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ANALYSIS OF THE COMPANY'S BUSINESS MODEL AS A FOUNDATION FOR THE SUCCESSFUL DIGITAL TRANSFORMATION AND SUSTAINABLE DEVELOPMENT¹

Kostiantyn ZAVRAZHNYI

PhD in Economics, Junior Researcher of the Department of Economics,
Entrepreneurship and Business Administration
ORCID: <https://orcid.org/0000-0002-0408-0269>

Anzhelika KULYK

PhD Student of the Department of Financial Technologies and Entrepreneurship,
Sumy State University
ORCID: <https://orcid.org/0009-0009-0743-8973>

Annotation. *The purpose.* Digital transformation is an important part of the strategic development of an enterprise in the modern world, which involves changing approaches to work, culture and technologies. The article examines the issue of implementing digital strategies as an integral step on the way to sustainable development. For the purpose of successful digital transformation, it is important to conduct an analysis of the company's business model, which will help identify opportunities for optimizing business processes, as well as develop effective mechanisms for managing digital transformation. **Research methods.** The article offers an adapted approach to the analysis of the activity model, which takes into account the specifics of the enterprise and will help optimize business processes in the conditions of digital transformation, emphasizes the importance of detailing and flexibility in the use of the model. The research is based on the use of a comprehensive view of business processes, their interaction and application to changes in the digital economy. The article proposes a top-down model, which begins the analysis with the construction of a top-level diagram of business processes. This approach will allow you to get a general idea of the company's activities and determine the main directions for further analysis. **Results.** A key aspect of the concept is the use of a "value chain diagram" in the context of digital transformation, which will allow visualizing the flows of materials, information and funds in the company, as well as identifying opportunities for their improvement. The article emphasizes the importance of detail and flexibility in the use of the model to meet the specific needs of the enterprise. **Practical value.** The proposed strategy is suitable for practical use in the context of managing the digital transformation of an enterprise. It will enable companies to achieve effective results in a global digital environment, ensuring holistic management of activities and adaptation to changes.

Keywords: digital transformation, sustainable development, top-down model, optimization, business processes, enterprise, flexibility.

Statement of the problem in general and its connection with important scientific or practical tasks. The analysis of a company's activity model is a key stage in the development and implementation of effective mechanisms for managing the enterprise's digital transformation. It allows to identify opportunities for optimizing business processes, develop effective mechanisms for digital transformation management, ensure holistic activity management and adaptation to changes. The focus of the business model analysis consists in the systematic consideration of all aspects of business activity, which includes strategic goals and objectives, the range of products and services. The development of various types and models, objects, symbols and the establishment of connections between them in accordance with the specifics of the enterprise is a significant component for achieving optimal management of the process of

digital transformation and sustainable development. An important aspect is the standardization of rules and approaches to the description of the company's activities for the purpose of their further formalization, analysis and optimization. Among these elements is the development of models that consider prospective use and the principle of reasonable sufficiency to achieve the optimal level of detail, the number of models and objects of digital transformation management, which will contribute to the sustainable development of the enterprise in the long term. The use of typical process models is the basis for describing business processes, which contributes to the creation of mechanisms for managing digital transformation. The development and detailed analysis of the business model is the key basis for further changes, and the implementation of modeling principles creates an opportunity to obtain the expected results.

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Analysis of the recent research and publications. Analysis of the latest research and publications of foreign and domestic researchers, such as Heubeck T. [1], Papathomas A. [2], Konteos G. [2], Shvydanenko H. [3], Prykhodko L. [3] makes it possible to identify key trends in this direction. Researchers today focus on developing digital strategies and innovative approaches to support digital transformation. This includes studying the role of the latest technologies that help businesses achieve competitive advantage and create new digital products and services [4]. Also, they focus on the development of new business process modeling methods that take into account the specifics of digital transformation. The use of various modeling approaches, such as BPMN, Value Stream Mapping, etc., helps to improve the management and optimization of processes [5]. In the context of digital transformation, data analysis takes on great importance for decision-making. Research in this area is aimed at developing analytical tools and methods that help companies implement effective data-based management [6]. Since digital transformation requires changes in work approaches and company culture, researchers are actively studying issues of organizational change, staff involvement in the process, and the development of a digital culture. For a successful digital transformation, it is important to define performance indicators and measure results. Methods of measuring the impact of digital transformation on key performance indicators are actively considered in research. These trends and directions of research show a general focus on the practical implementation of digital transformation in modern business structures and on the development of new methods and approaches for its successful implementation.

