МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ЗАПОРІЗЬКИЙ НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ

ФІНАНСОВІ СТРАТЕГІЇ ІННОВАЦІЙНОГО РОЗВИТКУ ЕКОНОМІКИ

Збірник наукових праць

Випуск 3 (51), 2021

Економіка та управління підприємствами
Ринкові механізми обліку, аналізу та аудиту в національній економіці
Теоретико-прикладні аспекти економічних процесів в Україні та світі
Фінанси і грошовий обіг
Економіка праці, управління персоналом та маркетинг
Економіко-математичне моделювання та інформаційні технології в економіці

Видавничий дім
«Гельветика»
2021

УДК 33(066)
В53

Фінансові стратегії інноваційного розвитку економіки
DOI https://doi.org/10.26661/vznuen-2414-0287

Фінансові стратегії інноваційного розвитку економіки № 3 (51), 2021.
DOI https://doi.org/10.26661/2414-0287-2021-3-51

Financial Strategies of Innovative Economic Development.
Збірник наукових праць входить до міжнародної індексації

INDEX COPERNICUS (ПОЛЬЩА)

Index Copernicus Value 2018 – 72,75 (ICV 2017 – 55,96); цитування: 1

Усі статті отримують номер DOI

Засновник – Запорізький національний університет
Виходить щоквартально. Збірник виходить з 2006 р.

Затверджено як наукове фахове видання України, в якому можуть публікуватися результати дисертаційних робіт на здобуття наукових ступенів доктора і кандидата наук (Наказ Міністерства освіти і науки України від 17 березня 2020 року № 409)

Рекомендовано до друку та поширення через мережу Internet Вченою радою ЗНУ (протокол засідання № 3 від 28.09.21 р.)

Фінансові стратегії інноваційного розвитку економіки : збірник наукових праць. Запоріжжя : Видавничий дім «Гельветика», 2021. № 3 (51). 128 с.

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
ZAPORIZHZHIA NATIONAL UNIVERSITY

FINANCIAL STRATEGIES OF INNOVATIVE ECONOMIC DEVELOPMENT

Proceedings Scientific Publications

Issue 3 (51), 2021

Economics and business management
National economy's market mechanisms of accounting, analysis and audit
Theoretical and applied aspects of economic processes
in Ukraine and in the world economy
Finance and money turnover
Labour economics, personnel management and marketing
Economic and mathematical modeling and information technologies in economics

Publishing House
"Helvetica"
2021

UDC 33(066)
B53

Financial Strategies of Innovative Economic Development.
DOI https://doi.org/10.26661/vznuen-2414-0287

Financial Strategies of Innovative Economic Development. № 3 (51), 2021.
DOI https://doi.org/10.26661/2414-0287-2021-3-51

Financial Strategies of Innovative Economic Development.

International journal indexing

INDEX COPERNICUS (POLAND)

Index Copernicus Value 2018 – 72,75 (ICV 2017 – 55,96); citation: 1

All journal articles have DOIs

Founder – Zaporizhzhia National University
Published 4 times a year. Scientific bulletin founded in 2006

By the decision of Ministry of Education and Science of Ukraine, dated March 17, 2020, No. 409 was included to the list of the professional publications of Ukraine, in which results of Dissertations in Economy for the Doctor and Candidate scientific degrees may be published

Published and disseminated through the Internet by the decision of academic council of ZNU
(Protocol № 3, dated 28.09.21)

Financial Strategies of Innovative Economic Development : Proceedings Scientific Publications. Zaporizhzhia : Publishing House “Helvetica”, 2021. № 3 (51). 128 p.

ISSN Print 2414-0287
ISSN Online 2707-8426

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РИНКОВІ МЕХАНІЗМИ ОБЛІКУ, АНАЛІЗУ ТА АУДИТУ В НАЦІОНАЛЬНІЙ ЕКОНОМІЦІ

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ISSN Print 2414-0287
ISSN Online 2707-8426

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РЕЦЕНЗІЇ

ISSN Print 2414-0287
ISSN Online 2707-8426

ECONOMICS AND BUSINESS MANAGEMENT

UDC 338.45:629.33]:[330.341: 620.92](100) DOI https://doi.org/10.26661/2414-0287-2021-3-51-01

ANALYSIS OF IMPLEMENTATION OF THE CONCEPT OF SUSTAINABLE DEVELOPMENT IN THE FIELD OF AUTOMOBILE IN THE USA, EUROPE AND ASIA

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Key words:
automobile industry, automotive industry, sustainable development, alternative energy sources, ecological economy, ecological price

The article examines the activities of the automotive industry. Alternative energy sources have been identified. Trends in the development of alternative fuel cars in the United States, Europe and Asia are analyzed. The positive consequences of using alternative fuels have been identified. Problems arising from the disposal of batteries have been identified. It is argued that the largest business in the world economy and the degree of its social responsibility are increasing in the face of global turbulence. The example of the automotive industry reveals various aspects of the economic activity of multinational corporations based on the paradigm of sustainable development. New challenges facing automotive corporations and provocative global trends in attracting business to achieve sustainable development goals have been identified. Ecological principles of socio-economic development and prospects of development, including in the automotive industry. The strategies of a number of corporations to overcome these challenges and strengthen their position in the global market are analyzed.

АНАЛІЗ РЕАЛІЗАЦІЇ КОНЦЕПЦІЇ СТАЛОГО РОЗВИТКУ В АВТОМОБІЛЬНІЙ ГАЛУЗІ В США, ЄВРОПІ ТА АЗІЇ

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Ключові слова:
автомобільна промисловість, автомобільна промисловість, сталий розвиток, альтернативні джерела енергії, екологічна економіка, екологічна ціна

У статті розглядається діяльність автомобільної промисловості. Виявлено альтернативні джерела енергії. Проаналізовано тенденції розвитку автомобілів на альтернативному паливі в США, Європі та Азії. Виявлено позитивні наслідки використання альтернативних видів палива. Виявлено проблеми, що виникають при утилізації батарейок. Стверджується, що найбільший бізнес у світовій економіці та ступінь його соціальної відповідальності збільшуються в умовах глобальної турбулентності. На прикладі автомобільної промисловості розкриваються різні аспекти економічної діяльності транснаціональних корпорацій на основі парадигми сталого розвитку. Визначено нові виклики, які стоять перед автомобільними корпораціями, та провокаційні глобальні тенденції у залученні бізнесу для досягнення цілей сталого розвитку. Екологічні засади соціально-економічного розвитку та перспективи розвитку, у тому числі в автомобільній промисловості. Проаналізовано стратегії низки корпорацій щодо подолання цих викликів та зміцнення своїх позицій на світовому ринку.

Statement of the problem

The automotive industry today is one of the largest industries in the world. The importance of the automotive industry and trends in its development are determined by the place of motor transport in the transport and energy infrastructure, and its overall role in the national economy of a country. Leading countries in the automotive industry occupy the first positions in the world economy. The automotive industry directly affects technological progress and speaks of the solvency of the population, and, consequently, the standard of living. The effective functioning of all sectors of the economy in general and

ISSN Print 2414-0287
ISSN Online 2707-8426

the automotive industry in particular is impossible without sustainable development.

Each production consumes energy and resources, as well as produces waste. The concept of sustainable development in production involves reducing waste and reducing resources used.

But the main tasks of sustainable development of the industrial complex are not only to save resources, but aimed at improving the environmental situation in the region, economic growth in general and more. These tasks of sustainable development of the industrial complex are successfully solved in the field of innovation. That is why innovation is an integral part of sustainable development.

Due to the growing importance and role of corporations in world economic development, experts note signs of transition from the classical form of the international division of labor to the transnational division of labor. Today, multinational corporations (MNCs) account for more than 50% of world industrial production and more than 70% of world trade; corporations control approximately 80% of patents and licenses for inventions and high technologies. If in 2000 the 100 largest economic structures in the world included 71 states and 29 MNCs, in 2017 – 59 states and 41 MNCs [1].

The «cost parameters» of the avant-garde of the modern corporate world are impressive. Thus, the 2,000 largest public companies ranked by Forbes Global 2000 in 2018 together: 39.1 trillion USD sales; 3.2 trillion USD profit; 189 trillion USD assets and 56.8 trillion USD market value [2].

The enormous scale and global coverage of the extensive network structures of the world's leading corporations, whose position often sets new points of socio-economic development in the global space. According to UNCTAD, in 2017, the volume of value added produced by MNC branches in other countries with a staff of 73.2 million people exceeded 9% of world GDP, and exports accounted for a third of world trade [3]. Compared to 1990, the contribution of foreign MNC units to world GDP has increased 1.7 times, the number of employees – 2.7 times, and the volume of accumulated foreign direct investment (FDI) – 14 times. The accumulated volume of FDI in the world by the end of 2017 was at about 31 trillion. dollars, including the annual flow of FDI amounted to more than 1.4 trillion USD (this is about 7% of all fixed capital investments in the world for the year) [4].

At the same time, not only the importance and influence of big business in the world economy is growing, but also the degree of its involvement in sustainable development, and public support for Zur is becoming part of the business reputation, image and operations of many MNCs. However, most corporations often perceive this area as a source of financial costs, and the benefits acquired are not obvious. However, more and more specific practices and projects are emerging, which show that the implementation of the Zur is growing from a set of good wishes and socially responsible activities in the business direction, combined with very specific and tangible commercial effects [5; 6]. If a year ago, according to the consulting company PwC, of the 729 largest MNCs operating in 21 countries and representing 6 industries, only about 200 corporations, one way or another, mentioned Zur in their business strategies; to date, of the 1,141 MNCs operating in 31 countries representing 7 industries, about 72% of corporations mention Zur in their reporting, 25% include it in their business strategies and 14% set specific targets for achieving Zur [7].

Analysis of recent studies and publications

Prerequisites for the formation of the foundations of sustainable development were studied in the works of M. Reimers, L.G. Melnyk, MI The next. Back in 1990, the first inaugural conference of the International Union for Ecological Economics (ISEE), The Ecological Economics of Sustainability, was held in Washington, DC. The conference was attended by leading scientists, ideologues of sustainable development (G. Daly, R. Constance, K. Folke, S. Fouche, A.-M. Janson, etc.) and became a kind of rehearsal for the World Summit, L.G. Melnik was present with the report «Environmental principles of socio-economic development». In Stockholm, at the second ISEE conference «Investing in Natural Capital: Prerequisites for Sustainable Development», held after the World Summit in Rio, L.G. Melnyk made a report on «Environmental price as a measure to optimize investment», which today is quite relevant and promising and even then determined the prospects for development, including in the automotive industry. L.G. Melnyk formulated the concept of the ecological price of a unit of production. Another important area of research is the development of a methodology for forecasting the environmental and economic consequences of the development of industrial complexes and assessing the effectiveness of design decisions taking into account environmental factorsThe impact of global sustainability trends on the automotive sector was studied by Joey Powis. Sustainable development as a driver of innovation in the automotive industry on the example of recycling old cars and their parts was studied by Stephanie Rothbauer.

Objectives of the article

Analyze trends and identify prospects for the development of the automotive industry in the United States, Europe and Asia taking into account the concept of the ecological price of a unit of production and assessing the effectiveness of design decisions taking into account environmental factors.

The main material of the research

The largest automobile companies occupy a special place among the set of MNCs in the context of sustainable development. Automotive industry is traditionally considered the core of mechanical engineering, which, along with the power and chemical industries, is part of the «avant-garde troika» of industries in the era of STR. It is also well known that generating and implementing technical and organizational innovations, creating new capacity and ensuring the continuity of passenger and freight traffic, the industry's products have always been one of the main polluters of the environment. In particular, motor transport remained the main source of CO_2 emissions

ISSN Print 2414-0287
ISSN Online 2707-8426

for the air basin of large agglomerations. As early as the end of the twentieth century, there were several dozen independent car companies in the world, but as a result of the merger and acquisition, there are now just over ten large conglomerates of automakers that have retained historic brands and produce nearly 90% of the industry. And such a global organizational restructuring of the industry, coupled with all the crises in the world economy has not affected the volume of production and sales of vehicles of various classes, which are steadily increasing globally. This is largely due to the stability of demand, which is based on long-term trends as widespread income growth and population mobility, as well as increasing domestic and international movement of goods. Another thing is that the dynamic quantitative growth was associated with serious qualitative transformations of technology based on the active introduction of innovations and new technologies in production, changes in the principles of plants through the integration of digital platforms and infrastructure. In response to the demands of the times, classic cars with internal combustion engines (ICEs) are rapidly transforming into innovative vehicles with a fully electric power plant; turn into a kind of «smart» cars, transmit big data on the basis of digital technology, or move on the roads offline without the participation of the driver. The scale of such changes is quite tangible, their pace is accelerating and often no longer predictable. In the wake of technological renewal of the industry there is a rapid emergence of new players in the world market, rotation in the ranking of automakers, the formation of a new type of automaker. So, on June 29, 2010 – the day of the beginning of trading in shares of the American electric car manufacturer Tesla on the NASDAQ stock exchange – no one expected that in exactly 10 years its shares will be traded at a price higher than the original price by more than 4 000% will become one of the most expensive automobile corporations in the world [8]. Moreover, in early 2020, Tesla built and launched its first plant for electric vehicles outside the United States – in China, and has already begun construction of the second such plant – in Germany.

In the commercial transport industry, while previously manufacturing companies perceived themselves as exclusively manufacturers, today many of them seek to position themselves as a provider of integrated transport solutions for customers and expand the boundaries of traditional transport and logistics. The elite of the global automotive industry was one of the first in the global business to actively support Zur, which was reflected in the integration of the principles of sustainable development into corporate culture; transformation of behavioral and business models of MNCs; implementation of socially significant and environmental initiatives that attract global attention; launching projects to reduce energy consumption and environmental impact; reflecting various aspects of Zur-related company activities in annual reports, etc. Such a strategy opens the way for corporations to new market niches shaped by global trends, from the development of alternative energy and changing the structure of energy consumption around the world to changing consumer preferences in favor of environmentally friendly products, resource conservation and recycling. Car companies can, of course, fight these trends and make very risky attempts to circumvent the requirements and falsify the level of emissions with new technical devices and sensors, jeopardizing the business reputation and brand image. An example of this is the example of Volkswagen, which as a result of the scandalous case known as «Dieselgate», incurred costs in the form of fines and compensation of about $35 billion, not to mention significant reputational losses [9]. But to stay in the «mainstream», the vast majority of the world's leading automakers clearly choose the path of finding new opportunities that hide behind the world's leading trends. In order to build on the achievement of the Zur on a systemic basis, most automotive corporations consistently integrate the principles of sustainable development into the main goal and mission of the organization, management structure and corporate culture, reflecting specific changes in management documents and business processes. At the same time, with the help of specific performance indicators (KPI), they measure the efficiency and effectiveness of business in achieving the Zur. Based on these indicators, you can also calculate the contribution of a project related to sustainable development, initiatives or activities in the financial condition of the business. Companies such as Daimler, Volkswagen, Scania, MAN, Volvo Trucks and a number of others have signed the UN Global Compact, an international business initiative in the field of corporate social responsibility and sustainable development, and are committed to implementing its ten internationally recognized principles. human rights, labor relations, the environment and anti-corruption, in internal corporate documents – instructions, standards and policies. And now they are disclosing to their stakeholders information detailing the company's progress in implementing the Zur over the calendar year (relevant information is posted annually on the official website of the UN Global Compact in the form of a Progress Report). In addition, some companies have begun to compile and publish on their website an annual report and a report on sustainable development as the only integrated document prepared in accordance with the principles and requirements of international reporting standards, and publicly report on progress towards commitments.

