



CONCEPTUAL FUNDAMENTALS OF ORGANIZATIONAL AND ECONOMIC MECHANISM FORMATION OF ECONOMIC SUSTAINABILITY MANAGEMENT OF A TELECOMMUNICATION ENTERPRISE

Fundamentos conceituais da formação do mecanismo econômico e organizacional da gestão da sustentabilidade econômica de uma empresa de telecomunicações

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ABSTRACT

Modern telecommunications companies operate in conditions of risk and uncertainty due to both external and internal factors. Due to the influence of various factors, companies may find themselves in a state of crisis due to the lack of a management mechanism, the main purpose of which is to ensure economic stability and efficiency based on sustainable capacity building. The purpose of this article is to identify the factors that affect the economic stability of telecommunications enterprises in Ukraine, and study their impact on the integrated indicator in order to form an organizational and economic mechanism for managing economic stability. The study was carried out using the following methods: analysis, synthesis, generalization, systematization, correlation and regression analysis. The main tendencies of Ukrainian telecommunication networks development are defined in this research. It is established that the crisis conditions in the world and national economy have led to the development of organizational and economic mechanism for managing the economic stability of telecommunications enterprises. The key structural element of this mechanism is proposed to determine the assessment of economic stability based on the use of a set of balanced indicators. Based on correlation and regression analysis, a significant dependence of the overall integrated indicator of economic stability on the subscriber component, moderate - on the component of internal business processes and staff training and development and a weak inverse dependence on the financial component. It was proved an expediency of using multicollinearity to check the tightness of the relationship between the analyzed variables in the regression model.

Keywords: Economic stability; Organizational and economic mechanism; Management; Telecommunications company; COVID-19.

Jel Classification: D81, I15, L96, O12.

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FUNDAMENTOS CONCEITUAIS DA FORMAÇÃO DO MECANISMO ECONÔMICO E ORGANIZACIONAL DA GESTÃO DA SUSTENTABILIDADE ECONÔMICA DE UMA EMPRESA DE TELECOMUNICAÇÕES

Conceptual fundamentals of organizational and economic mechanism formation of economic sustainability management of a telecommunication enterprise

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RESUMO

As empresas de telecomunicações modernas operam em condições de risco e incerteza devido a fatores externos e internos. Devido à influência de diversos fatores, as empresas podem se encontrar em situação de crise por falta de um mecanismo de gestão, cujo objetivo principal é garantir a estabilidade econômica e a eficiência com base na capacitação sustentável. O objetivo deste artigo é identificar os fatores que afetam a estabilidade econômica das empresas de telecomunicações na Ucrânia e estudar seu impacto no indicador integrado, a fim de formar um mecanismo organizacional e econômico para gerenciar a estabilidade econômica. O estudo foi realizado utilizando os seguintes métodos: análise, síntese, generalização, sistematização, correlação e análise de regressão. As principais tendências de desenvolvimento de redes de telecomunicações ucranianas são definidas nesta pesquisa. Constata-se que as condições de crise na economia mundial e nacional levaram ao desenvolvimento de mecanismos organizacionais e econômicos para a gestão da estabilidade econômica das empresas de telecomunicações. O principal elemento estrutural deste mecanismo é o de determinar a avaliação da estabilidade econômica com base na utilização de um conjunto de indicadores equilibrados. Com base na correlação e análise de regressão, uma dependência significativa do indicador global integrado de estabilidade econômica na componente de assinantes, moderada - na componente de processos de negócio internos e formação e desenvolvimento de pessoal e uma fraca dependência inversa na componente financeira. Comprovou-se a

conveniência do uso da multicolinearidade para verificar a rigidez da relação entre as variáveis analisadas no modelo de regressão.

Palavras-chave: Estabilidade econômica; Mecanismo organizacional e econômico; Gestão; Empresa de telecomunicações, COVID-19.

Classificação Jel: D81, I15, L96, O12.

INTRODUCTION

The modern telecommunications industry of the world is moving in a new direction, which is associated with the development of 5G technologies, changing consumer behavior due to the COVID-19 pandemic, increasing data consumption and increasing the volume of services provided over networks.