A systemic approach to modeling involves understanding a company as a system consisting of various components such as processes, resources, structures, information flows, etc. [7]. Business process analysis involves studying a company's business processes to identify stages, roles, interactions, and other aspects. This analysis helps deeply immerse into the current activities of the company and identify opportunities for optimization and automation [3]. The use of business process modeling methodologies, including BPMN (Business Process Model and Notation), to create formal models allows to visualize business processes, identify opportunities for improvement, and understand the impact of digital solutions on them. Using ER diagrams and database schemas helps better understand how data is processed and exchanged between system components. Analyzing needs and goals helps focus efforts on modeling aspects that are important to achieving those goals. It is important to use standard notations and modeling techniques to ensure the comprehensibility of the models for all process stakeholders. It is necessary to consider in detail the potential risks associated with

implementing digital transformation and identify the opportunities this process might unveil. Special attention should be paid to the analysis of possible negative impacts on the company's business processes and infrastructure, as well as ways to reduce and manage them. An iterative approach to modeling is an important aspect that involves considering modeling as a process of continuous evolution that adapts and improves throughout the company's life cycle. Special attention should be paid to constant adaptation and updating of models in accordance with new requirements and changes that occur in the business environment [8].

Considering business process modeling as a tool for digital transformation, it's essential to assess its impact on the sustainable development of the company. It is a key tool for reviewing the company's internal processes, identifying opportunities for optimization, and creating a clear basis for decision-making and reducing the negative impact on the environment.

Highlighting previously unresolved parts of the general problem and formulating the goals of the article. Previous studies made a significant contribution to the development of the methodology for analyzing the company's activity model and the formation of mechanisms for managing the digital transformation of business structures. However, there are a number of previously unsolved problems: the lack of a unified approach to the analysis of the company's activity model in the conditions of digital transformation, the necessity to consider the specifics of the enterprise. The goal of the article is to develop and propose a new strategy for analyzing the company's activity model and forming effective mechanisms for managing digital transformation that contribute to the sustainable development of the enterprise. The results of the research have theoretical and practical significance and allow applying a new approach to the analysis of the company's activity model, which meets the specific needs and goals of the enterprise and improves business processes in the conditions of digital transformation.

Presentation of the main research material with the full justification of the scientific results obtained. At the beginning of the company's activity analysis, it is important to define a comprehensive approach and requirements to ensure the integrity of the model, as well as the methods and tools for its creation and analysis. In the process of describing the components of the company's activity, it is necessary to follow the principles for creating models considering their intended future use. We propose using a top-down modeling approach, initially constructing top-level models and then decomposing them. It is necessary to adhere to ergonomic criteria and modeling principles when developing a model of the company's activity. Compliance with ergonomic criteria involves limiting the number of objects in the model

to ensure it is easily understood and interpreted. Adherence to modeling principles entails consistency among models of the same level of detail based on the degree of generalization of the described information in them.

When modeling business processes, it is important to use only those types and types of models and objects that implement the principle of a system approach, which requires considering the entire activity of the company as a system of interconnected and interacting processes. When describing the business process, it is necessary to ensure completeness and accuracy, as well as the integrity of the model. To achieve this, it is necessary to describe the entire sequence of tasks implemented by the process, identify process participants, material and information resources, as well as analyze and use the existing instance of the object on new models, establish relationships with related processes, if they exist.