Constantly growing concerns about irreversible environmental change and the severe depletion of natural resources make sustainable management truly important for automotive associations. Governments, as well as customers, investors and sponsors, are now pushing for car associations to 'green' their way of working, culture and products. This will have serious implications for businesses, which, when making significant progress, must in fact be guided by the concept of sustainable development.

The car business is under a lot of pressure from governments and society to find the best development model. Thus, the whole situation reflects a huge impact on the climate.

1. As of 2016, transport has already emitted almost a quarter of global CO_2 emissions, with 18% accounted for by street transport.

2. Destruction of normal biological systems. For example, China produces most of the world's graphite

ISSN Print 2414-0287
ISSN Online 2707-8426

used in electric vehicles. Expanding demand, along with the lack of strict environmental principles, has led to crop failures, soil pollution, water pollution and large-scale environmental degradation [10].

3. Non-biodegradable industrial waste and industrial waste have caused significant landfills, land poisoning and water pollution. In January and June 2017 alone, the United States, Europe, and Japan sold 3.1 million tons of plastic waste to non-industrial countries, mostly in Asia. Much of this is made up of vehicles that are no longer in use [2].

4. Automotive production requires significant consumption of energy, water and assets that increase carbon pollution. The automotive industry uses 5.2 billion liters of water and produces 1 million tons of CO_2 in vehicles in the UK alone [1].

Of course, companies are working to solve many of these problems. For example, between 2000 and 2015, EU automotive organizations exceeded their carbon emissions by reaching CO_2 emissions of almost 120 g/km, compared to the target of 130 g/km [4].

For sustainability to meet the industry's ambitious goals, it must be pursued through a value chain.

Secondly, the competition for leading positions in the world market of electric vehicles is intensifying. In the passenger segment, almost all major automakers are actively developing electric transport technologies. Volkswagen, for example, despite the scandal and the costs incurred, began to rely on electric cars and has already set itself the task of producing 26 million such cars by 2028 and become the world's largest manufacturer [12].

The development of this market has become part of the environmental policy of some countries and keeps pace with the principles of sustainable development. In Norway, thanks to various measures to support this market, electric cars have become cheaper than many traditional cars and accounted for 46% of all new cars sold in 2018 (growth – 40% compared to a year earlier), and in the country's total car fleet from 2 million. cars, the share of environmentally friendly cars reached 10% [13].

In Germany, funding for the electric car subsidy program has increased since 2020, and now state subsidies, such as for the purchase of electric cars worth less than 40,000 euros, are 6,000 euros instead of the previous 4,000 euros (for a car with a «clean» electric motor) and 4.5 thousand euros instead of the former 3.5 thousand euros (when buying a car with a hybrid engine) [10]. It is noteworthy that in the first half of 2020, despite the coronavirus pandemic and economic recession, the German car market saw a boom in sales of electric vehicles against the background of falling sales of cars with internal combustion engines (from January to June 2020 sales of «pure» electric vehicles increased by 42.7% and Hybrids – by 54.6% compared to the same period last year) [11].

In China, the largest market for electric vehicles, thanks to targeted measures to stimulate the production of environmentally friendly vehicles combined with efforts to localize the production of batteries, there is a sharp increase in the number of new players: in 2019 there were about 500 electric car manufacturers, and in 2018 electric and hybrid cars amounted to 1.3 million units, which is 62% more than a year earlier.

Conclusions

Thus, in the long run, those industrial organizations that predict a sustainable future will prosper. The future lies in the introduction of sustainable models, characterized by the use of much less material and energy to create the same, and perhaps better value for the product. Generating waste from companies and products is an unwise long-term strategy that is not viable in the face of environmental challenges.

Automotive organizations have made sustainability a strategic priority, although the challenge to be achieved is greater and more urgent than ever. While this is a good start, action is needed at the ground level throughout the value chain of cars. Management, measurement and monitoring need to be strengthened, and investment in sustainability needs to be significantly increased beyond large-scale advances in electric vehicle research and development. The electric vehicle strategy itself must be supported by a renewable charging infrastructure ecosystem and a circular economy to be truly sustainable. These initiatives will have a major impact, but the industry needs a structured approach to long-term stability. Automotive organizations need to prudently assess the maturity of their sustainable development strategy, learn from sustainability leaders, and make sustainability the goal of the organization.

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ISSN Print 2414-0287
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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 658.5

DOI https://doi.org/10.26661/2414-0287-2021-3-51-02

ANALYSIS OF METHODOLOGICAL APPROACHES TO THE ASSESSMENT OF ECONOMIC SUSTAINABILITY OF THE ENTERPRISE

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Key words:
economic stability, enterprise, methodical approach, partial indicators, integrated indicator, diagnostics

In the current crisis of management, many domestic enterprises are on the verge of survival. Therefore, the issue of creating conditions to ensure the economic stability of enterprises, assessing its level, which will determine in advance the main factors contributing to the improvement of such a process in order to develop and implement appropriate measures. It is substantiated that the algorithm for determining the level of economic stability of the enterprise includes the definition and evaluation of partial indicators and the integrated indicator. It is established that the assessment of the level of economic stability of the enterprise based on the analysis of the dynamics of a limited number of indicators does not take into account its systemic nature, and therefore has significant limitations. In a significant part of the proposed methods is not allocated and does not quantify the impact of threats on the level of economic stability of enterprises. Therefore, it is advisable to take into account the degree of risk of transition from a satisfactory financial condition to a state of financial crisis in terms of relevant factors. In the considered approaches to an estimation of a level of economic stability of the enterprise, the main attention is paid to retrospective and current measurement that does not give the full information on prospects of development of the enterprise. It has been found that many researchers suggest taking into account too many levels of indicators to assess the level of economic sustainability of enterprises, so it is difficult to define clear boundaries. It was found that a number of authors to assess the level of economic stability of the enterprise proposes to take indicators that are directly related to each other, along with the main – secondary indicators. The application of such proposals in the practice of management can lead to erroneous decisions.

АНАЛІЗ МЕТОДИЧНИХ ПІДХОДІВ ДО ОЦІНКИ ЕКОНОМІЧНОЇ СТІЙКОСТІ ПІДПРИЄМСТВА

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Ключові слова:
економічна стійкість, підприємство, методичний підхід, часткові показники, інтегральний показник, діагностика

У сучасних кризових умовах господарювання багато вітчизняних підприємств перебувають на межі виживання. Тому актуальним є питання формування умов для забезпечення економічної стійкості підприємств, оцінки її рівня, що дозволить завчасно визначити основні чинники, що сприяють поліпшенню такого процесу з метою розроблення і реалізації відповідних заходів. Обґрунтовано, що алгоритм визначення рівня економічної стійкості підприємства включає визначення і оцінку часткових показників й інтегрального показника. Встановлено, що оцінка рівня економічної стійкості підприємства на основі аналізу динаміки обмеженої кількості індикаторів не враховує системного її характеру, а відтак, має суттєві обмеження. У значній частині пропонованих методів не виділяється і кількісно не визначається вплив загроз на рівень економічної стійкості підприємств. Тому доцільно враховувати міру ризику переходу із задовільного фінансового стану у стан фінансової кризи у розрізі відповідних чинників. У розглянутих підходах до оцінки рівня економічної стійкості підприємства основну увагу приділяють ретроспективному і поточному виміру, що не дає повної інформації про перспективи розвитку підприємства. Встановлено, що для оцінки рівня економічної стійкості підприємств багато дослідників пропонують брати до

ISSN Print 2414-0287
ISSN Online 2707-8426

уваги занадто багато рівнів показників, тому проблематично визначити чіткі межі їхніх кордонів. Виявлено, що низка авторів для оцінки рівня економічної стійкості підприємства пропонує брати показники, які перебувають у прямому зв'язку між собою, поряд з основними – другорядні показники. Застосування таких пропозицій в практиці господарювання може призвести до прийняття помилкових рішень.

Statement of the problem

At present, the external environment of enterprises is characterized by the destruction of economic ties, the general unfavorable economic situation, political instability of the state, which negatively affects the development of the domestic industry. Under such conditions, ensuring economic stability is a very important task of management and is a prerequisite for security and efficient management of enterprises.

The formation of a system of economic stability is becoming increasingly important, because in market conditions, companies must constantly prevent crises and timely develop and implement measures to prevent bankruptcy, independently determine the range and volume of production, the nature of relations with suppliers and consumers, credit, investment, innovation, dividend policy, etc. In addition, the formation of such a system will allow such entities: to identify on time prone to financial insolvency; develop and implement anti-crisis measures; use available resources effectively; prepare for sudden changes in the external environment; identify the basic needs of the market; identify and use favorable environmental conditions; improve coordination and control. However, despite the presence of a significant number of methodological approaches to assessing the economic stability of enterprises, today there are no clearly defined criteria and a system of indicators based on which effective decisions could be made.

Analysis of recent studies and publications

Such domestic scientists paid in-depth attention to the study of the problem of assessing the economic stability of enterprises as O.A. Matushevska [1], O.M. Smolyakova [2], O.M. Goncharenko [3], S. Ya. Yeletsky [4] and others.

Scientists note that an objective assessment of the economic stability of the enterprise is the basis for making informed management decisions about its operation and development. In their research, they note that each method has its conditions and limits of application. Most scientists believe that determining the level of economic stability of the enterprise should be based on the following algorithm: analysis of partial indicators of economic stability; assessment of economic stability based on an integrated indicator. All researchers point out that there is a direct link between the economic stability of the enterprise with the provision of financial resources, their structure.

Objectives of the article

The purpose of the article is to study methodological approaches to assessing the level of economic stability of industrial enterprises, identifying their advantages and disadvantages and forming conclusions about the feasibility of their use in the practice of assessing the possibilities of functioning and development of corporate structures.

The main material of the research

The economic stability of enterprises is the basis of their efficient management in the long run.

We believe that the most reasonable and complete interpretation of the term «economic stability of the enterprise» is given in the source [1], as a qualitative characteristic of the business entity, which determines the ability of the enterprise through mechanisms of adaptation, resistance, avoidance and recovery in response to changes in internal and external environment to establish a new balance to maintain a balanced process of functioning both within itself and within the environment of its existence.

Sustainability in the economy means the strength and reliability of the economic system, the ability of the system to maintain its properties. Sustainability allows the company to develop, be viable and be able to overcome crises.

An objective assessment of its level is important for the formation of a mechanism for ensuring the economic stability of enterprises. However, science and practice have not yet developed a generally accepted approach to this issue.

O.M. Smolyakova to the system of indicators of economic stability of the enterprise recommends including the following components [2]:

1) cost component: the ratio of product prices to the relevant standards, the level of profitability of products, compliance of product quality with industry standards; growth/decrease rates; costs of product promotion, costs of modernization of production, costs of introduction of new technologies or production of new products;

2) Production component: the utilization of production capacity; the number of new technologies introduced into production; the share of expenditures on machinery, equipment, tools, other fixed assets and capital expenditures related to the introduction of innovations in the total expenditures on innovations; capital adequacy; compliance with the size of the supplied resources and their necessary needs, compliance with the normative value of stocks; the share of employees who improved their skills in the reporting year; share of employees under the age of 50; the share of employees performing scientific and technical work; the degree of depreciation of fixed assets, the share of own equipment in the total number of fixed assets; growth of labor productivity, profitability of fixed assets, return on assets;

3) financial component: coefficient of financial autonomy, coefficient of the structure of long-term deposits, coefficient of financial stability; total coverage ratio, absolute liquidity ratio, current liquidity ratio; fixed capital turnover ratio, receivables turnover ratio, etc.;

ISSN Print 2414-0287
ISSN Online 2707-8426

4) component of economic stability concerning the stages of the life cycle: initial stability and stability of functioning;

5) the component of the stability of the enterprise in the market includes the following indicators: the ratio between the value of the property and its accounts payable, depreciation ratio, self-financing ratio, level of implementation of plans, level of dynamics of plans, the share of units with independent balance; availability of development funds at the enterprise for each unit, the degree of responsibility for units;

6) the stability of the market of goods and services is proposed to analyze using the following indicators: the share of new products, the coefficient of renewal of the product range; share of warranty service costs; the share of products that have undergone warranty service; economic efficiency of exports, the index of the physical volume of exported products, the rate of return on investment in export operations;

7) the key indicators of economic stability in the market of means of production, according to the scientist, are the following indicators: the growth rate of income from the delivery of the property; the share of property used as collateral for borrowed funds; share of deliveries under direct contracts; the share of violations of supply contracts, the share of receivables in the company's funds.

The disadvantages of this approach, we believe, include the following:

− it does not allow a comprehensive assessment of the economic stability of the enterprise;

− for each component selected a significant list of indicators, to assess the impact of each of which on the formation of economic stability of the enterprise is problematic.

Therefore, the proposals of the scientist will not allow to reasonably assess the economic stability of the enterprise.

Researcher O.M. Goncharenko [3] to study the stability of the enterprise proposes to use a generalized criterion of the following type:

$$K_{uz} = K (F_i C_i) = C_1 F_1 + C_2 F_2 + C_3 F_3, \quad (1)$$

where C_i – weights coefficients; F_i – performance indicators of the enterprise; F_1 – the financial condition of the enterprise; F_2 – production activity of the enterprise; F_3 – innovative activity of the enterprise.

The author proposes to set the following weights: C_1=0.33; C_2=0.5; C_3=0.17. The following levels of enterprise stability are classified: 1) crisis state; 2) pre-crisis situation; 3) unstable condition; 4) satisfactory state of stability; 5) steady state bifurcation interval; 6) satisfactory stability; 7) relative stability; 8) stable stability; 9) absolute stability of the state.

In our opinion, the proposed methodological approach to assessing the level of stability of the enterprise has significant shortcomings, namely:

− the author does not indicate why the groups of indicators of financial condition, production and innovation activities are taken, and what partial indicators form each group;

− The proposal to set the proposed size of weights coefficients is unfounded;

− It is questionable to establish nine levels of stability of the enterprise because it is problematic to establish clear boundaries.