The economic stability of the telecommunications enterprise is objectively characterized as the basis for providing promising opportunities for its stable operation and effective development. The telecommunications sector has undergone the most drastic changes in terms of market liberalization and, according to Torres and Bachiller (2013), has dominated privatization processes in most countries, including Ukraine. The economic stability of the telecommunications company becomes especially important for countries with economies in transition, for which the presence of recessive and stagnant processes caused by the crisis through COVID-19, is particularly acute. That is why ensuring economic stability is seen as a key guideline for achieving the best results of telecommunications companies. The expediency and advantages of such a direction of the management system are due to the fact that in the presence of the proper level of economic stability, stable development of the telecommunication enterprise is carried out. However, changing economic conditions, the lack of a mechanism to respond to the global crisis caused by the pandemic, the inability to clearly predict the situation have led to the problem of lack of an effective mechanism for managing economic stability.

All mentioned above determine the fundamental specifics of managing the economic stability of a telecommunications company. The data obtained during the evaluation will contribute to the fullest possible compliance with the particularly important principles of management interaction. It is possible to carry out this assessment with the help of a set of balanced indicators. Thus, there is a need to develop conceptual foundations for the formation of organizational and economic mechanism for managing the economic stability of the telecommunications enterprise based on a comprehensive assessment of its level.

The purpose of the article is to identify factors that affect the economic stability of telecommunications enterprises in Ukraine, and study their impact on the integrated indicator in order to form an organizational and economic mechanism for managing economic stability

1 LITERATURE REVIEW

The category of "sustainability" is the object of close attention of many researchers in various fields, due to the need to study the functioning of complex systems and their elements. At the micro level, the methodology of studying the economic sustainability of enterprises as open systems is now studied in the context of sustainable development (Abdulkadyrova et al., 2019; Juettner et al., 2020).

Piletska (2014) believes that the economic stability of the enterprise is a form of equilibrium, as a result of which in the conditions of external negative factors its properties of functionality (integrity) are manifested, allowing to adapt to destabilizing factors by complex formation and use of potential in each element of the system. to carry out evolutionary development, to keep competitive advantages for the purpose of satisfaction of public and social needs both to collective of the given enterprise, and a society as a whole. Otlyvanska (2017) and Kryvovyazyuk et al. (2021) note that the main and primary condition for ensuring the stable development of a modern enterprise is the intensification of its investment activities with the implementation of appropriate strategies, the effectiveness of which is determined by the prospects for their development and sustainability in the external environment.

Siegrist et al. (2019) and Gaspar (2014) believe that the economic rationale for stability can be based on reducing costs, increasing revenues, and managing risks and intangible assets. In turn, Faber et al. (2005) believe that there is some confusion regarding the definition of the essence of economic sustainability, which hinders the study of the conceptual framework for its implementation. Schaltegger et al. (2016) found that the current approach to sustainable development is not efficient enough to produce the required radical transformation of enterprises, industries and societies toward the true, essential, or sustainable development.

The latest scientific studies of economic sustainability are closely related to the study of the impact of coronavirus infection COVID-19 on this category. In particular, Murray (2020) believes that it is economists who can help fight COVID-19 and can prevent future epidemics. Fetzer et al. (2020) assessed the rate of onset and

causal determinants of economic anxiety as a prototype of economic sustainability, and focused on how the perception of pandemic risk factors creates so-called "economic concerns". Gern, K.-J., Möhle, S. (2020) and Birbirenko et al. (2020) draw attention to the indirect effects on the economy resulting from measures to curb pandemics or changes in consumer behavior. Carlsson-Szlezak et al. (2020) believe that business leaders should carefully review market signals between different asset classes, develop a sustainability model, and review market boundaries on recession and recovery models, and investigate the history of pandemics and shocks.

Almuqren and Cristea (2021) emphasize that to assess the economic consequences of the crisis caused by the COVID-19 pandemic and given the vast amount of data on telecommunications companies, efficiency studies can and should be used to find solutions in competitive and volatile markets. While studying the activities of telecommunications companies, Kien (2017) emphasizes that efficiency and profitability are the top priorities of any enterprise, so the study of the relationship between efficiency and profitability should be comprehensive and continuous to predict the prospects of the business. At the same time, Widiastuti and Widya (2020) believe that the level of efficiency and concentration in the telecommunications services market are interrelated and influence each other. Therefore, the study of the cellular industry should be carried out through the prism of an effective market structure and in conditions where the number of consumers and service providers is small.

