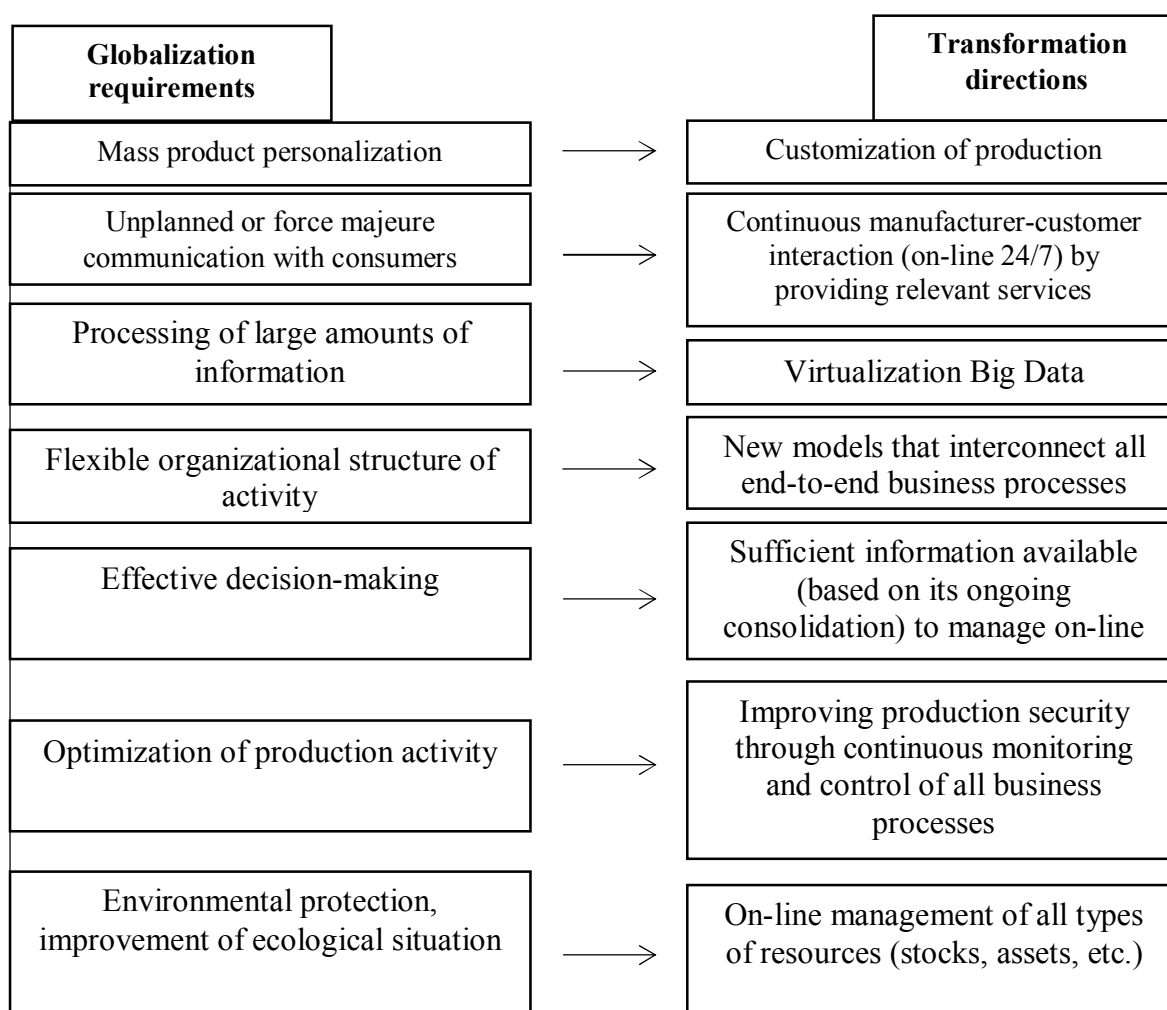
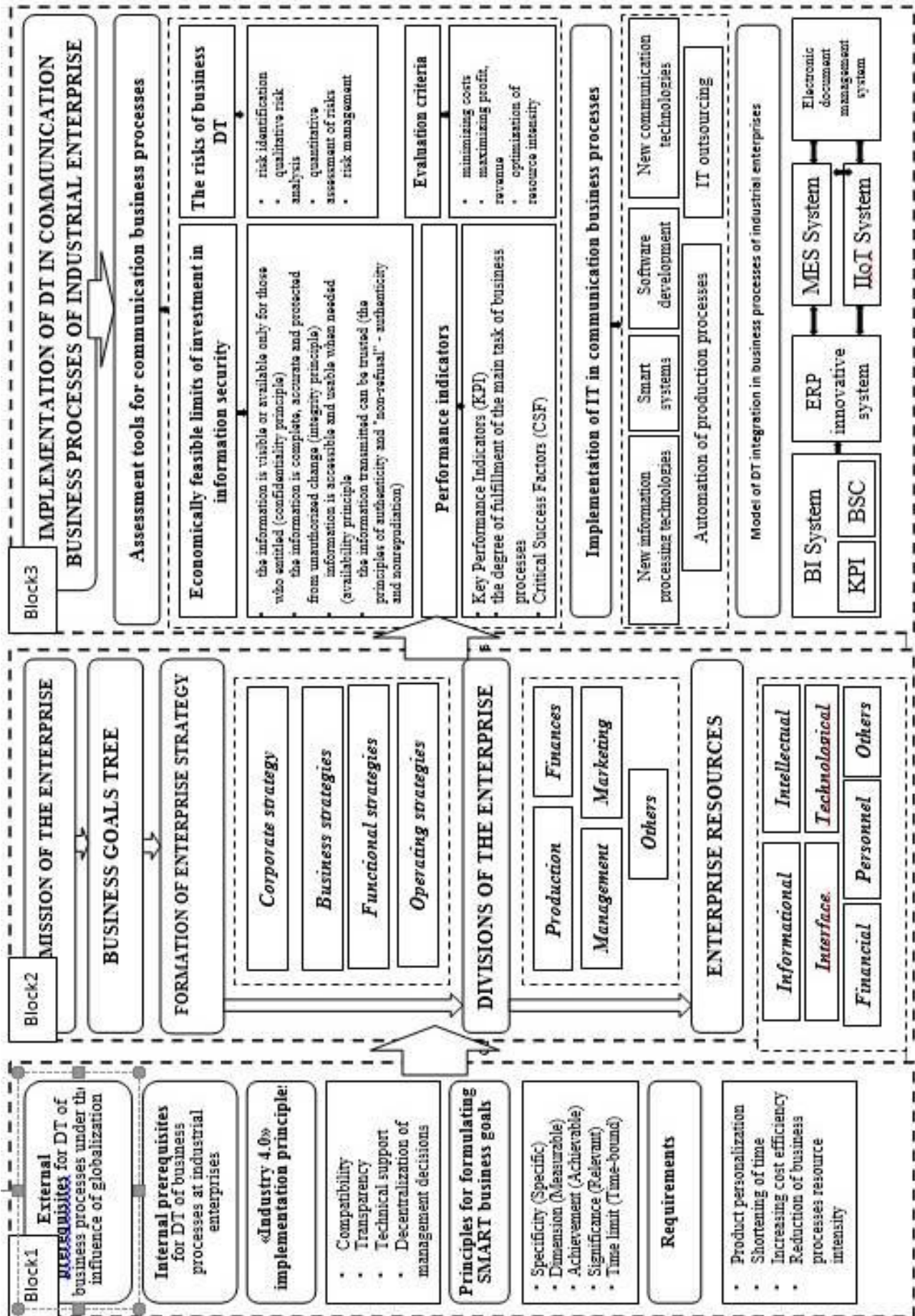