Researcher S.Ya. Yeletskykh [4] has developed a methodical approach to quantitative assessment of the level of financial stability of the enterprise, which involves determining the key indicators formed by individual blocks per the criteria of efficiency of property (assets) and liabilities (capital) of the enterprise between all stages of the capital cycle (attraction, placement and use).

All coefficients have a single dimension and should, according to the scientist, grow in dynamics, which allows calculating the integrated assessment for each of the blocks of key indicators and the final indicator of financial stability of the enterprise as their geometric mean.

Each key indicator includes three indicators. Experts establish significance of indicators: 3 points – the most significant; 2 points – less significant; 1 point – does not matter.

The generalization of the received estimations is carried out in an integral indicator taking into account the significance of key indicators for each stage of a life cycle of the enterprise that allows, as the author notes, further to direct administrative actions on a target group of indicators of financial stability.

The scientist offers a methodical approach to qualitative assessment of financial stability of enterprises based on the comparison of some rate indicators that reflect the ratio of growth rates of assets, fixed assets, equity, net income, value added:

Evaluation of key and final indicators, as well as pace indicators, provides an opportunity to diagnose the state of the enterprise (stable, unstable), to determine the development process (controlled or poorly controlled, uncontrolled).

Regarding this approach, in our opinion, it is worth noting its disadvantages:

1) it is not substantiated why the indicators of financial stability of the enterprise include the ratios of solvency, liquidity, business activity, and profitability (loss). There is no explanation as to why such coefficients were selected and their different number for each block;

2) different blocks of indicators include the same indicators. For example, in the block «financial stability» the author includes such indicators as the ratio of current assets to current liabilities and the ratio of own working capital, the calculation algorithm of which is directly related and characterizes not financial stability but liquidity. The total solvency ratio from the «solvency» block is directly related to the two previous indicators that are included in the «financial stability» block

The author has made a mistake in the formula of the current liquidity ratio («liquidity block»), which she shows as the ratio of working capital to current liabilities. Based on this formula, it is obvious that the normative value of such an indicator cannot be in the range of 1–1.5, as the scientist writes, but much lower, even with a negative sign;

3) it does not explain why the calculation integral indicator of financial stability ratios must necessarily increase in dynamics;

ISSN Print 2414-0287
ISSN Online 2707-8426

4) in the proposed approach to qualitative assessment of the financial stability of enterprises based on comparing some tempo indicators, not based on the revision of the growth rate of fixed assets in comparison with the growth rate of enterprise assets. To do this, accelerate the growth of current assets will be less than the time of increase in fixed assets, which is not allowed due to the deterioration of liquidation and solvency of the enterprise.

Therefore, the objectivity of assessing the financial stability of the enterprise when applying the analyzed methodological approach will be questionable.

Author F.M. Safin [5] proposes to use three groups of indicators to assess the economic stability of industrial enterprises: solvency (current liquidity ratio, a ratio of own working capital, a risk ratio of raider capture, solvency loss ratio, bankruptcy risk ratio, current solvency ratio, general solvency ratio), ratio financial stability (capitalization ratio, financing ratio, autonomy ratio, financial stability ratio, financial leverage, Beaver's ratio), indicators that take into account industry specialties (consolidated consumer price index, price index for basic products, risk factor for entering the shadow economy, ratio of product innovation, price index for non-basic products).

The scientist focuses on the following conditions:

− effective stability of the enterprise is achieved when the basic indicators are kept by it for a long time and the time factor is decisive in the analysis of indicators of stability;

− basic indicators of economic stability of the enterprise must meet or exceed the average values of the relevant indicators in the industry.

The author distinguishes a four-stage level of stability: a high level of stability; an average level of stability; a low level of stability; a zone of economic instability. The common line of demarcation between the zones of stability and the zone of instability is the break-even point.

We believe that concerning this methodological approach to measuring and assessing the level of economic stability of the enterprise should make the following comments:

1) separate indicators of solvency and financial stability are quite closely interrelated, which can lead to erroneous conclusions and unreasonable decisions. For example, when calculating the ratios of own working capital and current solvency, the same baseline indicators are used, namely: current assets and current liabilities;

2) the author does not explain why the proposed indicators were chosen to measure and assess the level of economic stability, and what is the algorithm for calculating the overall indicator;

3) it is not explained for what purpose the indicator of the price index for non-basic products is taken;

4) from the research of the scientist it is not clear why the time factor is decisive in the analysis of stability indicators;

5) the author argues that the common line of demarcation between the zones of stability and the zone of instability is the break-even point. It turns out that an enterprise that has reached the minimum level of profitability is economically stable, which is wrong.

Thus, this approach, in our opinion, does not allow to objectively determining the level of economic stability of the enterprise, and its application in practice can lead to unreasonable conclusions and erroneous management decisions.

Conclusions

The analysis of scientific works on the studied problem shows that the economic stability of enterprises is the basis of their efficient management in the long run. The disadvantages of the proposed methodological approaches to assessing the level of financial stability of enterprises include the following: for each component that forms financial stability of the enterprise selected a significant list of indicators to assess the impact of each on its formation is problematic; questionable proposal to establish too many levels of stability of the enterprise because it is problematic to establish clear limits of their borders; the proposals concerning the general line of demarcation between the zones of stability and the zone of instability based on the break-even point are unfounded. Herewith financial stability of the enterprise should provide the minimum necessary level of profitability of its activity; in the considered approaches to an estimation of a level of enterprise financial stability, basic attention is paid to an estimation of its level in retrospective and current dimension. None of the proposed methods provides complete information about the prospects for enterprise development.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 331

DOI https://doi.org/10.26661/2414-0287-2021-2-50-03

METHODS OF EVALUATION OF EFFICIENCY OF THE ENTERPRISE

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Key words:
efficiency, economic efficiency, efficiency indicators, approaches to evaluation of enterprise efficiency

The article provides a definition of efficiency, from an economic point of view. The general classification of efficiency indicators used for business evaluation is reflected. They, in turn, are divided at the level of qualifications: The level of economic activity, cost ratio, method of calculation, completeness of the components of costs and results, the object of evaluation, the stage of calculation, the method of calculation. The characteristic concerning each qualification sign is given. The main approaches to assessing the effectiveness of the enterprise are reflected. They are divided into: the classical approach, the concept of sustainable economic growth and modern theory of financial management. The characteristics of each of the approaches are given. It is concluded that the combination of these approaches and the identification of criteria that reflect the efficiency of the enterprise, but are not reflected in the main approaches to assessing the effectiveness of the enterprise.

МЕТОДИ ОЦІНКИ ЕФЕКТИВНОСТІ ПІДПРИЄМСТВА

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Ключові слова:
ефективність, економічна ефективність, показники ефективності, підходи до оцінки ефективності підприємства

У статті надано визначення поняття ефективності, з економічної точки зору. Відображено загальну класифікацію показників ефективності, використовуваних для оцінки бізнесу. Вони в свою чергу поділяються на рівні кваліфікаційних ознак: Рівень господарської діяльності, співвідношення витрат, спосіб розрахунку, повнота складових витрат і результатів, об'єкт оцінки, стадія розрахунку, спосіб розрахунку. Надано характеристику, щодо кожної кваліфікаційної ознаки. Відображено основні підходи до оцінки ефективності підприємства. Вони поділяються на: класичний підхід, концепція сталого економічного росту та сучасну теорію фінансового управління. Надано характеристику кожного з підходів. Зроблено висновок, щодо поєднання цих підходів, та виявлення критеріїв, які відображають ефективність підприємства, але не відображені в основних підходах оцінки ефективності діяльності підприємства.

Statement of the problem

Economic efficiency is one of the main categories associated with achieving the strategic goal of enterprise development. The main problem in assessing and applying the means of improving the economic efficiency of enterprises is to obtain the best financial results, provided the most efficient use of all available resources. With the development of market relations determines the specifics of the operation of enterprises, as the level of risk increases, competitiveness increases, allows to adapt to economic changes. In order to survive in these conditions, increase their efficiency and competitiveness in a particular market and search for new ones. The efficiency of the enterprise should be based on achieving the optimal level of costs, while ensuring the appropriate quality of goods or services.

Analysis of recent studies and publications

This question was studied by such scientists as Rogulenko T.M., Pozov D.A., Sharkova A.V., Kilyachkov A.A., Markina E.V. Reisberg B.A. and others. The essence of «effectiveness» and «efficiency» is revealed in the works of these scientists. Others define the criteria and systems of production efficiency indicators.

The main material of the research

The attractiveness of entrepreneurial activity depends on the degree of satisfaction of its results by people who invest in a particular business. Each investor has his own

ISSN Print 2414-0287
ISSN Online 2707-8426

goals and preferences, expects a certain end result, opening his own business. In general, the more a business meets the needs of an investor, the more efficient it is.

The very concept of «efficiency» is interpreted by different authors depending on its scope. From an economic point of view, efficiency is the ratio of result indicators (effect) and costs (or the sum of resources) used to achieve it [1].

Consider another definition of «efficiency» – the relative effect, effectiveness of the process, operation, project, defined as the ratio of effect, result, to costs, the costs that caused it to ensure its receipt [1].

Thus, economic efficiency reflects the relationship between performance and costs incurred for its implementation.

The general classification of indicators used to assess business performance is given below (Table 1) [2].

The system of global indicators covers the macro level, and local ones reflect the efficiency of specific enterprises.

It should be noted that different approaches are used to assess economic efficiency, which can be combined into cost and resource.

The cost approach comes down to the fact that when calculating the performance indicators, the result is correlated with the cost of resources aimed at obtaining this result.

The resource approach involves comparing the result not with the amount of resources expended, but with the cost of resources used in the process of obtaining the result.

The system of absolute indicators shows the natural and cost expression of the obtained result. Relative indicators characterize the quality or level of return on resources used and costs incurred.

Summary indicators characterize the efficiency of the business as a whole, and take into account the overall results and the amount of resources consumed.

Private indicators characterize the level of return of any specific resource, process, unit, etc.

In the process of financial management of the business should predict its effectiveness in the future, set planned current parameters and evaluate the actual results of activities.

Direct and inverse indicators are characterized by differences in calculation. Direct assumes the comparison of the result to the costs (level of return), and inverse – the costs to the amount of the result (the level of resource consumption).

Each of the above groups includes specific indicators that are criteria for assessing business performance.

As key indicators that traditionally characterize the efficiency of the enterprise, we can distinguish the following – profitability, cost level, return on assets, turnover ratio, capital intensity, productivity, and others.

The development of economic science and practice contributes to the improvement of tools for evaluating and managing business efficiency (Fig. 1).

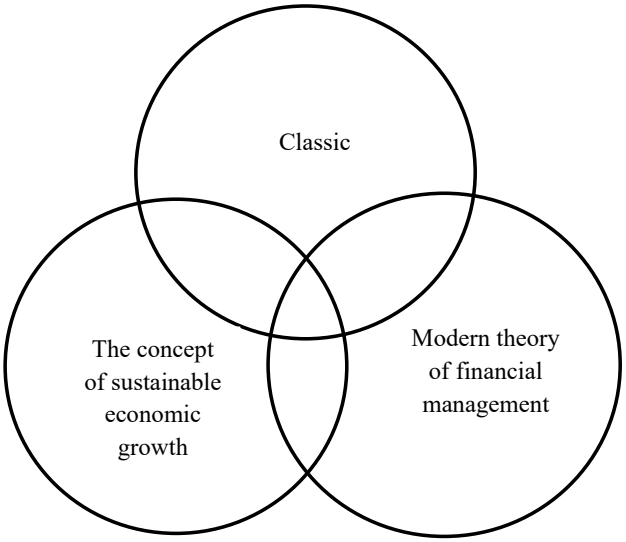

Fig. 1 – Basic approaches to assessing the efficiency of the enterprise [3]

Table 1 – Classification of enterprise efficiency indicators

Classifications	Types of indicators
Level of economic activity	Global
	Local
Cost ratio	Expensive
	Resource
Method of calculation	Absolute
	Relative
Completeness of component costs and results	Generalizing
	Partial
Object of evaluation	Resource efficiency
	Efficiency of capital expenditures
	Efficiency of innovations
	Efficiency of operation, agreement, project
	The efficiency of the enterprise as a whole, or its individual components (production, commercial, financial, investment)
Calculation stage	Design
	Planned
	Actual
Method of calculation	Straight
	Reverse

ISSN Print 2414-0287
ISSN Online 2707-8426

The classical approach to efficiency assessment is based on the entrepreneur's focus on the end result in the form of profit. In essence, this is an accounting approach based on the analysis of financial statements. The key performance indicators here are profitability indicators. This approach is quite justified, although it has its drawbacks due to the fact that current profits are not always able to provide the desired pace of business development.

The concept of sustainable economic development of the enterprise provides a focus on maintaining its stability at all stages of the planned strategy. This approach places more emphasis on maintaining the company's position and minimizing possible risks, ie its economic security.

The modern concept of financial management tends to increase the return on capital from investing in a particular business, taking into account all possible sources of its profitability. That is, in addition to current profitability and indicators that characterize financial stability, the end result is taken into account, which reflects the actual efficiency of entrepreneurial activity – the value of the business. Under effective financial management, the company's value will show steady growth, providing a decent return on investment. This approach is costly.

In this regard, it is obvious that the modern approach to evaluating and managing the efficiency of the enterprise should include not only the traditional set of indicators characterizing the overall results and costs, level of return and consumption of resources, but also the dynamics of business value as a key criterion for evaluating its efficiency.

The combination of cost and accounting approaches allows not only to reflect the state of the business, which is assessed on the basis of internal reporting and information, but also its strategic perspectives, taking into account the presence of external factors and indicators. This comprehensive approach is able to give the most objective view, both business owners and other categories of users interested in this information.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 334

DOI https://doi.org/10.26661/2414-0287-2021-2-50-04

SOCIALLY RESPONSIBLE BUSINESS AS A COMPONENT OF SUSTAINABLE DEVELOPMENT

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Key words:
social responsibility, sustainable development, global goals, business trends, society, public activity

The article focuses on the problem of tolerant attitude of entrepreneurs to society, namely, socially responsible business, its badly-developed structure. It is also described what motivates world business representatives to help citizens. The general definition and characteristics of social responsibility are given through consideration of its main principles. The main reasons for the weak interaction of Ukrainian business with society and the factors that hinder or strengthen socially responsible actions of entrepreneurs are demonstrated. Modern tendencies of social business in Ukraine and the world are considered. The methods of social responsibility of Ukraine are compared with the countries of the European Union. Examples of leading countries in socially responsible activity are given and the most perspective spheres of public relations, such as ecology, educational activity, medical provision are presented. Their indicators of the level of social responsibility are given in the diagram, which is built according to the statistics of recent years. The main ways of charitable activity of small and large business entrepreneurs are singled out. The necessity of development of social responsibility among Ukrainian and foreign business is proved. Charitable activity of companies as a way to gain consumer trust and attract new customers is considered. The interdependenceof the concepts of "social responsibility" and "competitiveness" is proved. The main advantages of coordinated interaction of enterprises with the external environment are described. Possible methods of activating the relations between the businessman and the public by focusing on the global goals of sustainable development are presented. Social responsibility can become the basis for the rapid development of the economy and society, create a strong competitive base of the country, improve its global performance in international markets, this is what makes the consideration of socially responsible business relevant today.