The Suhartoko study (2020) aims to determine the efficiency of telecommunications companies in East and Southeast Asia and is based on the use of correlation analysis to calculate the correlation coefficient between variables and efficiency values. A similar area is the study of Hendrawan, Gayuh and Wa (2019), which used stochastic analysis to study the efficiency of telecommunications companies in Southeast Asia and used capital expenditure (CapEx), operational expenditure (OpEx), Total Assets and Personal Expenses of telecommunication operators. Torres and Bachiller (2013) used the Data Envelopment Analysis (DEA) methodology to study their efficiency and capacity for comparative analysis of the largest European privatized state-owned telecommunications operators, as this analysis model is appropriate for companies whose production process does not lead to product before providing the service.

Scientific research on this issue includes the interpretation of economic stability as an anti-crisis phenomenon, as a state of the enterprise, which it is able to "resist", despite the many external and internal fluctuations. However, in our opinion, the issues concerning the scale of these destabilization processes have not been sufficiently covered, namely the circumstances under which the fundamental foundations of the stability of not only an individual economic entity, not only an individual state, but almost the whole world and the whole world economy. It should also be noted the inadequacy of modern scientific proposals to make proposals for managing the economic sustainability of telecommunications companies operating in a crisis caused by the spread of COVID-19.

2 METHODS AND METHODOLOGY

The largest telecommunication companies of Ukraine were selected for the research, namely: PJSC Ukrtelecom, PJSC Kyivstar, and PJSC Vodafone Ukraine. The study period of macroeconomic indicators covers 2010-2020, and of the microeconomic is 2018-2020.

The sources of information for the study were data from the State Statistics Service of Ukraine (2021) and the National Commission for State Regulation of Communications and Informatization (2021).

The assessment of the economic stability of telecommunications enterprises was carried out based on the calculation of the overall integrated indicator of economic stability (y). The following factors of the internal environment were selected as factor indicators influencing the integrated indicator of economic stability (y) in the study:

- financial component ($x1$);
- subscriber component ($x2$);
- internal business processes ($x3$);
- staff training and development ($x4$).

To calculate the impact of factors on the overall integrated indicator of economic stability, correlation analysis was used using the package "Data Analysis" in MS Excel, which allowed identifying the most statistically significant factors and assessing their relationship with the performance trait (y).

To check the closeness of the relationship between the analyzed variables (x_1, x_2, x_3, x_4 and y), the presence of multicollinearity, i.e. close linear dependence or strong correlation between factor (independent) variables in the regression model was investigated. This approach is chosen because multicollinearity negatively affects the quantitative characteristics of the econometric model or makes its construction impossible.