For example, let's apply the following components of activity to describe a company's business model: company goals; products and services offered; main business processes; process scenarios; organizational structure; work documents; architecture of the current information system; data structure, etc. It's necessary to define the type of model used for each component. If it's an organizational model, it represents the system structure – the hierarchy of organizational units, positions and specific persons, their relationships, as well as the territorial scheme of structural units. The functional model should contain a hierarchy of goals for the management structure, with a set of task trees necessary to achieve these goals. The information model reflects the structure of information necessary for the implementation of the entire set of system tasks. The model of management processes and mechanisms presents a comprehensive view of implementing business processes within the existing system.

Considering the outlined aspects and recent research findings, we propose adapting the approach to analyzing the company's activity model to create effective mechanisms for managing digital transformation. The developed concept takes into account the specifics of the enterprise and aids in optimizing business processes amid digital transformation. We emphasize the importance of analyzing primary, auxiliary, and managerial processes as components of a coherent system that facilitates comprehensive company management in the context of digital transformations. Our approach offers a comprehensive view of the interaction between company activity components, particularly primary, auxiliary, and managerial processes, viewing them as parts of a cohesive system. We recommend limiting the levels of decomposition to four: business process, complex process, simple process, and task, for each component of the company's activity.

According to the level of complexity and detail, the relationships between the components of the model can be described at various levels of abstraction and elaboration. For example, at the business process level, a general description of component interactions and functionality can be provided. At the complex process level, additional details regarding interactions and components can be elaborated upon. On the simple process level, specific action sequences and connections can be described, and at the task level, specific parameters and constraints can be indicated. In a basic scenario, a business process model might consist of two levels: the business process and the task. The next step is to fix the goals and objectives of the model at each level of decomposition. This assists in determining how it should be represented in the model and helps establish general rules for model formation at each level of decomposition. It is also important to establish the general principles of modeling at each level of decomposition and the type of model to be used. Determining the relationships between models at different levels of decomposition and defining the rules for encoding models and business processes are important aspects of this process.

For describing a company's business processes, up to four levels of model decomposition and up to ten elements on each level are employed to ensure the readability of the model. The first level is a top-level business process model, which is a graphic diagram displaying a list of business processes of the specified level. The second level contains a model of complex processes, depicted as a hierarchical tree diagram of the business process, detailed to that level. The third level features a graphical diagram of a process hierarchical tree, detailed to the level of simple processes, transitioning into a task model, an execution algorithm presented as an ordered sequence of controlled events and actions, incorporating various inputs and outputs, existing roles, and resources.

The diagram of the company's business processes begins with the construction of a model and a top-level business process map, which can belong to one of three types (Figure 1):

- the main processes aimed at the direct creation of products or services;
- the support processes that ensure the functioning of the main processes;
- the management processes, focused on managing and providing information about the company's current activities or steering the company's strategic development.

The Value Added Chain Diagram (VAD) type is used to describe the model and map of top-level business processes. Porter's value chain model is a strategic management tool developed by Harvard Business School professor Michael Porter. The tool analyzes a company's value chain, defined as the set of processes

