

V. Alkbimova,

Postgraduate student of the Department of Marketing, Management, Public Management and Administration, State University of Intellectual Technologies and Communications

ORCID ID: <https://orcid.org/0000-0001-7302-6031>

O. Diugowanets,

PhD in Economics, Associate Professor of the Department of Business administration, Marketing and Management, DVNZ "Uzhgorod National University",

ORCID ID: <https://orcid.org/0000-0003-2933-4306>

DOI: 10.32702/2306-6814.2023.1.86

# FEATURES OF MANAGEMENT OF TELECOMMUNICATION ENTERPRISES IN THE DIGITAL ECONOMY

В. В. Алхімова,

аспірант кафедри маркетингу, менеджменту, публічного управління та адміністрування, Державний університет інтелектуальних технологій і зв'язку

О. М. Дюгованець,

к. е. н., доцент, завідувач кафедрою бізнес-адміністрування, маркетингу та менеджменту, ДВНЗ "Ужгородський національний університет"

## ОСОБЛИВОСТІ МЕНЕДЖМЕНТУ ТЕЛЕКОМУНІКАЦІЙНИХ ПІДПРИЄМСТВ В УМОВАХ ЦИФРОВОЇ ЕКОНОМІКИ

***The primary telecommunications enterprise implemented activities to ensure the functioning of communication facilities, facilities and networks, which were carried out with the purpose of providing various communication services. At present the content of the activity has not changed, in contrast to the specifics of the supplier process, where the service is delivered as a multifunctional service. As the transformations in the value chains are typical for both telecommunications operators and mobile operators, the outlined processes change the combination of technologies, principles, methods, means and forms of management aimed at increasing the efficiency of telecommunication enterprises' work acquires qualitatively new properties. According to the above-mentioned research, it aimed at defining and general characteristics of management of telecommunication enterprises in the conditions of digital economy. Within the framework of the study, it is noted that modern management of telecommunication enterprises is characterized by systemic transformations, which are formed in connection with the connection of the classical value chain on two interrelated, among which virtual and physical chains. The authors pay attention that within the framework of the virtual value chain management of telecommunication enterprises acquire forms, which are detailed by the type of activity units involved in its business units. Four basic forms of management of the physical value chain were allocated, namely: logistics (management of incoming and outgoing logistics operations); operational (management of operations on conversion of invested resources into production); marketing (management of operations on sale of services as ready services); service (management of operations on provision of effective service for the buyer after sale of services). Within the virtual value chain, the infrastructure and technology business units are required to ensure the viability of the content supplied by the provider. In accordance with the business units involved, the following related forms of management of the virtual value chain were identified, namely:***

*infrastructure (management of the aggregate of buildings, buildings, systems and services necessary to ensure the viability of business units); technological (management of new knowledge and their application in the creation of services or technology of service provision); supplier (procurement decision management).*

**Первинно телекомунікаційне підприємство реалізувало діяльність із забезпечення функціонування засобів, споруд і мереж зв'язку, які виконувалися з метою постачання окремих послуг зв'язку. Наразі зміст діяльності змінився щодо специфіки постачальницького процесу, у межах якого постачається не послуга, а багатофункціональний сервіс. Оскільки трансформації в ланцюгах вартості характерні як для операторів телекомунікацій, так і для операторів мобільного зв'язку, окреслені процеси змінюють сутність принципів, методів, засобів і форм управління, спрямованих на підвищення ефективності роботи телекомунікаційних підприємств. Відповідно до вищенаведеного, дослідження спрямоване на визначення та загальну характеристику особливостей менеджменту телекомунікаційних підприємств в умовах цифрової економіки. У межах дослідження звернено увагу, що для сучасного менеджменту телекомунікаційних підприємств характерні системні трансформації, які відбуваються у зв'язку з роз'єднанням класичного ланцюга створення вартості на два взаємопов'язаних, серед яких віртуальний ланцюг та фізичний ланцюг. Звернено увагу, що, в межах фізичного ланцюга створення вартості, менеджмент телекомунікаційних підприємств набуває форм, які деталізуються за видом діяльності залучених у ньому ділових одиниць. Виділялися чотири базові форми менеджменту фізичного ланцюга створення вартості, а саме: логістичний (керування операціями вхідної та вихідної логістики); операційний (керування операціями з перетворення вкладених ресурсів у випуск); маркетинговий (керування операціями з продажу послуг, як готових сервісів); сервісний (керування операціями із забезпечення ефективного сервісу після продажу послуг). У межах віртуального ланцюга створення вартості залучені інфраструктурні та технологічні ділові одиниці, що необхідні для забезпечення життєздатності вмісту, що постачається провайдером. Відповідно до залучених ділових одиниць, виділилися наступні супутні форми менеджменту такого ланцюга створення вартості: інфраструктурний (керування сукупністю споруд, будівель, систем і служб, необхідних для забезпечення життєздатності ділових одиниць); технологічний (керування отриманням нових знань та їх застосуванням при створенні послуг або технології надання послуг); постачальницький (керування прийняттям рішень про закупівлі).**