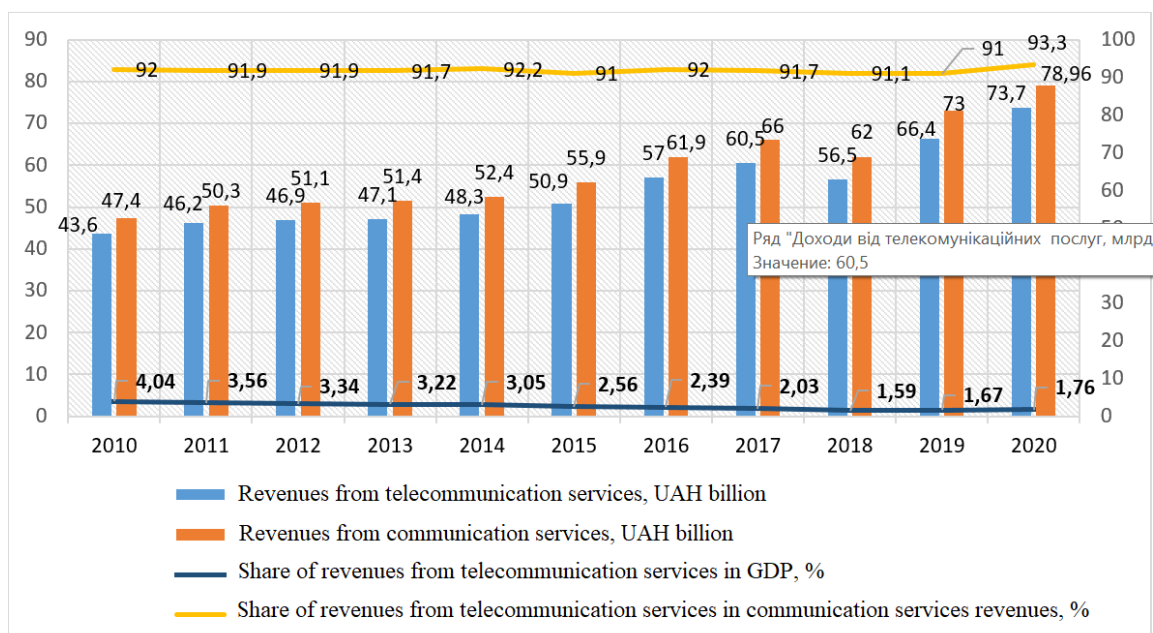
3 RESULTS

The size of the telecommunications services market in the world in 2020 was estimated at 1,677.7 billion US dollars, and according to experts in 2021-2028, the growth rate will grow by 5,4% (Grand View Research, 2021). Next-generation technologies, the growing number of mobile subscribers, the demand for high-speed data connectivity and managed services are factors contributing to the growth of the market. The global communication network is undoubtedly one of the most significant areas of continuous technological progress over the past few decades.

An important condition for the implementation of economic reforms in Ukraine is the policy of ensuring the economic stability of telecommunications enterprises, which, in turn, will provide opportunities to preserve and develop the potential of an important sector of the economy, increase the efficiency of strategic management. A comprehensive analysis of the impact of the external environment of telecommunications enterprises on their economic stability should be carried out based on studying the detailed characteristics of the field of communications and telecommunications of Ukraine, which plays an important role in further sustainable economic development and society.

The analysis of the main indicators that characterize the results of the telecommunications sector in Ukraine in 2010-2020 is shown in Figure 1.

Fig. 1. Revenues from communication and telecommunication services of Ukraine in 2010-2020.



All indicators that characterize the market of telecommunications services in Ukraine tend to grow, which not only positively characterizes the industry, but also indicates the prospects for development.

According to the National Commission for State Regulation of Communications and Informatization (2021), the main trends in the development of telecommunications networks in Ukraine in 2020 were:

- expansion of coverage of the territory of Ukraine by telecommunication networks of mobile (mobile) communication of the fourth generation (4G) with the use of radio technology "International mobile (mobile) communication IMT" in the bands of 1800 MHz and 2600 MHz;
- reforming and launching 4G networks in the 900 MHz radio frequency band by mobile operators to provide modern telecommunications services in rural areas and on Ukrainian highways;
- increase in the volume of services and the number of Internet access users;
- increasing the number of users of modern electronic services, primarily in the fields of administrative services, e-commerce, medicine, education (e-Gov, e-Ticket, bank-ID, mobile-ID, GooglePay, ApplePay, e-Health, etc.);
- growing consumer demand for machine-to-machine (M2M) and Internet of Things (IoT) services, which are in demand among enterprises such as banks, security services, utilities, transport and logistics companies;
- continuation of measures to build the National Center for Operational and Technical Management of Telecommunications Networks of Ukraine to ensure the preparation and use of telecommunications networks of Ukraine in a state of emergency and martial law.

At the same time, the market of telecommunication services was characterized by certain problems, among which the spread of coronavirus infection COVID-19 is the main obstacle to the development of telecommunication enterprises of Ukraine and contributed to the reduction of their economic stability.

To assess the economic viability of a telecommunications company that operates in conditions of risk and uncertainty, a set of balanced scores is proposed, which consists of four components: finance, subscribers, internal business processes, training and staff development.

Because of the received settlement data on estimation of the specified components, the general integral indicator of economic stability of the telecommunication enterprise is calculated. Statistical estimates to determine the accuracy of the selection of the regression model allowed calculating the values of the free term and the regression coefficients of the performance indicators of each component of the complex of balanced performance of telecommunications enterprises.

The results of the assessment of the economic stability of leading Ukrainian telecommunications companies are presented in Table 1.