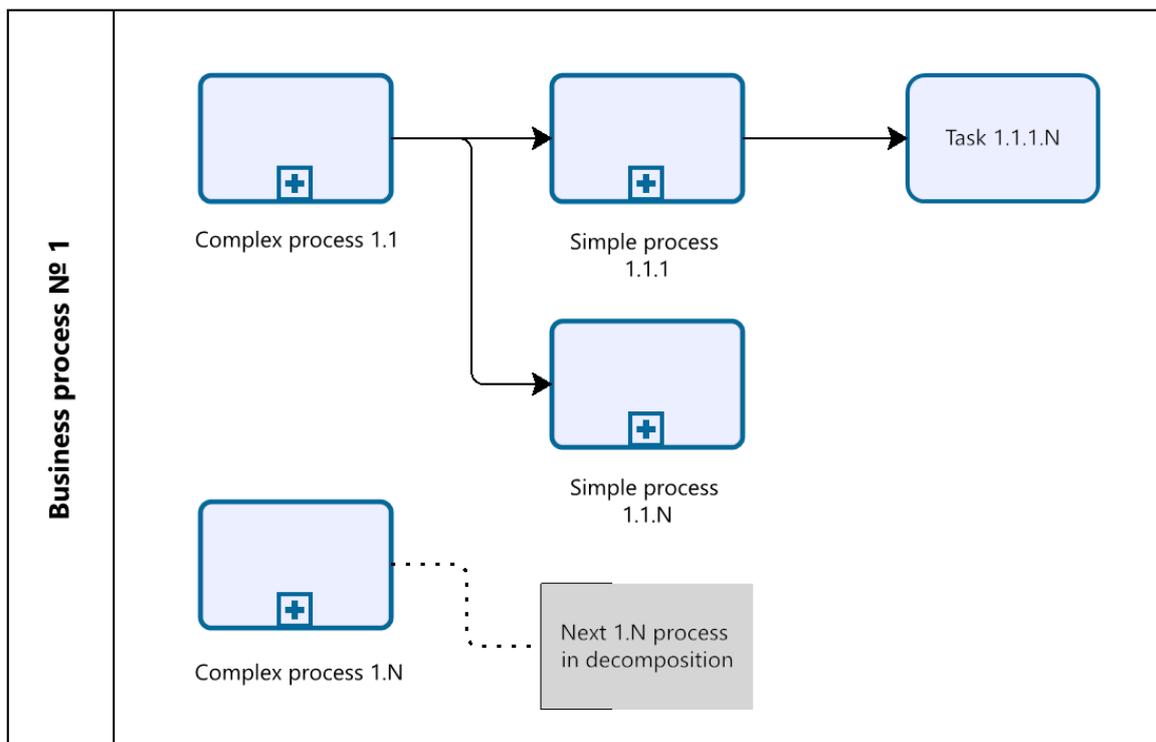


Figure 1. The levels of decomposition of business process models

Source: compiled by the authors

a company uses to make money [9]. The top-level business process model is used to describe the main areas of the company's activity, therefore, each upper-level business process is detailed on the second-level model – the process model.

The model of processes and tasks reveals the top-level business process as a list of complex processes that reveal the top-level business process. Each process in the complex processes model is further detailed into a model of simple processes, formatted according to BPMN (Business Process Model and Notation). It provides enterprises with a graphical notation to understand their internal business procedures, facilitating comprehension of collaboration effectiveness and business operations between organizations. This ensures that enterprises comprehend themselves and participants in their business, enabling organizations to quickly adapt to new internal and B2B business conditions [10].

At the level of processes and tasks, each complex process is presented as a collection of simple processes, designed to describe an ordered sequence of event-driven tasks.

The model of processes and tasks records:

- the sequence of executing processes and tasks;
- the logic/conditions for executing processes and tasks;
- responsibilities for executing processes and tasks or business roles;
- inputs and outputs of each process and task;

– material and digital resources used to perform processes and tasks, including objects of digital transformation information systems.

The execution algorithm of processes and tasks is further specified with information, the level of detail of which should be sufficient to indicate a certain task. Each process and task is executed by a defined business role within a specific timeframe under fixed conditions to achieve a specific result. To describe the model of processes and tasks for the purpose of forming mechanisms for managing the digital transformation of business structures, a sequence of events and actions is used, reflecting the logic of executing interconnected tasks aimed at achieving a given result.