Fig.1. Prerequisites for transformation of industrial business communication processes under the influence of globalization (authors' development)



The second block of the scheme presents the potential of an enterprise. Formulated taking into account the limiting factors of the first block, the mission, goals and strategies of the enterprise are implemented in business processes at the level of structural units using the available resources of the enterprise.

The third block of the scheme details a practical toolkit for DT implementation in the communication business processes of industrial enterprises, which includes:

1) tools for evaluating communication business processes, including:

- economically feasible limits for investing in information security;
- risks of business digitalization;
- defined list of performance indicators;
- evaluation criteria outlined;

2) specific directions of implementing information technologies in communication business processes, including:

- new information processing technologies;
- smart systems;
- software development;
- new communication technologies;
- automation of production processes;
- IT outsourcing;

3) model of DT integration into business processes.

In our opinion, the practical application of this conceptual model by industrial enterprises will allow to formalize the processes of DT implementation in their activities in general and to specify the directions of digitalization of communication business processes in particular.

Conclusions. According to the results of the study, we can draw the following conclusions:

- the requirements that domestic industrial enterprises face in the conditions of globalization of the world markets outline the need for introducing new effective technological solutions (including digitalization of business) in order to increase their competitiveness;

- in the context of globalization, the necessary directions for change at industrial enterprises include, first of all, the transformation of communication business processes as the basis of effective management;

- the authors' conceptual model of DT implementation into communication business processes of industrial enterprises includes the following blocks: 1) determinants and basic principles of conceptual changes; 2) potential of the enterprise for internal digitization of business; 3) a practical toolkit for the implementation of digital transformations in the communication business processes of industrial enterprises.

The results of the research can be used in the practical activity of industrial enterprises for creating a new business model, as well as the basis for further research.