Table 1. Comprehensive assessment of the economic stability of Ukrainian telecommunications companies

Indicator	PJSC Ukrtelecom			PJSC Kyivstar			PJSC "Vodafone Ukraine"		
	2018	2019	2020	2018	2019	2020	2018	2019	2020
Finance (x1)	0.4740	0.4624	0.4726	0.6107	0.5608	0.5959	0.3847	0.4108	0.4425
Subscribers (x2)	0.4994	0.4715	0.4503	0.6711	0.6893	0.6619	0.6412	0.5907	0.5214
Internal business processes (x3)	0.3337	0.3118	0.3200	0.5894	0.5717	0.5144	0.5798	0.4314	0.4909
Staff training and development (x4)	0.5115	0.4897	0.5217	0.7515	0.6983	0.7134	0.5904	0.6605	0.7117
Integrated indicator of economic stability (y)	0.5065	0.4891	0.4438	0.6853	0.6720	0.6482	0.6158	0.6521	0.6387

While conducting correlation-regression analysis, it is important to test the model for the phenomenon of multicollinearity. For the research, we use the data of PJSC "Ukrtelecom", given in Table 1, to construct a correlation matrix, which is used to measure the closeness of the relationship between the selected factor values and the performance indicator (Table 2).

Table 2. Matrix of paired correlation coefficients

	in	x1	x2	x3	x4
<i>in</i>	1	-0.140	0.946	0.404	0.538
<i>x1</i>	-0.140	1	0.188	0.848	0.909
<i>x2</i>	0, 946	0.188	1	0.678	-0.236
<i>x3</i>	0.404	0.848	0.678	1	0.553
<i>x4</i>	0.538	0.909	-0.236	0.553	1

The calculation of the matrix of paired correlation coefficients allows us to conclude that there is a significant relationship between the performance indicator (*y*) and the factor value *x2* (subscriber component indicator), moderate dependence on *x3* (internal business process component indicator), *x4* (staff training and development indicator) and weak inverse relationship (-0,140) with the value of *x1* (indicator of the financial component).

Let us note that the test for the presence of the multicollinearity phenomenon is possible to determine the dependence of factor values and necessitates the exclusion of some factors from the economic-mathematical model. According to the Chaddock scale, this exception applies to factors where the relationship between the values of the absolute value of the correlation coefficients is less than 0,7. In our model, such an exception should be applied to the factor values *x1* (financial component), which has a very strong relationship between the factor values, namely the relationship between *x1* and *x3* is 0.848, the relationship between *x1* and *x4* is 0,909.

Taking into account the results of the study, we construct a correlation-regression matrix on the basis of only two variables *x2* and *x4*, since their correlation coefficient is greater than 0.5.

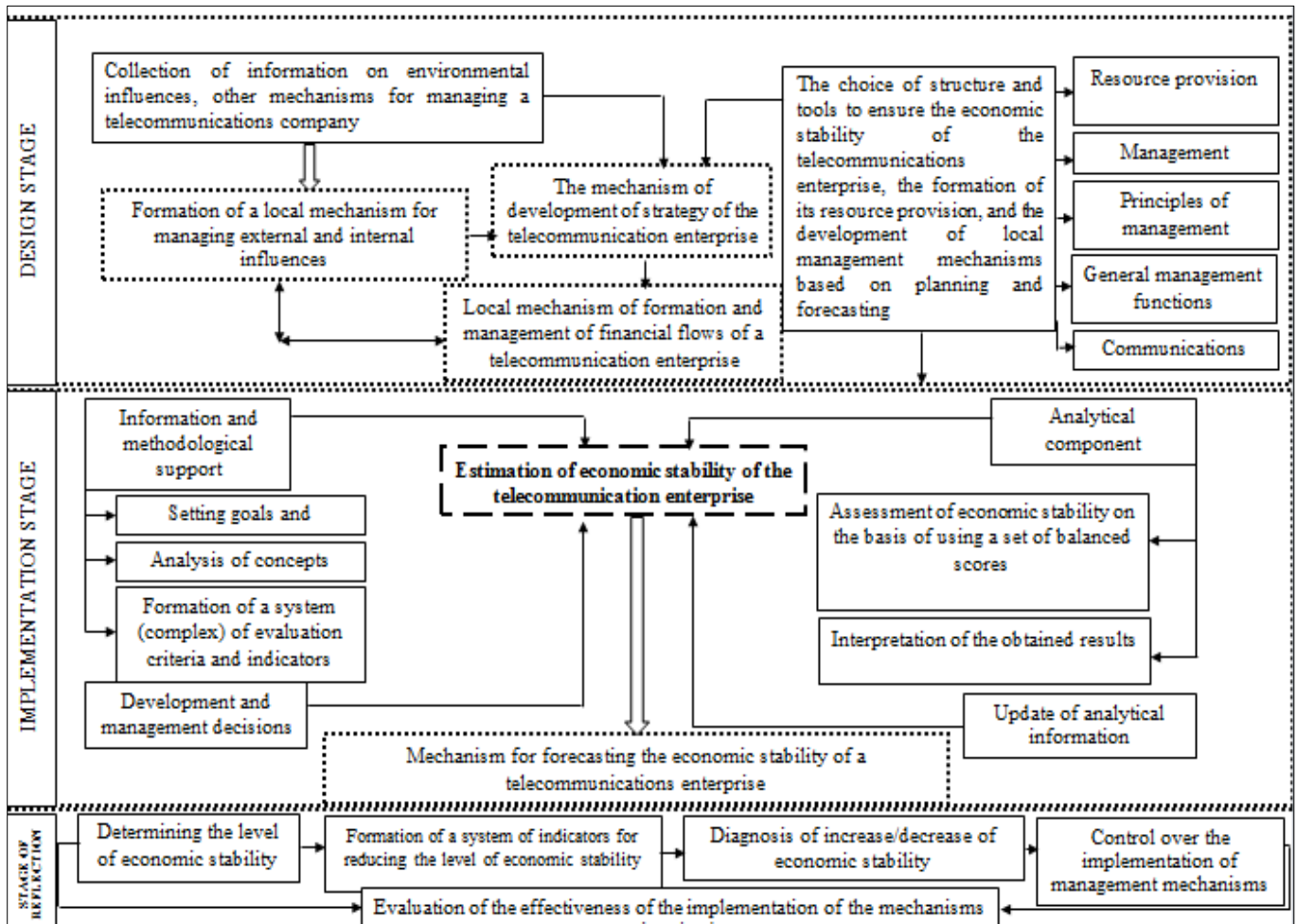
In this case, the regression equation will look like:

$$y = 0.275 + 1.14x1 - 0.66x4$$

Estimation of economic stability of the telecommunication enterprise becomes a key component of the organizational and economic mechanism of management of economic stability which conceptual bases of formation are represented in Figure 2. The formation of the mechanism occurs in the process of passing three stages: design, implementation and reflection. The design stage is characterized by the processes of collecting information (mainly about the effects of the external environment), the choice of tools to ensure economic stability, the main purpose of which is based on certain principles and methods. The basic principles usually include systematization, purposefulness, hierarchy, competence, adaptability, and the feedback.

At the stage of implementation, information-analytical blocks are formed, the main purpose of which is to assess the economic stability of the enterprise. Evaluation is based on the use of a set of balanced scores. No less important element of this stage is the implementation of the mechanism for forecasting the economic stability of the telecommunications company. It is based on the received data of the specified mechanisms that development and acceptance of administrative decisions concerning adjustment (if necessary) of the chosen strategy of development is carried out. This adjustment is made based on monitoring changes in the economic stability of the telecommunications company, which operates in conditions of risk and uncertainty.

Fig. 2. Organizational and economic mechanism for managing the economic stability of the telecommunications enterprise



At the stage of reflection is determined the level of economic stability of the telecommunications company. A system of a number of indicators is also being formed, with the help of which it is possible to state a decrease in the level of economic stability, which is subject to a certain diagnosis. Of course, all stages are subject to control, which will ultimately determine and assess the effectiveness of the mechanisms involved.

4 DISCUSSION

Among the most important areas of telecommunications services in the study from Deloitte (2021), the greatest attention is focused on sustainable development and focusing on customer needs. Almuqren and Cristea (2021) refer to external factors that affect the efficiency of telecommunications companies, such as the customer satisfaction based on Sentiment Analysis. In this study, we did not take into account the factors that characterize the level of market development and market concentration in the field of cellular telecommunications. At the same time, we agree with the conclusions of Widiastuti and Widya (2020), which believe that the variables used in the calculation of economic sustainability and efficiency include income from fixed communication services and income from non-fixed communication services.

The results of the study by Hendrawan, Gayuh, Wa (2019) showed that the input variables, consisting of CapEx, OpEx, total assets and personal expenses, had a significant impact on the efficiency of telecom operators. At the same time, Personal, CapEx and OpEx have a positive impact on the efficiency of telecommunications companies, while Total Assets have a negative impact on the surveyed companies. The results of this study revealed a significant dependence of the overall integrated indicator of economic stability and the factor value of the subscriber component, a moderate dependence on the component of internal business processes, staff training, development, and a weak inverse relationship with the financial component. The analysis method used by us correlates with the method proposed in the Suhartoko (2020) study to determine the efficiency of

telecommunications companies in East and Southeast Asia. At the same time, we propose the use of multicollinearity to check the closeness of the relationship between the analyzed variables in the regression model.