Each business process is described and standardized for the purpose of digital automation, contributing to the formation of a comprehensive set of business process models. The description of the model is carried out in terms of actions and entities (for example, a document is an order, act, invoice, etc.), without reference to objects of existing and new information systems. The business process model should contain an analysis of the impact of the described business process model on the current structure and processes of the enterprise, as well as a description of organizational changes. Unified business processes undergoing digital transformation should maximize the utilization of existing business automation software functionality used for creating information systems. However, when developing business process models

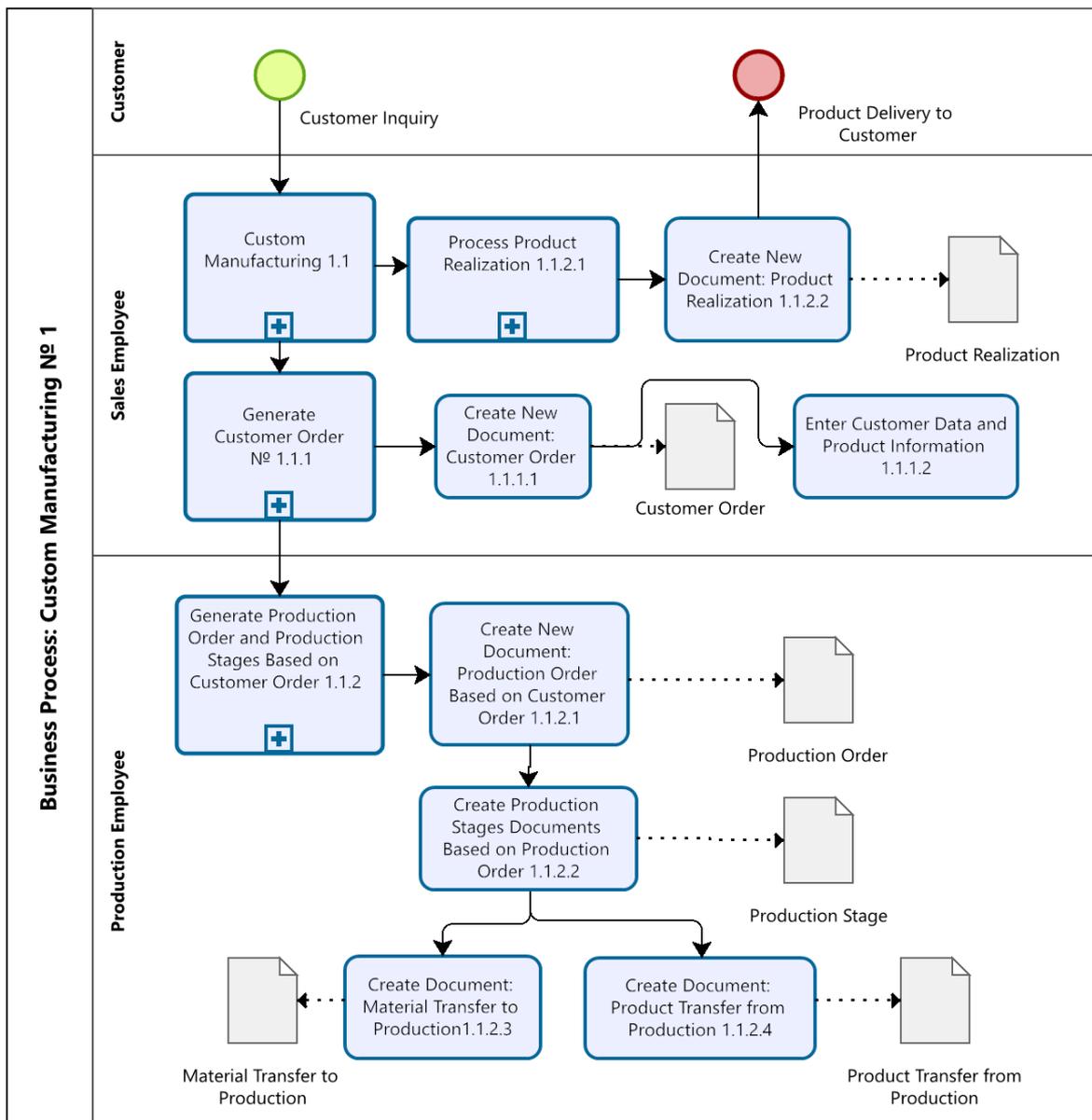


Figure 2. Business process production according to the order of the client N 1

Source: compiled by the authors

for digital transformation, it is necessary to consider sustainable development principles. This implies that business processes should be designed to be resource-efficient, minimize adverse environmental impacts, and contribute to social development.