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Сотник Ірина Миколаївна, доктор економічних наук, професор. **Завражний Костянтин Юрійович**, аспірант. Сумський державний університет. **Концептуальна модель імплементації цифрових трансформацій у комунікаційні бізнес-процеси промислових підприємств**. Розглянуто проблему імплементації цифрових трансформацій у комунікаційні бізнес-процеси промислових підприємств. Окреслено вимоги, які постають перед вітчизняними промисловими підприємствами в умовах глобалізації світових ринків, сформульовано напрями трансформаційних змін і систематизовано передумови трансформацій комунікаційних бізнес-процесів промислових підприємств. Запропоновано авторську концептуальну модель імплементації цифрових трансформацій у комунікаційні бізнес-процеси промислових підприємств, котра містить три блоки. У першому блоці представлено детермінанти та принципові основи здійснення концептуальних змін. У другому блоці подані потенційні можливості підприємства. Сформульовані з урахуванням обмежувальних чинників першого блока місія, цілі й стратегії підприємства реалізуються у бізнес-процесах на рівні структурних підрозділів з використанням наявних ресурсів підприємства. У третьому блоці деталізовано практичний інструментарій імплементації цифрових трансформацій у комунікаційні бізнес-процеси промислових підприємств, який містить: 1) інструментарій оцінювання комунікаційних бізнес-процесів; 2) конкретні напрями впровадження інформаційних технологій у комунікаційні бізнес-процеси (у т.ч. нові технології обробки інформації; розумні системи;

розроблення програмного забезпечення; нові комунікаційні технології; автоматизація виробничих процесів; IT-аутсорсинг); 3) модель інтеграції цифрових трансформацій у бізнес-процеси. Застосування такої концептуальної моделі промисловими підприємствами на практиці дозволить формалізувати процеси впровадження цифрових трансформацій у їхню діяльність у цілому та конкретизувати напрями цифровізації комунікаційних бізнес-процесів зокрема.

Ключові слова: бізнес-процеси, комунікації, промислові підприємства, концептуальна модель, цифрові трансформації.

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Sotnyk Iryna, D.Sc. (Economics), Professor. **Zavrazhnyi Kostiantyn**, PhD student. Sumy State University. **Conceptual Model of Implementation of Digital Transformations in Communication Business Processes of Industrial Enterprises.** The requirements for domestic industrial enterprises in the conditions of globalization of the world markets are outlined, the directions of transformational changes are formulated and the prerequisites for transformation of communication business processes of industrial enterprises are systematized. The authors' conceptual model of implementation of digital transformations in the communication business processes of industrial enterprises is proposed, which includes the following blocks: 1) determinants and basic foundations of conceptual changes; 2) potential of the enterprise for internal digitization of business; 3) a practical toolkit for the implementation of digital transformations in the communication business processes of industrial enterprises.

Keywords: business processes, communications, industrial enterprises, conceptual model, digital transformations.

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Сотник Ирина Николаевна, доктор экономических наук, профессор. **Завражный Константин Юрьевич**, аспирант. Сумской государственной университет. **Концептуальная модель имплементации цифровых трансформаций в коммуникационные бизнес-процессы промышленных предприятий.** Рассмотрена проблема имплементации цифровых трансформаций в коммуникационные бизнес-процессы промышленных предприятий. Обозначены требования, стоящие перед отечественными промышленными предприятиями в условиях глобализации мировых рынков, сформулированы направления трансформационных изменений, систематизированы предпосылки трансформации коммуникационных бизнес-процессов промышленных предприятий. Предложена авторская концептуальная модель имплементации цифровых трансформаций в коммуникационные бизнес-процессы промышленных предприятий, которая включает три блока. В первом блоке представлены детерминанты и принципиальные основы проведения концептуальных изменений. Во втором блоке приведены потенциальные возможности предприятия. Сформулированные с учетом ограничивающих факторов первого блока миссия, цели и стратегии предприятия реализуются в бизнес-процессах на уровне структурных подразделений с использованием имеющихся ресурсов предприятия. В третьем блоке детализирован практический инструментарий имплементации цифровых трансформаций в коммуникационные бизнес-процессы промышленных предприятий, который включает: 1) инструментарий оценки коммуникационных бизнес-процессов; 2) конкретные направления внедрения информационных технологий в коммуникационные бизнес-процессы (в т.ч. новые технологии обработки информации; разумные системы, разработку программного обеспечения, новые коммуникационные технологии; автоматизацию производственных процессов; IT-аутсорсинг); 3) модель интеграции цифровых преобразований в бизнес-процессы. Применение данной концептуальной модели промышленными предприятиями на практике позволит формализовать процессы внедрения цифровых преобразований в их деятельность в целом и конкретизировать направления цифровизации коммуникационных бизнес-процессов в частности.

Ключевые слова: бизнес-процессы, коммуникации, промышленные предприятия, концептуальная модель, цифровые трансформации.