СОЦІАЛЬНО ВІДПОВІДАЛЬНИЙ БІЗНЕС ЯК СКЛАДОВА СТАЛОГО РОЗВИТКУ

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Ключові слова:
соціальна відповідальність, сталий розвиток, глобальні цілі, бізнес-тенденції, суспільство, громадська активність

Стаття присвячена проблемі толерантного ставлення підприємців до суспільства, а саме соціально відповідального бізнесу, його погано розвиненої структури. Авторами описано, що спонукає представників світового бізнесу допомагати громадянам. Дано загальне визначення та характеристики соціальної відповідальності через розгляд її основних принципів. В дослідженні представлені основні причини слабкої взаємодії українського бізнесу із суспільством та фактори, що перешкоджають чи посилюють соціально відповідальні дії підприємців. Розглянуто сучасні тенденції соціального бізнесу в Україні та світі. Методи соціальної відповідальності України порівнюються з країнами Європейського Союзу. Наведено приклади соціально відповідальної діяльності в країнах-лідерах та представлено найбільш перспективні сфери суспільних відносин, такі як екологія, освіта, медичне забезпечення. Їхні показники рівня соціальної відповідальності наведені на діаграмі, яка побудована за статистикою останніх років. Виокремлено основні шляхи

ISSN Print 2414-0287
ISSN Online 2707-8426

благодійної діяльності підприємців малого та великого бізнесу. Доведено необхідність розвитку соціальної відповідальності українського та зарубіжного бізнесу. Автори розглядають благодійну діяльність компаній як спосіб завоювання довіри споживачів та залучення нових клієнтів. Доведено взаємозалежність понять «соціальна відповідальність» та «конкурентоспроможність». В статті описуються основні переваги злагодженої взаємодії підприємств із зовнішнім середовищем. Представлено можливі способи активізації відносин між бізнесменом і громадськістю шляхом орієнтації на глобальні цілі сталого розвитку. Соціальна відповідальність може стати основою швидкого розвитку економіки та суспільства, створити міцну конкурентну базу країни, покращити її глобальні показники на міжнародних ринках, що актуалізує дослідження соціально відповідального бізнесу.

Formulation of the problem

The catalyst for sustainable development of the country is society. A high level of state competitiveness can be achieved only through coordinated public interaction with the economic and political spheres. Socially responsible business can be considered as the basis of sustainable development, because social projects unite many Ukrainian and European companies to achieve their goals. That is, there is a process of integration, which has a positive impact on the development of the country. Therefore, the study of socially responsible strategies and innovative methods of their implementation in enterprises is necessary to consolidate the strong position of the state in the world economic space.

Analysis of recent research and publications

Socially responsible business as a basis for sustainable development was considered by such scientists as Bondaruk O.V. in his work «Socially responsible business as one of the directions of society development», Shevchenko O.S: «Analysis of ratings of social responsibility of organizations in different countries» and Galchak H.R «Social Responsibility of Business in Market Conditions of Management» and Rudenko O.V., Kondratyuk O.M., Goreva A.S. in the work: «Social Responsibility: Responsibility».

Presenting the main material

The modern development of the country's economy is characterized by the rapid introduction of innovations, which opens up a wide range of opportunities for doing business in various spheres of society.

The main goal of every businessman is to achieve sustainable development of the company or enterprise, and hence to achieve maximum profit. The main factor that can develop production is human resources. It is a skilled workforce that is the engine of progress. Thus, social responsibility is relevant among the representatives of modern business.

The term «social responsibility» means helping society to achieve its social and economic goals. Such assistance is based on global goals of sustainable development:

- overcoming poverty;
- quality education;
- efficient resource use;
- decent work and economic growth;
- innovation activity;
- fight against environmental problems.

Doing socially responsible business can be enhanced by certain factors:

- social partners (involved through government subsidies);
- non-governmental organizations;
- shareholders;
- representatives of the financial sector;
- private funds;
- consumers.

There are 8 basic principles of socially responsible business (Fig. 1).

Fig. 1 – Principles of social responsibility

ISSN Print 2414-0287
ISSN Online 2707-8426

The social responsibility of firms and companies can be expressed in the areas presented in table 1.

Thus, it is fair to say that a component of sustainable business development is a voluntary contribution of the company to improving the life of society, which, in turn, creates a balance between economical and social problems of business.

According to the statistics of 2018, we can name the world's companies, which are leaders in the level of social responsibility:

– network of gas stations «WOG» (implementation of the project «Road to the heart», which is aimed at helping medical institutions);

– Kyivstar mobile operator (implements educational language programs for young people);

– cosmetics company «Avon» (support for women victims of domestic violence, implementation of the project «Mission against breast cancer», which is based on providing medical facilities with modern equipment);

– German chemical concern BASF (the project «Kids Lab» is aimed at acquainting students with the chemical industry);

– Carlsberg (aims to reduce carbon emissions, increase the share of alternative energy sources, actively combat the consumption of alcohol by minors; water saving (water used in the production process is purified and reused), implementation of the project «Green Fiber Bottle» – development the world's first wood fiber bottle;

– Metinvest (purchase of equipment for medical institutions, implementation of educational projects for young people, support of educational institutions);

– Nova Poshta (Business School organization, which provides an opportunity for small and medium-sized businesses in Ukraine to gain key knowledge for development).

As you can see, thanks to social projects, many Ukrainian and European companies are coming together to achieve their goals. That is, there is a process of integration, which has a positive impact on business development. Of course, the positive factors of socially responsible activities are:

– attracting new investors;
– positive reputation in international markets;
– stimulating the effective activity of employees;
– attracting new customers.

No less important for Ukrainian business is the adoption of the experience of social projects from foreign countries. The leaders of social responsibility in Europe and the world are the following countries:

– Norway;
– Switzerland;
– Germany.

I want to present the TOP-5 leading countries in the index of social responsibility (Fig. 2).

Their high performance is due to the significant emphasis of leading companies on socially important

Table 1 – Areas of socially responsible business

Direction	Main activity
Providing various benefits to employees	• Social insurance of employees of companies • I pay for sick leave • Granting leave • Material assistance in difficult life situations • Decent pay
Charity	• Assistance to educational and medical institutions • Allocation of funds to help boarding schools, orphanages • Support for children with disabilities
Educational opportunities	• Grants for study abroad for schoolchildren and students • International internship programs for future professionals
Ecology and energy supply	• Carrying out charitable events on environmental protection • Use of alternative energy sources in the production process • Use of safe materials in the production process • Minimization of air pollution by installing treatment plants

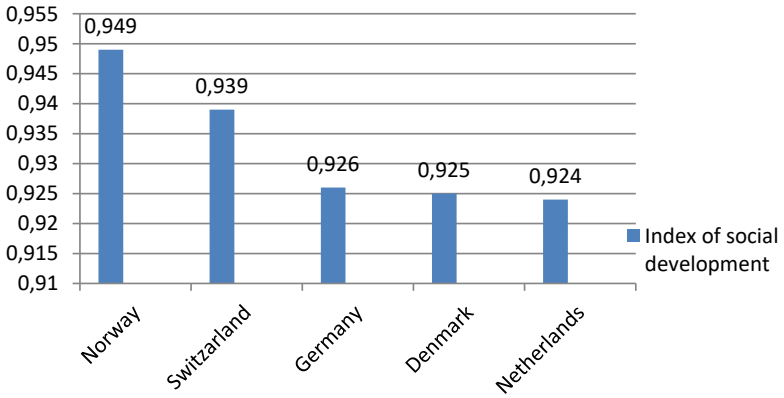

Fig. 2 – TOP-5 countries according to the index of social development

ISSN Print 2414-0287
ISSN Online 2707-8426

issues. The main principle of such enterprises is «work for society».

Another example of the social development of business is Denmark, where the government adopted a special «Action Plan» in 2008. It is aimed at the development of Danish companies, which will take place by focusing on public life and the problems of society, so now the indicators of the Danish social index is at a fairly high level (0.925), which has a positive impact on economic development.

The Netherlands pursues an effective policy for the development of socially responsible business. Their policy is based on three approaches:

– innovations;
– integration;
– inspiration.

And, it has 8 directions (Fig. 3).

The United Kingdom has no less high levels of social responsibility. It is the only country in the world where issues of social activity of firms and companies are considered at the state level. The government encourages companies to be accountable to society through a special policy – preferential taxation for businesses that adhere to business ethics in the processing of industrial waste, staff relations and resource efficiency. In addition, there are «High Royal Awards» for socially responsible companies in the UK, which significantly affects the positive perception of ethical business activities.

As for Ukrainian entrepreneurs, their socially responsible attitude is based on improving the working conditions of staff, providing educational opportunities, charitable assistance in respect for the consumer. Only a small number of companies deal with such large-scale problems as:

– ecology and environmental protection;
– poverty of the population;
– public health care.

At the moment, socially responsible business is in its infancy. Unfortunately, not all domestic companies conduct socially responsible business, due to various reasons:

– entrepreneurs do not consider it necessary;
– some companies do not see the point of such activities;
– significant lack of funds;
– the belief that social responsibility is a matter for the government, not the businessman.

In general, socially responsible business in Ukraine is divided into the following areas (Fig. 4).

Since 2008, the Center of the Development of Social Responsibility has been operating in Ukraine, working on 4 priority goals. First of all, the center distributes new educational programs, which are mainly based on integration with foreign countries. Assistance to society in times of crisis and active interaction with the public and the government remain no less important.

During the period of intensive economic development in 2020, Ukraine ranked 63rd in the world according to the index of social progress. This is a significant shift compared to other years, when our state ranked 80th. It should be noted that the most successful in conducting socially responsible activities in Ukraine are representatives of TNCs, which focus on modern social principles and standards.

It is worth noting that in 2020 the level of corporate social responsibility in Ukraine and the world increased. This is primarily due to the global COVID-19 pandemic. Many companies have taken a counter-step to society in order to provide support during the quarantine period. So, I can give examples of several such companies (Table 2).

To further strengthen its position among the leading countries of socially responsible business, Ukraine should focus on important aspects:

– first, business representatives in Ukraine should be aimed at improving the system in companies, for example, it will be effective to introduce a position, which will include control and reporting on socially responsible actions, the organization of charitable activities;
– secondly, it will be effective to monitor international trends in the development of countries, to link the international priorities of socially responsible business with the needs of Ukrainian society. Also, in my opinion, it will be effective to unite with foreign countries in order to achieve common public goals;
– The next proposal is to introduce into the education system a subject on the methodology of socially responsible business and to involve foreign specialists in it, in order

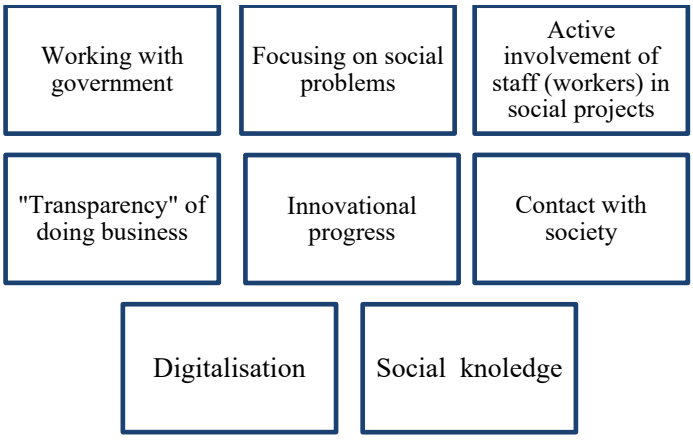

Fig. 3 – 8 areas of social business policy

Source: developed on the basis of: https://mainbusinesspartner.ua/sotsialna-vidpovidalnist-bisnesu

ISSN Print 2414-0287
ISSN Online 2707-8426

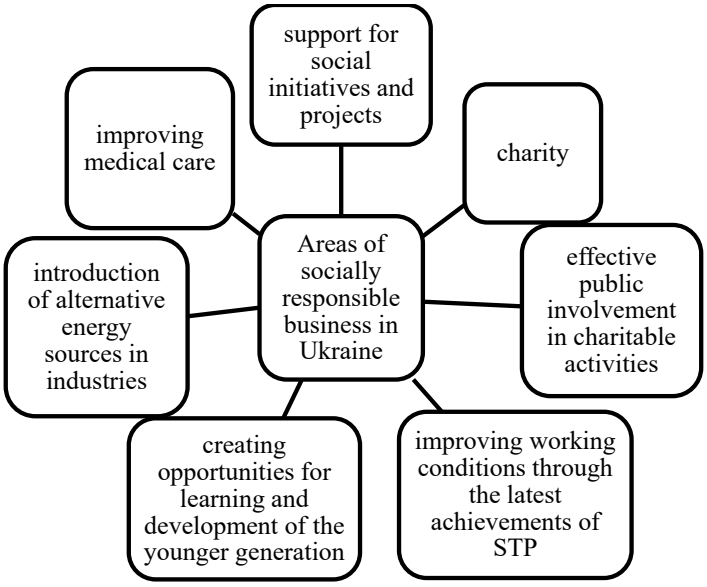

Fig. 4 – Directions of socially responsible business in Ukraine

Source: developed on the basis of: [«Social responsibility of business. Ukrainian realities and prospects»: file: /// C: /Users/user/Documents/Analitichniy_Material_do_Sluhan_FINAL.pdf

Table 2 – Socially responsible actions of companies

Company	**Charitable contribution to society**
TEDIS-Ukraine	Providing support to older people who have difficulty purchasing of food and medicine. The company purchased food kits and distributed them to the elderly in various regions of Ukraine.
Vodafone	Providing customers with free use of Vodafone Press, Vodafone Music, Bookmate and BiFit services to provide entertainment programs for people in the period of self-isolation.
Lifecell	Active support of Ukrainian medical workers. Also, the operator abolished the fee for calls and traffic on the web resources of the Ministry of Health and the Ministry of Foreign Affairs of Ukraine.
Other big enterprises	Ensuring the safety of its employees by providing free personal protective equipment, temperature control, transfer of specialists to remote work.

to exchange experiences, implement new social business programs and consider global problems of society. Thus, the younger generation will already be aware of this area and will offer innovative methods of solving public problems.