The next step is the development of a matrix of business roles for those business processes that are subject to digital transformation, with the aim of fixing the list of business roles, their access rights and authorities requiring design in information systems. Next, an organizational change plan is formed, representing one of the most important components for the success of digital transformation. It includes a

list of measures that must be taken at the enterprise in order to introduce management in the new model of processes and tasks, such as changing the organizational structure, job instructions, business processes, etc. Coding of models of top-level business processes, complex processes, simple processes and tasks is carried out top-down, from top-level business processes to lower-level tasks. For business processes, it is necessary to define a list of business roles (responsible and executors) that perform tasks of the business processes.

Each business process for which a model is being built should have at least one complex pro-

cess that contains a simple process and an initial task. The final task can be represented by a transition to another simple process. The number of input and output connections for processes and tasks should not exceed one. In cases that the number of input and output connections for processes and tasks exceeds one, the use of logical connections is necessary to properly implement these connections.

The path of simple processes and tasks is always divided and combined using branching/merging rules that use logical operators "AND", "OR", "exclusive OR" ("AND", "OR", "XOR"). The sequence flow of simple processes and tasks is displayed mainly from left to right, from top to bottom. It is necessary to try to minimize the number of turns and intersections of arrows. Business roles in the model must be shown in the form of 5-6 horizontal lanes or attempt to decompose the model.

Conclusions from the mentioned problems and prospects of further research in the given direction. The research yielded the following findings and conclusions. Considering the advantages of the proposed approach, it should be noted that its flexibility and adaptability are key to achieving effective results in the context of digital transformation and sustainable development. Examining business processes through the prism of an integrated system allows to achieve greater efficiency compared to other methods that may be less adapted to modern challenges and changes. The described types of business processes (main, support and management) reflect various aspects of the company and its orientation. A detailed description of each process and task is important in

establishing specific roles, responsibilities, resources, and event sequences.

For the implementation of digital transformation, it is important to adapt the approach to modeling and analyzing a company's activities, thoroughly exploring various levels of detailing, and using appropriate notations to create a clear picture of business processes are crucial foundations for further optimization and management. Based on our analysis and practical application, we recommend considering the described elements and recommendations when developing mechanisms for managing digital transformation. The primary advantage of our approach is the ability to provide more precise and adapted management that meets the needs of a specific company. Incorporating principles of sustainable development is a necessary component in the context of digital transformation. Modeling business processes should contribute to the efficient use of resources, minimize the negative impact on the environment, and contribute to social development. All these aspects, along with an adapted approach to modeling business processes, create the basis for successful digital transformation and development of the enterprise in the conditions of the modern economy.

This research offers a practical approach to managing digital transformation based on comprehensive analysis and modeling of business processes, fostering sustainable and innovative company growth. Future plans include further exploration of the proposed approach and studying the experiences of companies that have successfully implemented digital transformation while considering principles of sustainable development.