Torres and Bachiller (2013) argue that factors such as privatization, government regulation, and organizational change need to be considered in a study of telecommunications companies to determine their effectiveness. In a study of European telecom operators, the authors conclude that not all companies have been able to adapt equally to a competitive market. Inefficient companies have traditionally operated in the protectionist market, and they continue to be in a monopoly despite market liberalization. At the same time, the assessment of the economic sustainability of a telecommunications company is a defining component of the organizational and economic mechanism of economic sustainability management, the conceptual framework of which is proposed in this study. Formation of the mechanism of management of economic stability of the telecommunication enterprises can cover three stages: design, implementation and reflection. Thus, all stages of management of economic stability of the telecommunication enterprise allow adapting operatively to changing conditions of external environment and are focused on continuous reception of profit with a possibility of its increase in the end.

CONCLUSION

The economic environment in which the Ukrainian telecommunications company operates is characterized by uncertainty, the negative trends of which have intensified against the background of the spread of coronavirus infection COVID-19. The presence of a pandemic has contributed to the emergence of risky situations in the activities of telecom operators and critical manifestations - a crisis characterized by a complex of contradictions, reduces economic stability and slows down further development. As a result, the issues of formation, preservation and increase of economic stability based on an effective organizational and economic mechanism for managing the economic stability of the enterprise in conditions of risk and uncertainty become important.

Among the other sectors of Ukraine's economy, communications and informatization have suffered the least from the pandemic, as the population has continued to use communications. However, some losses are still due to the decline in the purchasing power of the population, the abolition of roaming, the closure of borders and the slowdown in the supply of telecommunications equipment to Ukraine and the development of telecommunications networks. All this affected the economic sustainability of telecommunications enterprises and necessitated the development of strategic aspects of its recovery.

The developed theoretical and methodological principles of strategic management of economic stability of telecommunications enterprises are of a recommendatory nature, but their implementation in the practice of telecommunications operators will increase the efficiency of the telecommunications enterprise, which operates in modern market conditions.

Prospects for further research are the development of methods and practical recommendations for forecasting the economic stability of the telecommunications company, taking into account the consumer interests of users.

REFERENCES

- ABDULKADYROVA M., BETILGIRIEV M., ISRAILOVA YA., ISRAILOV M., TIBILOVA A. Economic Sustainability as an Element of The Company Efficiency Mechanism, in *Conference: SCTCMG 2019 - Social and Cultural Transformations in the Context of Modern Globalism*, DOI: <https://doi.org/10.15405/epsbs.2019.12.04.186>, 2019
- ALMUQREN L., CRISTEA A.I. (2021) COVID-19's Impact on the Telecommunications Companies. In: Rocha Á., Adeli H., Dzemyda G., Moreira F., Ramalho Correia A.M. (eds) *Trends and Applications in*

Information Systems and Technologies. WorldCIST 2021. Advances in Intelligent Systems and Computing, vol 1368. Springer, Cham. DOI: https://doi.org/10.1007/978-3-030-72654-6_31

BIRBIRENKO S., ZHADANOVA Y., BANKET N. Influence of pandemic of coronavirus infection COVID-19 on economic resilience of Ukrainian enterprises. *Economic Journal-XXI*, 183(5-6), 66-78, 2020. DOI: <https://doi.org/10.21003/ea.V183-07>

CARLSSON-SZLEZAK P., REEVES M., SWARTZ P. (2020) What Coronavirus Could Mean for the Global Economy. *Harvard Business Review*, 2020. <https://hbr.org/2020/03/what-coronavirus-could-mean-for-the-global-economy>.

DELOITTE. 2021 outlook for the US telecommunications, media, and entertainment industry, 2021. <https://www2.deloitte.com/us/en/pages/technology-media-and-telecommunications/articles/media-and-entertainment-industry-outlook-trends.html>

FABER, N., JORNA, R., ENGELEN, J. V. The sustainability of “sustainability” – a study into the conceptual foundations of the notion of “sustainability”. *Journal of Environmental Assessment Policy and Management*, 7(1), 1-33, 2005.