Summarizing the above, we can say that adhering to socially responsible business countries will be able to ensure sustainable economic development at both national and international levels, because progress in forming competitive positions is achieved only in a harmonious relationship with the public and the environment, and most socially responsible actions create close ties between the countries of the world, intensifying integration and globalization processes that create a direct path to an strongly-developed society.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 338.45:687]:502.174.1(477) DOI https://doi.org/10.26661/2414-0287-2021-3-51-05

ESSENCE AND ECONOMIC PROBLEMS OF CIRCULAR BUSINESS MODELS' IMPLEMENTATION IN UKRAINE (ON THE EXAMPLE OF FASHION INDUSTRY)

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Key words:
circular economy, circular business model, fashion industry, circular fashion industry, sustainable development

The article considers the theoretical and practical aspects of the introduction of circular business models in the fashion industry. The essence of the circular fashion industry is revealed on the example of the Swedish company Nudie Jeans. As a result of the analysis of existing trends in the industry, the preconditions for the emergence of the concept of the circular fashion industry are highlighted and the essence of the problems the industry faced by nowadays is revealed. It is determined that today the fashion industry is one of the most polluting sectors of the global economy. Another important problem is the ambiguity of consumer needs for industry products. As a result of the analysis of scientific literature and practical experience the general view of circular business model in the fashion industry is reflected and the main stages of the product life cycle in the circular business model of the fashion industry are highlighted, their peculiarities are revealed. The peculiarities of the process of transition of companies in the industry to circular business models are analyzed. Thanks to this study, the advantages of using circular business models in the fashion industry and the main problems faced by entrepreneurs face while their implementation are highlighted. The circular business model of the Swedish company Nudie Jeans is analyzed, its features at each stage of the product life cycle are considered. The main directions of assistance in realization of the concept of the circular fashion industry are defined. Based on the analysis of the state of the fashion industry of Ukraine, its potential is highlighted and the need to promote the development of this industry in Ukraine, taking into account current trends in the introduction of circular business models, is justified. The main directions of state assistance to the development of the Ukrainian fashion industry on the basis of the concept of circular economy are determined.

СУТНІСТЬ ТА ЕКОНОМІЧНІ ПРОБЛЕМИ ВПРОВАДЖЕННЯ ЦИРКУЛЯРНИХ БІЗНЕС-МОДЕЛЕЙ В УКРАЇНІ (НА ПРИКЛАДІ ІНДУСТРІЇ МОДИ)

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Ключові слова:
циркулярна економіка, циркулярна бізнес-модель, індустрія моди, циркулярна індустрія моди, сталий розвиток

У статті розглянуто теоретичні та практичні аспекти впровадження циркулярних бізнес-моделей в індустрії моди. На прикладі шведської компанії Nudie Jeans розкрито сутність циркулярної індустрії моди. Внаслідок проведення аналізу існуючих в галузі тенденцій виділено передумови виникнення концепції циркулярної індустрії моди та розкрито сутність проблем, з якими сьогодні стикається галузь. Визначено, що нині індустрія моди є однією з найбільш забруднюючих довкілля з-поміж усіх галузей економіки в світовому масштабі. Як ще одну вагому проблему виділено неоднозначність потреб споживачів щодо продукції галузі. В результаті аналізу наукової літератури та практичного досвіду відображено загальний вигляд циркулярної бізнес-моделі в індустрії моди та виділено основні етапи життєвого циклу продукції в циркулярній бізнес-моделі індустрії моди, розкрито їх особливості. Проаналізовано особливості процесу переходу

ISSN Print 2414-0287
ISSN Online 2707-8426

компаній галузі до циркулярних бізнес-моделей. Завдяки проведенню даного дослідження виділено переваги застосування циркулярних бізнес-моделей в індустрії моди та основні проблеми, з якими стикаються підприємці при їх впровадженні. Проаналізовано циркулярну бізнес-модель шведської компанії Nudie Jeans, розглянуто її особливості на кожному з етапів життєвого циклу продукції. Виділено основні напрямки сприяння реалізації концепції циркулярної індустрії моди. На основі проведеного аналізу стану індустрії моди України виділено її потенціал та обґрунтовано необхідність сприяння розвитку даної галузі в Україні з урахуванням сучасних тенденцій до впровадження циркулярних бізнес-моделей. Визначено головні напрямки сприяння держави розвитку української індустрії моди на засадах концепції циркулярної економіки.

Statement of the problem

At the present stage of human development, a single and closely connected socio-ecological-economic system of planetary scale is being formed. The whole world is now facing a number of interrelated problems, the scale of which is growing over the years. These include, first and foremost, demographic, food, energy and material problems, as well as environmental problems (climate change and environmental degradation). The solution of these issues, along with the need to support socio-economic prosperity in the context of steady population growth, requires changes in the existing economic model. Today, the fashion industry also faces these challenges. Thus, the industry faces the task of extending the life cycle of products, saving natural resources, minimizing waste and negative environmental impact.

The problem of transition from the linear to the circular economy is especially relevant nowadays, in conditions of low efficiency of resource use, depletion of many natural resources and environmental pollution. Modern globalization processes increase the pressure on the environment, but also increase the possibilities for the implementation of the concept of the circular economy in life.

Analysis of recent studies and publications

In the economic literature, the problems of transition from a linear model of management to a circular one in the fashion industry were considered in the works of Julian M. Allwood, Søren Ellebæk Laursen, Cecilia Malvido de Rodríguez, Nancy Boken [1], Esben Rahbek Gjerdrum Pedersen, Kirsti Wright Andersen [2], Eva Gouldman [3], Barbara Resta, Paolo Gayardelli, Roberto Pinot, Stefano Dotti [4]. The authors paid special attention to the problems facing the modern fashion industry in the context of its transformation on the basis of the circular economy concept. Prospects for the development of fashion industry in Ukraine in the conditions of the instable external environment were studied by Tetiana Havrylenko, Iryna Brodiuk [5] and many other researchers. But the problem of the transition of companies in the fashion industry to the principles of the circular economy remains insufficiently investigated, because as of today there is no company in the world whose business model would be purely circular. Currently, there is a gradual transition of companies in the industry to the principles of a circular economy.

Objectives of the article

The purpose of the article is to study and analyze the basic approach to the introduction of circular business models in the fashion industry.

The main material of the research

The fashion industry is an industry that includes design, production, distribution, marketing, trade, advertising and promotion of all types of clothing [6].

Today, the fashion industry is one of the most polluting industries in the world and, according to the current trajectory of development, it is projected that by 2050 it will use 25% of the world's CO_2 emissions budget. The spread of «fast fashion» has led to a sharp reduction in the service life of clothing. Since 2002, the global production of clothing has more than doubled, with the average consumer buying 60% more, and each piece of clothing is kept half as long [7].

Nowadays the textile and clothing industries face the problem of meeting the expectations of consumers, which in some cases contradict each other. On the one hand, researches have shown that there is an unhealthy culture of «throwaway» consumption, which causes excessive consumption and waste. Consumers are increasingly getting used to the cheap, low-quality products of the fashion industry, which they can throw away after a few washings. On the other hand, other studies have shown that consumers are increasingly interested in eco-friendly products [3].

In general, the textile industry is characterized by high consumption of fuel, water and chemicals. Extensive energy consumption, for example, occurs in the production of artificial fabrics, yarn and finishing, as well as in washing and drying at the stage of usage and direct emissions during transportation [4]. Regarding the use and release of toxic chemicals in cotton and agriculture, and in most types of textile production, they are used in pre-treatment, dyeing and printing, which leads to soil and water pollution [1].

Thus, common modern linear industry business model causes and faces many environmental, economic and social problems. Therefore, the emergence of the concept of the circular fashion industry was only a matter of time.

The circular fashion industry is a concept of an industry that does not create waste, does not cause environmental pollution, whose products and materials are used as long as possible (including through reuse and recycling), and

ISSN Print 2414-0287
ISSN Online 2707-8426

which contributes to the restoration of natural systems [8]. Thus, nowadays there is a tendency to introduce circular business models in the fashion industry. The general view of the business model of the circular fashion industry is shown in Figure 1.

Circular business model of fashion industry involves the use of materials that have been properly made and designed with the principles of the circular economy in mind. Such products pass special certification (for example, Cradle2Cradle, which assesses whether the products have been properly designed and manufactured in the five most important performance categories: Material Health, Material Reutilization, Renewable Energy and Carbon Management, Water Stewardship and Social Fairness).

Clothing should also be designed with the principles of circularity and sustainability in mind. While clothes designing, it is necessary to take into account the perspective of how the product will be made, used and ultimately disposed of. Design issues to consider include the usage of single fibers rather than blends, the ensuring of easy removal of hardware and trims to facilitate their recovery for reuse, the usage of safe dyes and finishes etc.

The industry's products must be produced from high-quality materials with maximum strength to ensure its durability. It should also have a timeless style that would maximize the duration of the consumer usage stage in product life cycle.

At the stage of consumer usage, the following measures are used to extend the life cycle of clothing: rent, reuse, repair, redesign, resale. When the quality of clothing is already insufficient for rent, reuse, repair or redesign, it is sent for recycling for further reusage of the obtained materials in the production of new clothing.

The circular business model of the fashion industry also provides the end stage of the clothing's life cycle. If the product can no longer be used either entirely, in parts, or recycled back into raw materials, it must be disposed of without any harm to the environment by biodegradation and composting [8].

As a practical example of the circular business model of the fashion industry implementation, we can refer to the Swedish company Nudie Jeans, which specializes in the production, service and reuse of cotton clothing.

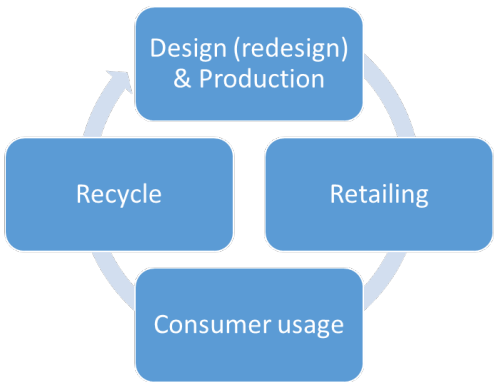

Fig. 1 – General view of the business model of the circular fashion industry

Source: formed by the authors on the basis of [8; 9]

The company has established a product return system in which customers receive a 20% discount on a new pair of jeans when they return the old ones to the store. The returned jeans are washed, repaired and sold as used. If they are worn out, they are sent for recycling. Then recycled fabrics are used to make new jeans (in combination with organic cotton) or to repair clothes. The company carries out clothing repair for its customers free of charge in selected stores. For those customers who cannot provide their clothes to such store or want to repair it on their own, the company provides free special repair kits.

In the production of denim clothing, Nudie Jeans uses only organic and recycled cotton, which significantly reduces the negative impact on the environment. Organic cotton is grown without the use of artificial fertilizers, pesticides or genetically modified seeds, which eliminates the risks associated with their use for soils and people. There are also more efficient irrigation methods used in the production of organic cotton, which allows to save water resources. The company also uses recycled polyester in the manufacture of clothing (to increase the strength of clothing, as well as for labels).

As for design, Nudie Jeans strives to create clothes that customers would like to wear for as long as possible and regardless of the season.

The company also cooperates with suppliers of fabrics to research environmentally friendly fabrics and fibers, adapt new developments and technologies for their further implementation in its production [10].

Thus, Nudie Jeans' circular business model helps to lengthen the product life cycle, saves natural resources, minimizes waste and the company's negative impact on the environment. But there are still a lot of problems on the way to the circular fashion industry.

As for manufacturing companies of the industry, the main problem is the lack of necessary technologies for the production and/or use of materials developed taking into account the principles of circular economy and sustainable development.

Another barrier for companies to implement circular business models in fashion industry is the need for constant change in the industry, which promotes overproduction, overconsumption and overwasting. Colors, shapes, materials, etc. are constantly changing, which contradicts the idea of clothing durability [2].

Possible solutions to these and some other problems can be solved by the following steps:

1. Introducing rewards for goods returned to retail stores to attract more consumers to facilitate the transition to a circular fashion industry and responsible consumption in general.
2. Designers should create a more classic clothing design that will be valuable to users over a longer period of time.
3. Companies should completely revise their current business models towards more circular ones, which involves the introduction of practices such as recycling of sold products, reuse of resources etc.
4. Creating trust among consumers regarding used clothing by issuing certificates from the trusted bodies for the goods [9].

ISSN Print 2414-0287
ISSN Online 2707-8426

Meanwhile, the Ukrainian fashion industry is currently going throw bad times. Over the years of independence, the production of goods in the industry, due to the rupture of economic ties and the structural component of the economy, has decreased by at least 10 times. The number of employees has decreased from 750 thousand people in 1990 to 88 thousand people at the beginning of 2019 [11; 12].

Nowadays Ukrainian companies in the industry mainly use imported raw materials, which is caused by the reduction of its cultivation and production in Ukraine. The main activity of many Ukrainian companies are operations with tolling raw materials, the customers of which are mostly companies from the EU countries [5].

Fashion industry products are directly aimed at meeting the needs of the local population. Ukraine's fashion industry has significant potential (including human resources), as the industry was developed much better during the Soviet era. In addition, Ukrainian fashion products are in demand, primarily in developed European countries [12], which indicates a fairly high level of their quality. Therefore, the state should do everything possible to promote the further development of this industry. However, this development should be carried out taking into account current trends towards the introduction of circular business models, which will ensure the competitiveness of the industry's products in local and foreign markets in the long run.

So, for the development of the Ukrainian fashion industry it is necessary to improve standardization, promote the introduction of new technologies, the use of materials of higher quality, the introduction of energy- and resource-saving technologies at the industry's companies, monitor the financial condition of companies, contribute to the improvement in the investment climate, the diversification of production, the increasing of personnel qualification, the increasing of the level of after-sales service, eliminate barriers to business activity, reduce tax pressure on industry, provide support to newly established companies and exporting ones, contribute to the increasing of the population solvency etc.

Conclusions

Currently the fashion industry faces many environmental, economic and social challenges. In order to solve these problems, the concept of the circular fashion industry emerged, so nowadays there is a trend towards the introduction of circular business models by companies in the industry.

The circular business model of the fashion industry involves the use of materials that have been properly designed and produced taking into account the principles of the circular economy and the concept of sustainable development. Products must also be designed keeping these principles in mind. When designing clothes, it is necessary to take into account the perspective of how the product will be produced, used and ultimately disposed of. The industry's products must be produced from high-quality materials with maximum strength to ensure its durability. They should also have a timeless style that would maximize the duration of the stage of consumer usage in the product life cycle. At this stage measures such as rent, reuse, repair, redesign, resale are provided to extend the life cycle of a clothing. When the quality of clothing is already insufficient for such activities, it is sent for recycling for further use of the obtained materials in the production of new clothing. Also, the circular business model of the fashion industry has a stage of the end of the life cycle of clothing, which involves its disposal without harm to the environment by biodegradation and composting, when the product can no longer be used either in whole, in parts or recycled.