*Key words: value chain; telecommunication operators, mobile operators; wired infrastructure; services; services.*

*Ключові слова: ланцюг створення вартості; оператори телекомунікацій, оператори мобільного зв'язку; провідна інфраструктура; послуги; сервіси.*

#### **PROBLEM SETTING (DESCRIPTION OF THE PROBLEM BEING ANALYZED IN GENERAL AND ITS CONNECTION WITH IMPORTANT ACADEMIC OR PRACTICAL TASKS)**

At present, digital and innovative technologies are becoming more and more deeply penetrating the business processes of enterprises of all types, including telecommunication enterprises and the transformation of their value chains [5]. In particular, the primary telecommunication enterprise has implemented activities to ensure the functioning of communication facilities, facilities, and networks, which were carried out with the purpose of supply of various communication services. At present, the content of the activity has not changed, unlike the specifics of the supplier process within which the service is delivered as a convenient service. As the transformations in the value chains are typical for both telecom operators (within the framework of wireless

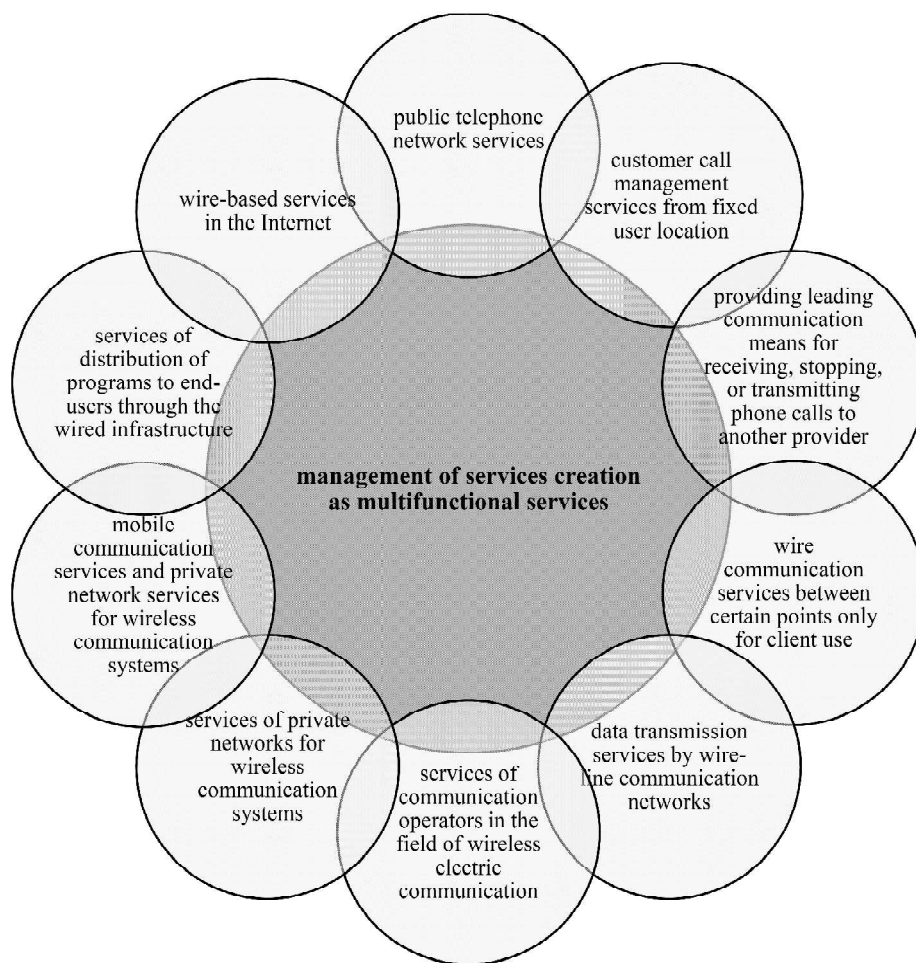
telecommunication services provided by the Internet) and mobile operators (within the framework of mobile communication services and mobile wireless telecommunication services provided by the Internet network), the described processes change the totality of technologies, principles, methods, means, and forms of management, to increase the efficiency of telecommunication enterprises, new properties are being built.