FETZER T., HENSEL L., HERMLE J., ROTH C. Coronavirus perceptions and economic anxiety. *Review of Economics and Statistics*, 1-36, 2020. DOI: https://doi.org/10.1162/rest_a_00946

GASPAR, J. Economic growth and multiple equilibria: A critical note. *Economic Modelling*, 36, 157-160, 2014.

GERN, K-J., MÖSLE, S. The impact of the COVID-19 pandemic on the global economy: Survey-based evidence from free zones, *Kiel Policy Brief*, No. 139, 2020. .Kiel Institute for the World Economy (IfW), Kiel.

GRAND VIEW RESEARCH. Telecom Services Market Report, 2021. <https://www.grandviewresearch.com/industry-analysis/global-telecom-services-market>

HENDRAWAN R., GAYUH T. P., Wa K. Efficiency analysis of telecommunications companies in Southeast Asia using Stochastic Frontier Analysis (SFA) method. *Journal Siasat Bisnis*, 23(2), 104-112, 2019. DOI: <https://doi.org/10.20885/jsb.vol23.iss2.art3>

JUETTNER, U., WINDLER, K., PODLEISEK, A., GANDER, M. AND MELDAU, S. Implementing supplier management strategies for supply chain sustainability risks in multinational companies, *The TQM Journal*, Vol. 32 No. 5, 923-938, 2020. DOI: <https://doi.org/10.1108/TQM-05-2019-0136>

KIEN, P. X. Researching the relationship between operational efficiency with profitability of telecommunication technology joint-stock companies, *VNU Journal of Science: Economics and Business*, 33(2), 2017. DOI: <https://doi.org/10.25073/2588-1108/vnueab.4069>.

KRYVOVYAZYUK I, OTLYVANSKA G, SHOSTAK L., SAK T., YUSHCHYSHYNA L., VOLYNETS I., VISYNA T. Business Diagnostics as a Universal Tool for Study of State And Determination of Corporations Development Directions And Strategies. *Strategies Academy of Strategic Management Journal*, Issue 2. Vol. 20, 2021

MURRAY, E. J. Epidemiology's Time of Need: COVID-19 Calls for Epidemic-Related Economics. *Journal of Economic Perspectives*, 34 (4), 105-120, 2020. DOI: <https://doi.org/10.1257/jep.34.4.105>.

NATIONAL COMMISSION FOR STATE REGULATION OF COMMUNICATIONS AND INFORMATIZATION. The official web portal, 2021. <https://nkrzi.gov.ua>

OTLYVANSKA, G. A. Investment activity of telecommunications providers: conditions, problems, and trends, *Naukovyj visnyk Polissia*. 2 (10). Vol. 1, 113-119, 2017. DOI: [https://doi.org/10.25140/2410-9576-2017-1-2\(10\)-113-119](https://doi.org/10.25140/2410-9576-2017-1-2(10)-113-119)

PILETSKA S.T. The essence of economic stability and its relationship with crisis processes in the enterprise. *Business Inform*, №5, 286-290, 2014.

SCHALTEGGER, S., LÜDEKE-FREUND, F., HANSEN E. G. Business models for sustainability: a co-evolutionary analysis of sustainable entrepreneurship, innovation, and transformation. *Strategic Organization*, 12(1). 70-78, 2016.

SIEGRIST, M., BOWMAN, G., MERVINE, E., SOUTHAM, C.. Embedding environment and sustainability into corporate financial decision-making. *Accounting & Finance*, 60 (1), 129-147, 2019. DOI: <https://doi.org/10.1111/acfi.12533>

STATE STATISTICS SERVICE OF UKRAINE (2021). Official site. <http://www.ukrstat.gov.ua/>

SUHARTOKO, P. M. S. Analysis of efficiency in telecommunication technology companies in Eastern and South East Asia using analysis data envelopment method, in *Digital Economy for Customer Benefit and Business Fairness. Proceedings of the International Conference on Sustainable Collaboration in Business, Information and Innovation (SCBTII 2019)*, Bandung, Indonesia, October 9-10, 2019, Routledge.

TORRES, L., BACHILLER, P. Efficiency of telecommunications companies in European countries. *J Manag Gov* 17, 863–886, 2013. DOI: <https://doi.org/10.1007/s10997-011-9203-4>

WIDIASTUTI N., WIDYA S. Technical Efficiency on the Operator Industry of Telecommunication in Indonesia, *Palarch's Journal of Archaeology of Egypt/Egyptology*, 17(3), 12-24, 2020.