The fashion industry of Ukraine is currently in decline. The industry has significant potential, as it was sufficiently developed during the Soviet times. In addition, its products have a fairly high level of quality and are in demand in the EU countries. Therefore, the government should in every possible way contribute to the further development of this industry. However, this development should be carried out taking into account current trends in the introduction of circular business models, which will ensure the competitiveness of the Ukrainian fashion industry in both local and foreign markets in the long run.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 330.46 : [656 : 005.932]
DOI https://doi.org/10.26661/2414-0287-2021-3-51-06

IMPROVEMENT OF THE INFORMATION DECISION SUPPORT SYSTEM IN THE SPHERE OF TRANSPORT LOGISTICS OF ENTERPRISES

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Key words:
transportation logistics, goods turnover, forecasting, information system, decision support system

The article is devoted to the problem of improving the information system for decision support in the sphere of transport logistics of enterprises. The relevance of the work is due to the importance of transport logistics as a source of increasing the level of economic efficiency of the enterprise and the imperfection of existing enterprise management information systems in terms of the quality of forecasting logistics indicators. The essence of improving the decision support information system in the field of transport logistics of enterprises is to improve the model database management subsystem by including a module for forecasting freight turnover by modes of transport. The volume of freight turnover is an important indicator that is used in short-term and long-term planning, which determines the task of improving the accuracy of forecasts. It is this task that was put into the idea of improving the decision support system in the field of transport logistics of enterprises. To implement the task, a procedure has been developed for choosing a predictive model from among the proposed ones, which provides the best estimate of the forecast accuracy for specific input data. This procedure is implemented in the software environment for statistical processing and data visualization R. The input data for forecasting are time series of freight turnover volumes by modes of transport, which can be obtained from any enterprise management system. Calculations were made to test the developed module. The list of models for selection contained such predictive models as: ARIMA-model, Holt-Winters model with additive seasonality model and Holt-Winters model with multiplicative seasonality model. The source of data is statistical information on freight turnover. The choice of the best model for forecasting is based on the calculation of the mean absolute percentage error (MAPE) for the test data. Approbation of the subsystem revealed its possibility of use. A comparative analysis of the constructed forecasts of freight turnover volumes for different types of transport and forecast models confirmed the feasibility of using an improved forecasting subsystem in the field of transport logistics. The use of an improved decision support information system creates conditions for improving the planning of transportation of the enterprise and increasing the economic efficiency of the enterprise.

УДОСКОНАЛЕННЯ ІНФОРМАЦІЙНОЇ СИСТЕМИ ПІДТРИМКИ ПРИЙНЯТТЯ РІШЕНЬ В СФЕРІ ТРАНСПОРТНОЇ ЛОГІСТИКИ ПІДПРИЄМСТВ

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Ключові слова:
транспортна логістика, вантажообіг, прогнозування, інформаційна система, система підтримки прийняття рішень

Стаття присвячена проблемі удосконалення інформаційної системи підтримки прийняття рішень в сфері транспортної логістики підприємств. Актуальність роботи зумовлена важливістю транспортної логістики як джерела підвищення рівня економічної ефективності діяльності підприємства та недосконалістю існуючих інформаційних систем управління підприємством у частині якості прогнозування логістичних показників. Сутність удосконалення інформаційної системи підтримки прийняття рішень в сфері транспортної логістики підприємств полягає в удосконаленні підсистеми управління

ISSN Print 2414-0287
ISSN Online 2707-8426

базою моделей за рахунок включення модулю прогнозування вантажообігу за видами транспорту. Обсяг вантажообігу є важливим показником, який використовується при короткостроковому та довгостроковому плануванні, що зумовлює завдання щодо підвищення точності прогнозів. Саме це завдання і покладено в ідею удосконалення системи підтримки прийняття рішень в сфері транспортної логістики підприємств. Для реалізації завдання розроблена процедура вибору прогнозної моделі з переліку запропонованих, яка забезпечує найкращу оцінку точності прогнозу для конкретних вхідних даних. Ця процедура реалізована в програмному середовищі для статистичної обробки та візуалізації даних R. Вхідними даними для прогнозування є часові ряди обсягів вантажообігу за видами транспорту, які отримані з будь-якої системи управління діяльністю підприємства. Для апробації розробленого модуля здійснені розрахунки. Перелік для вибору містив такі прогнозні моделі: ARIMA-модель, модель Хольта-Уінтерса з адитивною моделлю сезонності та модель Хольта-Уінтерса з мультиплікативною моделлю сезонності. Джерелом даних є статистична інформація про вантажообіг. Вибір кращої моделі для прогнозування відбувається на основі розрахунку середньої абсолютної процентної похибки (MAPE) для тестової вибірки. Апробація підсистеми виявила її придатність для використання. Порівняльний аналіз побудованих прогнозів обсягів вантажообігу за різними видами транспорту та прогнозними моделями підтвердив доцільність використання вдосконаленої підсистеми прогнозування в сфері транспортної логістики. Використання удосконаленої інформаційної системи підтримки прийняття рішень створює умови покращення планування транспортних перевезень підприємства та підвищення економічної ефективності діяльності підприємства.

Statement of the problem

Transport logistics occupies a special place in the activity of any enterprise. This is due to the fact that, on the one hand, transport is an independent area for investing the capital of an enterprise, which later takes part in the processes of production, turnover, and so on. On the other hand, according to studies [1; 2], the costs of transport logistics account for 70% of all logistics costs of an enterprise and, therefore, are an effective source of increasing the efficiency of its activities.

Transport is an area that is located at the junction of the manufacturing sector and the service sector. Transport provides transportation of goods and passengers, helps to develop ties between enterprises, industries, regions, without creating any material values. At the enterprise level, the objects of management in the field of transport logistics are the choice of modes of transport, traffic volumes, directions and nomenclature of goods. Therefore, it cannot be considered outside the networks of the transport system of the entire state. If the state transport system functions effectively and is included in the global transport network, then this favors an increase in the volume of international traffic and an increase in the competitiveness of domestic transport, enterprises and the country's economy as a whole.

Railway transport in the transport system of Ukraine transports significant volumes of goods and passengers over long distances, and also ensures the implementation of export-import operations. Road transport ensures the transportation of passengers and goods mainly over short and medium distances (on average, up to 200 kilometers). Pipeline transport is essential for the movement of oil, petroleum products and natural gas. Ukraine has an integral network of pipelines. It consists of local oil pipelines, which pump oil from production sites to oil refineries, and main oil pipelines. The filling of oil and gas pipelines depends on international agreements on the purchase and transportation of these resources. River and sea transport are part of the water transport of Ukraine. River transport mainly carries out domestic transportation of goods along the Danube River. Air transport performs functions related to the connection of Ukraine with other countries of the world. This mode of transport mainly transports passengers, mail and goods, which quickly deteriorate.

According to [3], one of the problems that need to be addressed in the logistics sector of Ukraine is the unsatisfactory information support in the field of transport and transport logistics.

Analysis of recent studies and publications

Researches [4–6] and several other are devoted to the issues of transport logistics. It should be noted that in addition to the development of the transit potential of the state, the issues of transport systems, the interaction of various modes of transport at the international, national, regional levels, a significant number of studies are devoted to the development of individual modes of transport.

So, monographs [7; 8] are devoted to the problems and ways of development of road transport. Publications [9; 10] and others are devoted to ensuring effective innovative activity in the transportation of both passengers and goods by rail.

In their studies, the authors give different definitions of the concept of «transport logistics», do not always take into account the fact that transport logistics concerns not only the movement of goods, but also the transportation of passengers, give a different interpretation of the concept of «information support» in the field of goods transportation.

ISSN Print 2414-0287
ISSN Online 2707-8426

According to [11], information support in transport logistics is an interconnected complex system of a large number of heterogeneous elements: software, global positioning satellites for vehicles, automated dispatcher workstations, means of computerized control of the state of the vehicle. The introduction of logistics information systems into the management processes of an enterprise allows solving such problems as:

a) increase in the speed of information processing and due to this, quick decision making;

b) increase in the volume of processed information and, due to this, analyze more options when making a decision;

c) minimizing errors in the collection and processing of information.

Logistic information is the knowledge that is necessary to ensure the process of managing the logistics system, and information support for logistics is the activity of processing, accounting, analyzing and forecasting information in order to integrate elements of the management system (planning, control and regulation). The data stream that comes through the communication channels is the basis for obtaining information. The higher the level of control, the more significant information is for decision making and the more harm a wrong decision will bring.

Automated information logistics processes are subject to such requirements as scalability, distribution, modularity, openness, etc [12].

The authors of [13] pay attention to the fact that during the development of a logistics information system, it is necessary special focus on methods for measuring and comparing logistics indicators, as well as methods for managing them.

To date, there is no clear approach regarding the number and composition of indicators that will fully characterize the work of the transport system of an enterprise, region, and not its individual components. Each type of transport has its own system of indicators, which reflects its specifics. There is also a group of indicators that is common to all modes of transport and for state planning and accounting bodies. This group of indicators includes indicators of the work of carriers. Indicators are conditionally divided into quantitative and qualitative.

The category of quantitative indicators includes: transportation of goods, freight turnover, transportation of passengers, passenger turnover [14]. Accounting for these indicators, as a rule, is carried out on an accrual basis for every day, decade, month, quarter and year. Individual transport ministries calculate the average daily work for the decade, month, quarter and year, respectively. Indicators of the activity of transport systems of regions and enterprises, such as cargo turnover, passenger turnover for various modes of transport and other indicators are provided to the state statistics bodies of Ukraine.

The most common modern integrated software systems in the world are such systems [15]:

a) ERP-systems, which provide management of all enterprise processes;

b) SCM systems, which provide logistic chain management.

ERP standard systems support the implementation of the main financial and management functions, so their use concerns manufacturing enterprises. The basic tenets of the SCM strategy are «deliver the right product – to the right place – just in time – at low cost – with the right service for the customer».

An integral part of most modern ERP systems is the presence of the «Logistics» contour [16]. For example, the «Logistics» program outline of the SAP R/3 information ERP system of SAP AG Corporation (Germany) consists of the following modules: sales and distribution (SD), production planning (PP), material flow management (MM), equipment maintenance and repair (PM), quality management (QM), service management (SM).

Support for logistics operations at enterprises is also implemented in the Oracle E-Business Suite integrated information system, developed by Oracle (USA) [16]. The main parts of the Oracle E-Business Suite system are: sales management, warehouse management, supply management. Using the enterprise logistics subsystem allows you to manage information and processes associated with all stages of material flow management, from input flows to shipment of products to customers. The papers [17–19] consider the issues of designing and developing a decision support system for managing the flow of goods and business transactions. Particular attention is paid to the dynamic interaction between various aspects of a sustainable transport system from the point of view of a transport company and the application of intelligent logistics based on the Internet of Things.

However, despite the fact that the use of modern information systems to support logistics operations at enterprises makes it possible to reduce the amount of manual labor, improve the quality and consistency of all types of accounting, the quality of predicting the logistics performance of an enterprise is still their «weak» point.

Objectives of the article

The purpose of the article is to improve the decision support system in the field of transport logistics of enterprises by improving the forecasting subsystem of freight turnover.

The main material of the research

Forecasting the volume of freight turnover is one of the important tasks in the organization of transport logistics at the enterprise, in corporations and at the state level. The activities and prospects of the enterprise's own transport support, as well as the organization of attracting external contractors, depend on the supply and demand for transport services. The volume of freight turnover of the enterprise for different modes of transport is an important indicator that should be the basis for short-term and long-term planning, which leads to high requirements for the quality of forecasts. It is this task that was put into the idea of improving the decision support system in the sphere of transport logistics of enterprises.

We will consider a decision support system as an interactive system that provides the user with access to models and data in order to support the decision-making process regarding semi-structured and unstructured tasks [20]. All types of decision support systems are characterized

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by a clear structure that contains three components: a user interface subsystem (block 1), a database management subsystem (block 2), a model database management subsystem (block 3). At the present stage of development of networks (global, corporate, inter-organizational), a message management system (communications or relations) is added to the decision support system. The general structure of the decision support system is shown in Figure 1.

The effective integration of all elements of the decision support system makes it possible to avoid difficulties in building a decision support system and increase the productivity of a computer system due to the special integration of the decision support system database with other internal and external databases, the effective use of complex mathematical models, and successful dialogue coordination with a database of models and a database, reducing the cost of creating and operating the system, etc.

To improve the accuracy of forecasting freight turnover by modes of transport, it is proposed to improve the forecasting subsystem in block 3 of the decision support system by developing a procedure for choosing a predictive model that provides the best estimate of the quality of the forecast.

To implement the proposed improvement, the software environment (programming language) R [21] (designed for statistical processing and data visualization), libraries *tseries*, *forecast*, *ggplot2*, *dygraphs* were used. The database of models for forecasting freight turnover (subsystem of block 3.1) consists of a test for checking the time series for stationarity and predictive models from the *forecast* library of the R language: ARIMA-model, Holt-Winters model with additive seasonality model and Holt-Winters model with multiplicative seasonality model. Modeling tools (block 3.2) include reports that are saved in text files. However, the base of predictive models can be expanded taking into account the wishes of specialists (users) and the level of development of science.

The decision support system is automated, since it provides for the active participation in decision-making (interaction) of the user. The proposal created by the system can be finalized, improved, and then returned back to the system for verification. After that, the offer is again presented to the user and so on until a decision is made by the user. The proposed decision support system is model-oriented, since it gives access to statistical models. The structure of the freight turnover forecasting subsystem of the decision support system in the sphere of transport logistics of enterprises is shown in Figure 2.

The input data for forecasting is statistical information on freight turnover by means of transport (monthly information), which is stored in a.*csv* file in the workspace of the R software environment (file «vantobig.csv»). The decision maker updates this file periodically with updated freight turnover data. The file stores information about the turnover of five types of transport (railway, road, pipeline, water and air). The unit of measure for turnover is billions of ton-kilometers.