#### **THE ANALYSIS OF THE LAST RESEARCH AND PUBLICATIONS IN WHICH THE SOLUTION TO THIS PROBLEM IS BEGUN**

Among the basic researchers, in which the solution of the problem of management of telecommunication enterprises under the conditions of digital economy is started, we have allocated the work I.O. Kovshov, P.S. Yeshchenko, V.V. Zhebka, Jonathan Mitchell, Christopher Coles, Jody Keane and others. At the same time, the majority of existing works are devoted to deve-

lopment of conceptual scheme of providing high-quality telecommunication services on the basis of the principles of classical management. At the same time, the questions of definition and general characteristics of the peculiarities of management of enterprises are practically not covered in scientific literature.

This creates significant problems when developing of two-tier management of telecommunication enterprises model in the digital economy. This is due to the fact that classical peculiarities of management are formed depending on administrative-administrative forms of management, its functional directions (strategic, financial, personnel, anti-crisis, etc.) and basic functions (planning, organization, motivation, control). At the same time, as for the modern management of telecommunication enterprises in the digital economy, its characteristic signs of systemic transformations are acquired, connected with the connection of the classical value chain for two interrelated, among which is the virtual chain and the physical chain.



**Fig. 1. The main directions of creation of services as multi-functional providers of telecommunication and mobile communication operators for which value chains management used**

Source: formed based on [4].

**THE WORDING OF THE PURPOSES OF THE ARTICLE (PROBLEM)**

The purpose of the article is to define and general characteristics of management of telecommunication enterprises in the digital economy.

**THE PAPER'S MAIN BODY WITH FULL REASONING OF ACADEMIC RESULTS**

The physical value chain starts with the multi-functional content supplied by the provider, which is then distributed and supported by the information infrastructure, which results in the supplier providing the actual interaction with the client. At the same time, a virtual value chain is supported and formed by the content of processes to ensure the viability of the content supplied by the provider (due to the efficiency of purchasing, production, distribution, and sales of services of traditional companies). For each value chain, the forms of management were individualized.

The separation of the value chains has led to the fact that there is now a qualitative new two-level management within which a conventional horizontal line on the physical and virtual lines of the cost-creation of services that have been transferred to the category of multifunctional services can be carried out. Such management expands the

classical management approach to improving the efficiency of work by influencing service functions on the client's request and providing access to certain resources or services. At the same time the expanded content of management is formed due to the physical representation of different processes of cost creation and virtualization of services cost as multi-functional services of telecommunication and mobile communication operators on a wide range of directions, shown in fig.1. For example, the types of management, both physical and virtual value chains, relate to the management of the creation of the service as multi-functional providers, in the following directions:

- public telephone network services (which are used to transmit and redirect voice, data, and video messages from a fixed user location or public and semi-public coin and card-based telephones);
- customer call management services from the user's fixed location (switching to a line that is in hold mode, forwarding a call, determining who is calling by phone, three-way connection, call indicator, call waiting, call filtering, call blocking, automatic answer-ring, call answer, voice messages, and the voice menu);
- wire communication services between certain points only for client use (provision of a wire commu-

nication to private lines by telecommunication providers);

— providing leading communication means for receiving, stopping, or transmitting phone calls to another provider (intersystem connection, processing or termination of domestic or international phone calls, long-distance connection for telephone calls from a paid payphone or other local call providers, for the joint use of the equipment, such as the installation of power lines, the line use);

— data transmission services by wire-line communication networks (access to wired facilities and services specifically designed for efficient data transfer based on a pay-as-you-go system);

— wire-based services in the Internet (services of Internet highways, services on provision of narrow-space access to the Internet through wired networks, services on provision of wide-space access to the Internet through wired networks, services of conducting electric communication in Internet network, others);

— services of distribution of programs to end-users through the wired infrastructure (software distribution services to end-users through wired infrastructure);

— mobile communication services and private network services for wireless communication systems (providing access and use of switched or non-switched networks to transmit voice, data, and video messages, short message transmission, multimedia messaging systems, internet service, mobile device compatible, etc.);

— services of private networks for wireless communication systems (provision of wireless connection by the telecommunication company to private lines to telecommunication providers);

— services of communication operators in the field of wireless electric communication (transfer of wireless data exchange traffic from one Internet service provider to another).