REFERENCES

1. Heubeck, T. (2023) Managerial capabilities as facilitators of digital transformation? Dynamic managerial capabilities as antecedents to digital business model transformation and firm performance. *Digital Business*, vol. 3 (1). Available at: <https://www.sciencedirect.com/science/article/pii/S2666954423000017> (accessed November 20, 2023).
2. Papatomas, A. & Konteos, G. (2023) Financial institutions digital transformation: the stages of the journey and business metrics to follow. *Journal of Financial Services Marketing*. Available at: <https://link.springer.com/article/10.1057/s41264-023-00223-x> (accessed November 20, 2023).
3. Shvydenko, H. & Prykhodko, L. (2012). *Business Process Optimization*. KNEU.
4. Xie, X., Han, Y., Anderson, A. & Ribeiro-Navarrete, S. (2022) Digital platforms and SMEs' business model innovation: Exploring the mediating mechanisms of capability reconfiguration. *International Journal of Information Management*, vol. 65. Available at: <https://www.sciencedirect.com/science/article/pii/S0268401222000470> (accessed November 20, 2023).
5. Camargo, M., Dumas, M. & González-Rojas, O. (2020) Automated discovery of business process simulation models from event logs. *Decision Support Systems*, vol. 134. Available at: <https://www.sciencedirect.com/science/article/pii/S0167923620300397> (accessed November 20, 2023).
6. Xuan, L. (2022) Big data-driven fuzzy large-scale group decision making (LSGDM) in circular economy environment. *Technological Forecasting and Social Change*, vol. 175. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0040162521007198> (accessed November 20, 2023).
7. Didur, K. (2012) Systemic approach to enterprise management and enterprise personnel management. *Effective Economics*, vol. 4. Available at: <https://www.economy.nayka.com.ua/?op=1&z=1079> (accessed 20.11.2023).
8. Tabunshchik, G., Kaplienko, T. & Petrova, O. (2016). *Software Design and Modeling for Modern Information Systems*. ZNTU.
9. Cuofano, G. (2023) What is Porter's Value Chain Model and why it matters in business. *FourWeekMBA*. Available at: <https://fourweekmba.com/porters-value-chain-model> (accessed November 20, 2023).
10. Business Process Model and Notation (2023). Available at: <https://www.bpmn.org/> (accessed November 20, 2023).

К. Ю. Завражний, А. К. Кулик, Сумський державний університет. Аналіз моделі діяльності компанії як основа для успішної цифрової трансформації та сталого розвитку.

Анотація. Мета статті. Цифрова трансформація – це важлива частина стратегічного розвитку підприємства у сучасному світі, що передбачає зміну підходів до роботи, культури та технологій. У статті розглядається питання впровадження цифрових стратегій як невід'ємного кроку на шляху до сталого розвитку. З метою успішної цифрової трансформації важливо провести аналіз моделі діяльності компанії, який допоможе визначити можливості для оптимізації бізнес-процесів, а також розробити ефективні механізми управління цифровою трансформацією. **Методика дослідження.** Стаття пропонує адаптований підхід до аналізу моделі діяльності, який враховує специфіку підприємства та допоможе оптимізувати бізнес-процеси в умовах цифрової трансформації, підкреслює важливість деталізації і гнучкості у використанні моделі. В основі дослідження лежить використання комплексного погляду на бізнес-процеси, їх взаємодію та застосування до змін цифрової економіки. У статті запропонована модель «зверху-вниз», яка розпочинає аналіз із побудови схеми бізнес-процесів верхнього рівня. Цей підхід дозволить отримати загальне уявлення про діяльність компанії та визначити основні напрямки для подальшого аналізу. **Результати.** Ключовий аспект концепції – це використання «діаграми ланцюжка доданої вартості» у контексті цифрової трансформації, яка дозволить візуалізувати потоки матеріалів, інформації та коштів у компанії, а також виявити можливості для їх вдосконалення. У статті підкреслюється значущість деталізації та гнучкості у використанні моделі для відповідності конкретним потребам підприємства. **Практична значущість результатів дослідження.** Запропонована стратегія придатна для практичного використання у контексті управління цифровою трансформацією підприємства. Вона дозволить компаніям досягти ефективних результатів у глобальному цифровому середовищі, забезпечуючи цілісне управління діяльністю та адаптацію до змін.

Ключові слова: цифрова трансформація, сталий розвиток, модель «зверху-вниз», оптимізація, бізнес-процеси, підприємство, гнучкість.