The decision maker runs an R script that reads the freight turnover data from a file and writes it to an object in *ts* (time series) format. The special function *ts()* is used to create objects of this class. The *ts()* function has a *start* argument that can be used to specify the start date of the time series. The additional argument *frequency* allows you

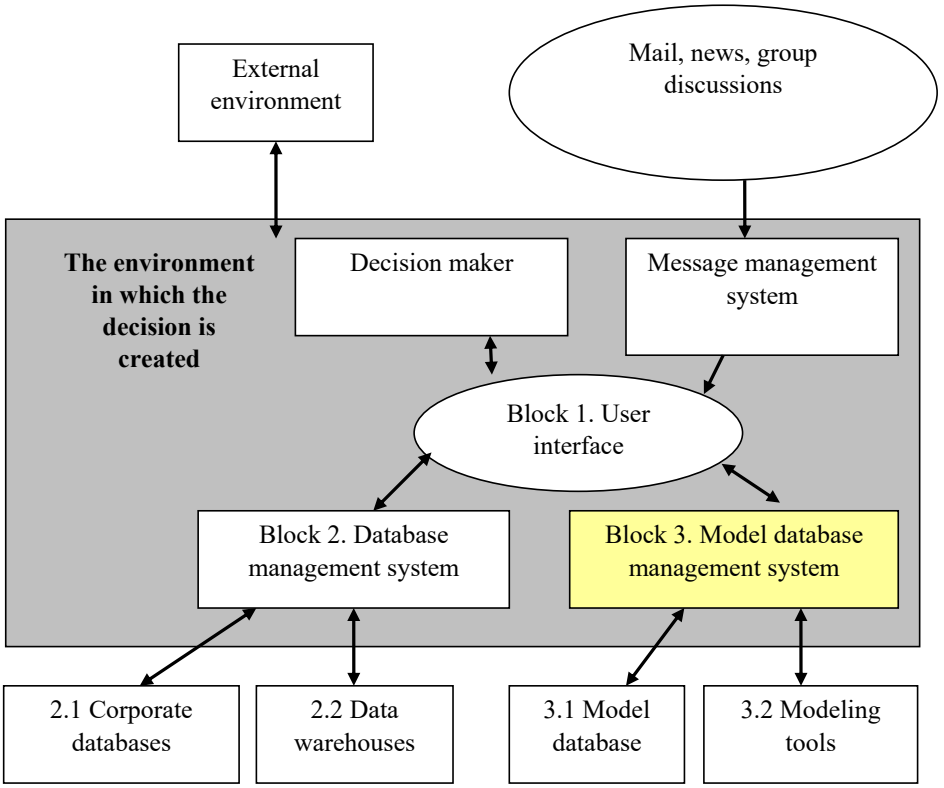

Fig. 1 – The general structure of the decision support system

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ISSN Online 2707-8426

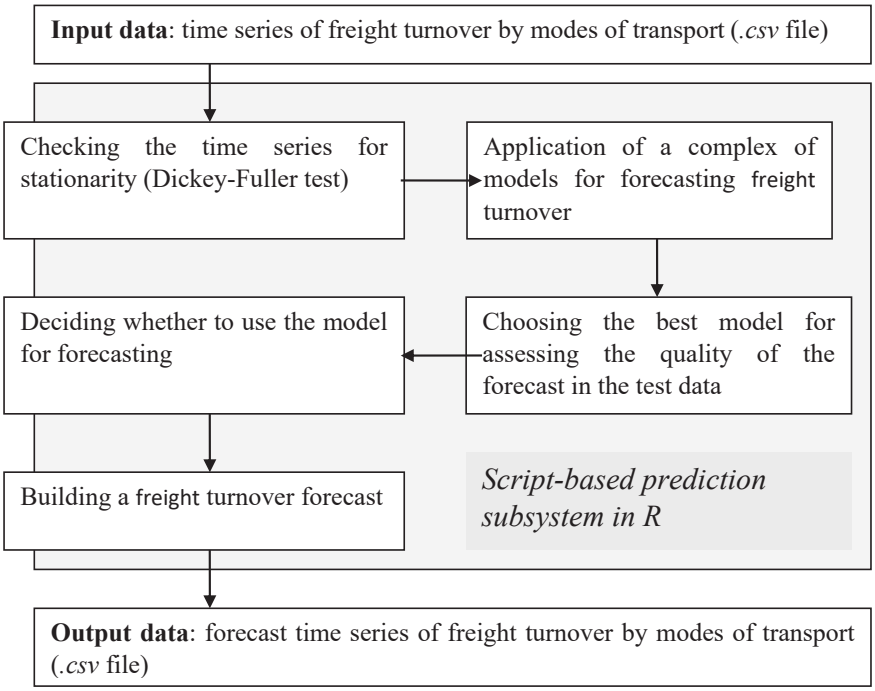

Fig. 2 – The structure of the freight turnover forecasting subsystem of the decision support system in the sphere of transport logistics of enterprises

to specify the increment of the following dates. Since the turnover in the system is monthly data, the value of the *frequency* argument is 12. The object created in this way looks like a matrix when viewed. The rows and columns of this matrix are automatically assigned names according to the values of the *start* and *frequency* arguments.

The next step in the analysis is to check the time series for stationarity using the Dickey-Fuller test (function *adf. test()* in the *aTSA* library of the R language). This check is necessary when applying the ARIMA model [22] for forecasting.

The choice of the predictive model is based on the training and test data, into which the freight turnover time series is divided. The measure used to select the best forecasting model is the mean absolute percentage error (MAPE). The decision maker is provided with a report in the form of a.*csv* file (for example, the file «auto_model. csv») with the values of this assessment. An example of a report is shown in Figure 3.

Based on the report, the decision maker selects a model to build a forecast of freight turnover for the medium term (next six months). To do this, a predictive function is called that matches the selected model. The built forecast is also saved in a.*csv* file in the R workspace (for example, the file «auto_forecast.csv»).

An example of a program code for forecasting freight turnover is shown below.

```
# Connecting the necessary libraries of the R language
library(dplyr)
library(readr)
library(ggplot2)
library(forecast)
library(dygraphs)
library(tseries)
# Loading information from a file into a variable
vantobig<-read.csv(file=»D:/documents/vantobig.csv», header=TRUE, sep=»;»)
# Writing to the variable rail of the time series of freight turnover of rail transport
rail<-ts(vantobig$rail, start = c(2006, 1), end =c(2020, 9), frequency =12)
# Plotting a time series
```

```
"","x"
"1","additive"
"2","Модель Вінтерса адітивна"
"3","7.91860081613457"
"4","Модель Вінтерса мультиплікативна"
"5","8.18702150903184"
"6","ARIMA-модель"
"7","4.92197377074661"
```

Fig. 3 – Report example about model accuracy evaluation (MAPE) in freight forecasting advanced decision support system

ISSN Print 2414-0287
ISSN Online 2707-8426

```
dygraph(rail, main = «Вантажообіг залізничний», xlab = «Рік», ylab = «млрд ткм»)%>% dyLegend(show = «follow»)%>% dyRangeSelector()
# Time series decomposition
rail_d<- decompose(rail)
plot(decompose(rail))
rail_d$type
# Checking the time series for stationarity
rail_adf<-adf.test(rail)
rail_adf
# Creation of training and test set
rail_train <- window(rail, start= c(2006, 1), end = c(2018, 12))
rail_test <- window(rail, start = c(2019, 01), end = c(2020, 09))
# Building a predictive model
rail_winters_a<- HoltWinters(rail_train, seasonal= c(«additive»))
rail_winters_m<- HoltWinters(rail_train, seasonal= c(«multiplicative»))
rail_arima<-auto.arima(rail_train)
# Building a forecast for a test data
rail_winters_a_pr<-forecast(rail_winters_a, h = 21, seasonal = 'additive')
rail_winters_m_pr<- forecast (rail_winters_m, h = 21, seasonal = ' multiplicative ')
rail_arima_pr <- forecast(rail_arima, h = 21)
# Estimation of forecast accuracy for a test data
accuracy_rail_winters_a<- accuracy(rail_winters_a_pr, rail_test)['Test set',]
accuracy_rail_winters_m<- accuracy(rail_winters_m_pr, rail_test)['Test set',]
accuracy_rail_arima<-accuracy(rail_arima_pr, rail_test)['Test set',]
accuracy_rail_winters_a
accuracy_rail_winters_m
accuracy_rail_arima
# Writing forecast accuracy estimates for a test data to a file
rail_mape=c(rail_d$type, ' модель Хольта-Уінтерса з адитивною моделлю сезонності ', accuracy_rail_winters_a [5], ' модель Хольта-Уінтерса з мультиплікативною моделлю сезонності ', accuracy_rail_winters_m [5], 'ARIMA-модель', accuracy_rail_arima [5])
write.csv(rail_mape, file=»rail_model.csv»)
# Building a forecast for the freight turnover of railway transport based on the selected model
rail_pr <- predict(rail_arima, start = c(2019, 1),27)
# Writing predictive values to a file
write.csv(rail_pr, file=»rail_forecast.csv»)
```

Approbation of the work of an improved decision support system for forecasting freight turnover was carried out on statistical data on monthly freight turnover by modes of transport in Ukraine for 2006–2020. The results revealed that for forecasting the freight turnover by modes of transport, the following models turned out to be the best:

a) for railway transport – model ARIMA (0, 1, 0)(2, 0, 0) with a lag of 12 periods, MAPE=4,9;

b) for road transport –model ARIMA (1, 1, 1)(2, 1, 0) with a lag of 12 periods, MAPE=11,1;

c) for pipelne transport – Holt-Winters model with multiplicative seasonality model, MAPE=17,7;

d) for water transport – Holt-Winters model with additive seasonality model, MAPE=22,4;

e) for air transport – Holt-Winters model with multiplicative seasonality model, MAPE=29,8.

Conclusion

Efficient transport logistics of an enterprise is an important component of its economic activity and a source of increasing its efficiency. Forecasting the volume of freight turnover is one of the important tasks in the organization of transport logistics, the results of which are used in the construction of short-term and long-term plans for the enterprise, etc. This determines the high requirements for the quality of forecasts.

The article presents an improved forecasting subsystem of a decision support system in the sphere of transport logistics by including a procedure for choosing a forecasting model that provides the best estimate of the quality of the forecast to the database of models.

To implement the proposed improvement, the R software environment was used, which is designed for statistical processing and data visualization. Approbation of the subsystem on the data of freight turnover by modes of transport in Ukraine revealed its suitability for use. A comparative analysis of the constructed forecasts of freight turnover volumes for different types of transport and forecast models confirmed the feasibility of using an improved forecasting subsystem in the sphere of transport logistics.

Prospects for further research in this area include expanding the database of predictive models and improving the user interface (block 1) when working with the subsystem.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 657.15:658.15]:347.736

DOI https://doi.org/10.26661/2414-0287-2021-3-51-07

DISCRIMINATIVE MODELS OF BANKRUPTCY PROBABILITY CALCULATION AND THEIR APPLICATION AT DOMESTIC ENTERPRISES

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Key words:
bankruptcy, diagnostics, discriminant model, evaluation criteria, financial condition, crisis state, risk

The article considers the legal framework for regulating the bankruptcy procedure and its diagnosis, reveals the essence of the bankruptcy of the enterprise and identifies its causes. It was found that the analysis and diagnosis of the probability of bankruptcy is based on discriminant models that are used in domestic enterprises. A comparative analysis of bankruptcy risk assessment models developed by both foreign and domestic scholars has been conducted. The advantages and disadvantages are systematized, the expediency of application of the existing models of diagnostics of probability of bankruptcy at the domestic enterprises is substantiated. It is determined that among the models that have been studied, there is no perfect model, the application of which provides an opportunity to determine with high accuracy the probability of bankruptcy in a particular enterprise. It is established that Ukrainian enterprises should use models for diagnosing the probability of bankruptcy exclusively of domestic scientists and the post-Soviet space. The practical value of the study lies in the fact that the level of probability of bankruptcy of the enterprise SE "Mine named after M.S. Surgay" for the period 2018–2020 by using the considered models of diagnostics of bankruptcy. Measures to overcome the crisis in the company are proposed. In order to improve the financial condition of the enterprise, topical measures are substantiated, in particular: increase of the target volume of income from the main activity and the corresponding level of prime cost; achieving the optimal ratio of equity and debt capital; mobilization of internal reserves.

ДИСКРИМІНАНТНІ МОДЕЛІ РОЗРАХУНКУ ЙМОВІРНОСТІ БАНКРУТСТВА ТА ЇХ ЗАСТОСУВАННЯ НА ВІТЧИЗНЯНИХ ПІДПРИЄМСТВАХ

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Ключові слова:
банкрутство, діагностика, дискримінантна модель, критерії оцінки, фінансовий стан, кризовий стан, ризик

У статті розглянуто нормативно-правову базу регулювання процедури банкрутства та його діагностики, розкрито сутність банкрутства підприємства та визначено його причини. З'ясовано, що в основу аналізу та діагностики ймовірності банкрутства покладено дискримінанті моделі, які застосовуються і на вітчизняних підприємствах. Проведено порівняльний аналіз моделей оцінки ризику банкрутства, розроблених як зарубіжними так і вітчизняними науковцями. Систематизовано переваги та недоліки, обґрунтовано доцільність застосування наявних моделей діагностики ймовірності банкрутства на вітчизняних підприємствах. Визначено, що серед моделей, які було досліджено, не існує досконалої моделі, застосування якої надає можливість з високою точністю визначити ймовірність настання банкрутства на конкретному підприємстві. Встановлено, що українським підприємствам доцільно застосовувати моделі діагностики ймовірності банкрутства виключно вітчизняних вчених та пострадянського простору. Практичне цінність дослідження полягає в тому, що розраховано та визначено рівень ймовірності банкрутства підприємства ДП «Шахта ім. М.С. Сургая» за період 2018–2020 р.р. шляхом використання розглянутих моделей діагностики банкрутства. Запропоновано заходи щодо подолання підприємством кризового стану. З метою поліпшення фінансового стану підприємства, обґрунтовано актуальні заходи, зокрема: збільшення цільового обсягу доходу від основної діяльності та відповідного рівня собівартості; досягнення оптимального співвідношення власного та позикового капіталу; мобілізація внутрішніх резервів.

ISSN Print 2414-0287
ISSN Online 2707-8426

Formulation of the problem

The external negative economic, political and epidemiological background causes a high level of crisis manifestations and a higher risk of bankruptcy of the entire economic system of Ukraine, as well as individual economic entities. Analysis of the state and trends of industry shows that the share of unprofitable enterprises in most industries remains quite high. Thus, the diagnosis of the probability of bankruptcy of domestic enterprises, today, is quite relevant.

There are a sufficient number of different foreign and domestic methods for diagnosing the risk of bankruptcy. However, the choice of the optimal technique remains problematic. Accordingly, it is important to compare the results of different models for diagnosing the probability of bankruptcy.

Analysis of recent research and publications

The work of both foreign and domestic scientists is devoted to the analysis of the probability of bankruptcy and areas of financial recovery of an enterprise in financial crisis. Methods and criteria for assessing the probability of bankruptcy have been developed by leading scientists such as E. Altman [1], G. Springgate [2], O. Tereshchenko [3] and others. A. Matviychuk [4], O. Yankovsky [5] devoted their works to the improvement of the proposed models of bankruptcy risk assessment and their adaptation to the Ukrainian economy. I. Zhuchkova and V. Fedoryuk dealt with the issue of adaptation of the method of expert assessments for the diagnosis of bankruptcy of domestic banking institutions [6]. The introduction of a stochastic simulation model was proposed by L. Lygonenko [7]. Neural network systems for bankruptcy assessment were used by B. Odintsov and A. Romanov [8]. Despite the importance of scientific research, there are still a number of debatable issues that are relevant and need further research.