The negative features of management are determined by the content of the directions generating the value and by the list of business units involved in the chain. For example, in terms of the physical value chain the negative management features involved in the chain of service and logistics units (including suppliers provide the firm with the necessary resources) and those involved in the production of digital services [1; 2; 3]. The peculiarity of the physical value chain of telecommunication services is that it passes through all the business units available after the other, changing its cost and service properties. By the above-mentioned form within the virtual chain of value creation, the management of telecommunication enterprises acquires forms, which are detailed by the type of activity units involved in its business units. According to the types of business units of telecommunication enterprises, four basic forms of management of the physical value chain were allocated, namely:

**Table 1. The characteristic of basic forms management of telecommunication enterprises in the digital economy conditions**

Management form	Direction of management form	Methods, means of management	Management principles
logistics	control Incoming and Outgoing logistics operations	planning and organization of incoming movement of materials, parts, and/or finished material base from suppliers to telecommunication enterprises storage and movement of the end product and associated information flows from the enterprise to the consumer	creation of competitive advantages with the help of information technologies; virtual value chain; sales of services as a single functional remote service*; combination with other analysis tools.
operational	control operations from converting invested resources into output	planning and organization of processes of virtual transformation of invested resources (in the form of raw materials, labor, and energy) into production (in the form of various telecommunication services forming the service).	
marketing	control of services sales operations as ready-made services	planning, organization of a remote sale of products and processes for creation, communication, delivery, and exchange of offers, which are valuable for clients	
service	control of operations to provide efficient service to the buyer after the sale of services	development and implementation of measures necessary for effective work of the service on the client after its sale and delivery	

Source: formed based on [1; 2; 3].

1) logistics (oriented on the management of inbound and outbound logistics operations);

2) operational (oriented on operations management from the conversion of invested resources into production);

3) marketing (oriented on the management of operations on sale of services as ready-made services);

4) service (oriented on operations management to provide efficient service to the buyer after the sale of services).

Thus, the characteristic of basic forms management of telecommunication enterprises in the digital economy conditions (Table 1) allows marking their orientation on functionality and general planning and organization of the cost flow as multi-functional services.

The virtual value chain includes infrastructure and technology business units necessary for the viability of the content supplied by the provider (i.e., the viability of the physical value chain). According to the involved business units of telecommunication enterprises were allocated three auxiliary types of activity, and thus quite specific accompanying forms of management aimed at controlling the viability of the value chain, namely:

1) infrastructure (oriented on the management of the aggregate of buildings, buildings, systems, and services necessary for ensuring the viability of business units);

2) technological (oriented on the management of new knowledge and their application in the creation of services or technology of rendering of services);

3) supplier (oriented on procurement decision management).

Thus, the characteristics of accompanying forms of management of telecommunication enterprises in the digital economy conditions (Table 2) show their orientation to search for further reserves of cost reduction and growth

of revenues from service provision based on the content supplied by the provider distribution and support of the information infrastructure.

According to the above mentioned, the peculiarities of management of telecommunication enterprises in the digital economy are oriented on functionality, general planning, organization of the physical flow of cost from multifunctional services, as well as a related search of further reserves of cost reduction and income growth based on content supplied by the provider, to distribution with support of information infrastructure.

**SUMMARY RESEARCH SUMMARY AND PROSPECTS FOR FURTHER TASKS IN THIS AREA**

Within the framework of the study, it is noted that modern management of telecommunication enterprises is characterized by systemic transformations formed in connection with the connection of classical value chain on two interrelated, among which virtual chain and a physical chain. The following conclusions were made:

1. The physical value chain starts with the multi-functional content supplied by the provider, which is then distributed and supported by the information infrastructure, which results in the supplier providing the actual interaction with the client. At the same time, a virtual value chain is supported formed by the content of the processes to ensure the viability of the content supplied by the provider. The separation of the value chain has led to the fact that there is now a new quality two-level management within which a conventional horizontal line on the physical and virtual value chain can be carried out, which has become a part of the multi-functional services.

2. In physical value chain management of telecommunication enterprises taking forms, detailed by the type of business units involved in it. Four basic forms of management of the physical value chain were allocated, namely: logistic (oriented on the management of operations of input and output logistics); operational (oriented on the management of operations of transformation of invested resources into production); marketing (oriented on the management of operations of sale of services as ready services); service (focused on managing operations to provide efficient service to the buyer after the sale of services).

3. Within the framework of the virtual value chain, the infrastructure and technology business units are required for the viability of the content supplied by the provider (i.e. the viability of the physical value chain). According to the business units involved, the following related forms of management were allocated, aimed at managing the viability of the virtual value chain, namely: infrastructure (oriented to managing the aggregate of buildings, buildings, systems, and services necessary to ensure the viability of business units); technological (oriented on the management of new knowledge and their application in the creation of services or technology of rendering of services); supplier (oriented on the management of decision making on purchase).

The perspectives of further research are to develop the models of two-level management of telecommunication enterprises in the digital economy.

**Table 2. Characteristics of accompanying forms of management of telecommunication enterprises in the digital economy conditions**

Management form	Direction of management form	Methods, means of management	Management principles
infrastructure	management of the aggregate facilities, buildings, systems, and services necessary for the provision of services	includes accounting, financing, control, public relations, quality assurance, and strategic development	management of the value chain's viability based on the content supplied by the provider before the distribution and support of the information infrastructure; focus on finding further reserves to reduce costs and increase revenues from service delivery (ensuring revenue growth).
technological	management of new knowledge acquisition and application in the creation of services or technology of service delivery	refers to the hardware, hardware and software, procedures, and technical knowledge used to convert input data into output data	
supplier	management of procurement decisions	purchase of goods, services or works from an external source	

Source: formed based on [1; 3].

**Література:**

- Jonathan Mitchell, Christopher Coles, Jodie Keane (2009). *Upgrading Along Value Chains: Strategies for Poverty Reduction in Latin America*. Comercio y Pobreza en Latino America (COPLA).
- Ковшова І. О. Особливості маркетингового менеджменту телекомунікаційних підприємств, *Економіка і Фінанси*, 2017, № 6, с. 39—48.
- Ковшова І. О., Єщенко П. С., Жебка В. В. Організаційно-економічні особливості суб'єктів підприємницької діяльності в сфері телекомунікацій України, *Економіка, менеджмент, бізнес*", 2012. № 1 (5), С. 20—23.
- Офіційний сайт ProAgroGroup, Послуги у сфері телекомунікацій (електрозв'язку), 2022, URL: <https://proagro.com.ua/> (дата звернення 14.12.2022).
- Zaiachkovska H., Tserklevyuch V., Vovk S. The Influence of the Global Perfumery Market on the Principles of the Formation of a Tourist Flow, 2021, *Studies of Applied Economics*, vol. 39(5), URL: <https://ojs.ual.es/ojs/index.php/eea/article/view/5232> (дата звернення 14.12.2022).

**References:**

- Mitchell, J. Coles, C. and Keane, J. (2009), *Upgrading Along Value Chains: Strategies for Poverty Reduction in Latin America*, Comercio y Pobreza en Latino Am?rica (COPLA), London, UK.
- Kovshova, I.O. (2017), "Peculiarities of marketing management of telecommunications enterprises", *Ekonomika i Finansy*, vol. 6, pp. 39—48.
- Kovshova, I.O., Yeshchenko, P.S. and Zhebka, V.V. (2012), "Organizational and economic features of business entities in the field of telecommunications of Ukraine", *Ekonomika, menedzhment, biznes*, vol. 1 (5), pp. 20 — 23.
- Official website ProAgroGroup (2022), "Services in the field of telecommunications (electrical communications)", available at: <https://proagro.com.ua/> (Accessed 14.12.2022).
- Zaiachkovska, H., Tserklevyuch, V. and Vovk, S. (2021), "The Influence of the Global Perfumery Market on the Principles of the Formation of a Tourist Flow", *Studies of Applied Economics*, vol. 39(5), available at: <https://ojs.ual.es/ojs/index.php/eea/article/view/5232> (Accessed 14.12.2022). *Стаття надійшла до редакції 16.12.2022 р.*