Formulation of the goals of the article

The purpose of the study is to analyze foreign and domestic models for predicting the risk of bankruptcy on the example of indicators of a particular enterprise, systematization of their advantages and disadvantages to justify the feasibility of using these models to assess the probability of bankruptcy in domestic practice.

Presentation of the main research material

The development and formation of the Ukrainian regulatory framework for the regulation of bankruptcy proceedings consists of four stages, which are listed in Table 1. The first stage is the adoption of the Law of Ukraine, which regulates bankruptcy, and the next two – new versions (the last version of the Law expired 10/21/2019 p.). The fourth stage of development of the regulatory framework in Ukraine includes the reform of the regulatory framework in this area and the adoption of the Bankruptcy Code of Ukraine dated 18.10.2018 № 2597-VIII [9].

In order to assess the financial condition of domestic enterprises and diagnose the risk of bankruptcy apply «Guidelines for identifying signs of insolvency and signs of actions to conceal bankruptcy, fictitious bankruptcy or bankruptcy», which was first developed in 2001 (updated version in 2006., current edition – from 26.10.2010) [11].

According to the Bankruptcy Procedure Code of Ukraine, bankruptcy is the inability of a debtor recognized by a commercial court to restore its solvency through reorganization and restructuring and to repay creditors' monetary claims established in accordance with this Code other than through liquidation proceedings [9]. Its appearance – the inevitability of the head, which is due to:

− reduction of production and sales (actual indicators compared to the plan);
− negative dynamics of financial results, the state of losses;
− increase in production costs;
− insufficient resources of the enterprise, such as little cash flow or no cash flow at all, inefficient asset management;
− not optimal structures of assets and liabilities;
− unstable financial condition.

To predict bankruptcy, companies use many different models that have been studied for a long time. All of these models have strengths and weaknesses, and the choice between them is difficult, as most models are characterized by their reference to a specific industry or a specific country. Thus, when diagnosing the probability of bankruptcy,

Table 1 – Comparative analysis of legislation in the field of bankruptcy regulation in Ukraine during 1992–2000

Stage	Name of the Law of Ukraine	General conclusion on type of model	Types procedures
1	Law of Ukraine "On Bankruptcy" from 14.05.1992 № 2343-XII	pro-creditor	sanitation; liquidation
2	Law of Ukraine "On Restoration solvency of the debtor or recognition of his bankruptcy" from 30.06.1999 № 784-XIV	moderately pro-creditor	property disposal; the settlement agreement; sanitation; liquidation
3	Law of Ukraine "On Restoration solvency of the debtor or declaring him bankrupt" from 22.12.2011 № 4212-VI	moderately pro-creditor	property disposal; the settlement agreement; sanitation; liquidation
4	Code of Ukraine on Procedures bankruptcy from 10/18/2018 № 2597-VIII	pro-creditor	1. Regarding the debtor of a legal entity: disposal of property; sanitation; liquidation. 2. Regarding the debtor – an individual: debt restructuring; debt repayment

Source: grouped by [10]

ISSN Print 2414-0287
ISSN Online 2707-8426

in foreign and domestic practice, the most common are models that are based on discriminant analysis (Table 2). Among the most common models of foreign scientists are the models of probability of bankruptcy of Altman, Conan and Gelder, Springweight and the model of W. Beaver, and among the models of domestic scientists – models of O. Tereshchenko, A. Matviychuk, R-model of bankruptcy risk assessment.

To determine the feasibility and accuracy of the models from table 1 at domestic enterprises, we will diagnose the probability of bankruptcy of the mining enterprise SE «Mine named after M.S. Surgay». Let's start the diagnosis with the model of Ukrainian scientist O. Tereshchenko.

O. Tereshchenko's bankruptcy assessment model is a model developed using the methodology of discriminant analysis; characterized by reference to the financial performance of Ukrainian enterprises and their financial condition. This model has two options (10 factors – there is a differentiation by industry, and 6 – universal) [3]. Calculations for this model are presented in Table 3.

The calculations based on the model of the Ukrainian scientist O. Tereshchenko allow us to state that in 2018 there are signs of the threat of bankruptcy at the enterprise, as $0 < Z < 1$. The management carried out remediation measures. This is evidenced by the value of the Z-indicator in 2019, which no longer indicates a threat, but only a violation of the financial balance and the need to move to crisis management. In 2020, the financial condition of SE «Mine named after M.S. Surgay» has deteriorated significantly, ie anti-crisis measures have been ineffective,

Table 2 – Models for diagnosing the probability of bankruptcy

№	The author of the model, year, country of origin	Model and coefficients		Probability of bankruptcy, value Z
		Marking	Calculation	
1	E. Altman, 1968, USA	Z	$= 1{,}2 \times A + 1{,}4 \times B + 3{,}3 \times C + 0{,}6 \times D + 0{,}999 \times E$	Z < 1.81 is very high; [1.81–2.67] – average; [2.67–2.99] – small; Z > 2.99 – very low;
		A	working capital / total asset value	
		B	total value of assets	
		C	operating profit / total value of assets	
		D	market value of shares / debt	
		E	net income (revenue) from sales / total value of assets	
2	R. Lisa, 1972, Great Britain	Z	$= 0{,}063 \times A_1 + 0{,}092 \times B_2 + 0{,}057 \times C_3 + 0{,}001 \times D_4$,	Critical value Z ≤ 0.037
		A	working capital / total value of assets	
		B	operating profit / total value of assets	
		C	retained earnings / total assets	
		D	equity / loan capital	
3	R. Taffler and G. Tishaw, 1977, Great Britain	Z	$= 0{,}53 \times X_1 + 0{,}13 \times X_2 + 0{,}18 \times X_3 + 0{,}16 \times X_4$	Critical value Z ≤ 0.2; Z > 0,3 – the probability of bankruptcy is very low
		X_1	operating profit / short-term liabilities	
		X_2	current assets / total value of assets	
		X_3	short-term liabilities / total assets	
		X_4	net income (revenue) from sales / total value of assets	
4	G. Springgate, 1978, USA	Z	$= 1{,}03 \times A + 3{,}07 \times B + 0{,}66 \times C + 0{,}4 \times D$	Z < 0.862 – high; Z > 2.45 is minimal
		A	working capital / total asset value	
		B	profit before taxes and interest / total value of assets	
		C	taxable income / short-term liabilities;	
		D	sales volume / total asset value	
5	O.O. Tereshchenko, 2003, Ukraine	Z	$= 1{,}5 \times X_1 + 0{,}08 \times X_2 + 10 \times X_3 + 5 \times X_4 + 0{,}3 \times X_5 + 0{,}1 \times X_6$	Z > 2 – does not threaten; 1 < Z < 2 – financial the balance is disturbed; 0 < Z < 1 – threat, if not remedial measures were taken; Z < 0 – the company is semi-bankrupt
		X_1	cash-flow / liability	
		X_2	balance sheet / liability currency	
		X_3	profit / currency balance	
		X_4	profit / revenue from sales	
		X_5	inventories / sales revenue	
		X_6	fixed capital turnover (sales revenue / balance sheet currency)	
6	A. Matviychuk, 2005, Ukraine	Z	$= 0{,}033 \times X_1 + 0{,}268 \times X_2 + 0{,}045 \times X_3 -$ $- 0{,}018 \times X_4 - 0{,}004 \times X_5 - 0{,}015 \times X_6 + 0{,}702 \times X_7$,	Z > 1,104 – low probability of bankruptcy, stable financial position; Z < 1,104 – the threat of financial crisis
		X_1	current assets / non-current assets	
		X_2	net sales revenue / current liabilities	
		X_3	net sales income / equity	
		X_4	balance / net sales income	
		X_5	(current assets – current liabilities) / current assets	
		X_6	(long – term liabilities + current liabilities) / Balance	
		X_7	equity / (provision of subsequent expenses and payments + + long-term liabilities + current liabilities)	

Source: systematized by [12, p. 335]

ISSN Print 2414-0287
ISSN Online 2707-8426

Table 3 – Assessment of bankruptcy according to the model of O. Tereshchenko SE Mine naned after M.S. Surgay

Indicator	Formula	2018	2019	2020
X_1	f. 2 r. 2350 or 2355 + amort. f. 2 r. 2515 / f. 1 r. 1595 + f. 1 r. 1695	0,028	0,156	–0,035
X_2	f. 1 r. 1300 / f. 1 r. 1595 + f. 1 r. 1695	0,659	0,763	0,638
X_3	f. 2 r. 2350 or 2355 / f. 1 r. 1300	–0,002	0,078	–0,211
X_4	f. 2 r. 2350 or 2355 / f. 2 r. 2000	–0,004	0,075	–0,460
X_5	f. 1 from 1101 to 1104 / f. 2 r. 2000	0,171	0,129	0,405
X_6	f. 2 r. 2000 / f. 1 r. 1300	0,569	1,049	0,458
Z	$= 1,5 \times X_1 + 0,08 \times X_2 + 10 \times X_3 + 5 \times X_4 + 0,3 \times X_5 + 0,1 \times X_6$	0,156	1,596	–4,247

as a result of which the financial situation is already diagnosed as semi-bankrupt.

Thus, Tereshchenko's model in the diagnosis of bankruptcy is quite convenient, and this is undoubtedly its advantage. Its advantages also include its adaptability to domestic enterprises, the model takes into account the industry characteristics of enterprises and modern international practice. Equally important, in our opinion, is the ability of this model to solve the problems of critical values of indicators, as the enterprises of different industries use modifications of the basic model.

But this model also has certain disadvantages:

− only satisfactory and unsatisfactory financial condition is diagnosed, ie the method does not contain a deeper assessment of financial condition;

− the method is characterized by inaccurate fixation of normative values of financial indicators due to insufficient substantiation of critical points (intervals) for certain financial indicators;

− long interval of uncertainty.

Let's continue the diagnosis of the financial condition of the enterprise using the model of foreign scientist E. Altman. Altman developed three models of bankruptcy prediction in different periods:

− Z-Score model (1968)
− Zeta model (1983)
− Modified model Z3 (1993)

We will use the Z-Score model in the study.

This model was developed by Edward Altman using multiple discriminant analysis to relatively predict the threat of bankruptcy in the next five years. The model allows on the basis of financial and accounting statements to establish indicators that indicate whether the company is approaching bankruptcy. The scientist pointed out that the model is a reliable tool for predicting the bankruptcy of various industries, it is universal. As for the weighting factors (1.21; 1.41; 3.3; 0.6; 0.999), they take into account the relative importance of each variable based on what is used by enterprises [12].

Calculations for this model are presented in Table 4.

Defined in table. 4 indicators allow us to state that at the enterprise SE «Mine named after M.S. Surgay» in 2018 and 2020 there is an average probability of bankruptcy, and in 2019 – diagnosed very low, although for three years the company is in a difficult financial situation. Thus, we can conclude that the results of calculations indicate the inconsistency of the Altman model with the economic conditions of the domestic market, as well as the feasibility of its use in diagnosing the probability of bankruptcy of domestic enterprises. This is the main disadvantage of this model. Another disadvantage is that the Altman model is based on data from the 1950s, in the model is outdated, because during this time there have been significant changes in the level of economic development.

The advantages of the model are its ease of use. Since this is a quantitative model, it is very easy to draw conclusions from forecasting results. The model uses five financial ratios, which are calculated based on seven financial data that are readily available in the balance

Table 4 – Bankruptcy assessment according to the model of E. Altman SE "Mine named after M.S. Surgay" for 2018–2020

Indicator	Formula	2018	2019	2020
A	f. 2 r. 1195 / f. 1 r. 1300	0,254	0,340	0,268
B	f. 2 r. 2350 or 2055 / f. 1 r. 1300	–0,002	0,078	0,211
C	f. 2 r. 2000 / f. 1 r. 1300	0,569	1,049	0,458
D	f. 2 r. 2350 or 2355 / f. 2 r. 2000	–0,004	0,075	0,460
E	f. 1 r. 1495 / f. 1 r. 1300	–0,517	–0,310	–0,568
Z	$= 1,2 \times A + 1,4 \times B + 3,3 \times C + 0,6 \times D + 0,999 \times E$	2,258	4,344	2,622

ISSN Print 2414-0287
ISSN Online 2707-8426

sheet and other reports. Investors usually use it to assess the solvency of the enterprise, in order to determine the feasibility of investing in this enterprise.

The next model we will study is the model of the foreign scientist G. Springgate. Based on the procedures developed by Altman for US enterprises, Springgate, at Simon Fraser University, used step-by-step multiple discriminant analysis to select four ratios of the 19 popular financial instruments that best distinguish between a «healthy» business and one that has really failed. Thus, the model was developed for US and Canadian companies and reached 92.5 % accuracy in forecasting using indicators from 40 companies tested by Springgate [13].

Calculations for this model are presented in Table 5.

The results of calculations show that applying the Springgate model in predicting the probability of bankruptcy of SE «Mine named after M.S. Surgay», you can get more accurate results than the Altman model. Based on the obtained results, we can conclude that in 2018 and 2020 at the SE «Mine named after M.S. Surgay» is a sign of potential bankruptcy, and in 2019 – the company operates quite efficiently, so it is not threatened with bankruptcy. Such results differ from the results of the previous model.

The advantage of the Springgate model is the high accuracy of predicting the probability of bankruptcy of the company. The disadvantages include the focus of the scientist only on the economies of Canada and the United States. The coefficients were presented by the scientist in dollars. When converting, the exchange rate will leave a deviation [13].

The last model we will study is the model of R. Taffler and G. Tishaw. Taffler proposed a model based on a large data set. The model is designed to analyze the performance of industrial companies. Using computer technology, 80 financial ratios were calculated using the figures of all listed industrial companies that went bankrupt between 1968 and 1976. There were also 46 randomly selected industrial enterprises for the production of solvents. This information was processed using a number of statistical methods, and the model was constructed using a multidimensional discriminant method. To create the model, profitability, liquidity, capital adequacy and other parameters were evaluated. The model can be used only by joint-stock companies whose shares have been listed on stock exchanges [14].

Calculations for this model are presented in Table 6.

The results obtained indicate the impractical use of this technique in the diagnosis of bankruptcy of domestic enterprises, as the results of the diagnosis during 2018–2020 SE «Mine named after M.S. Surgay» works quite efficiently and is not threatened with bankruptcy.

Due to the fact that the model was developed on the basis of a large array of data, the obtained forecast results must be with a high percentage of accuracy. The disadvantages of the model will be the limitation of the scope and impossibility of application in the diagnosis of bankruptcy of Ukrainian enterprises [14].

The generalization of the obtained results of the diagnosis of the probability of bankruptcy according to the studied models is clearly shown in Figure 1.

According to the results of the analysis, the company in order to improve the financial condition of the company needs to implement a set of measures:

- increase in income from operating activities;
- reduction of production costs;
- achieving the optimal level of equity and debt capital;

Table 5 – Assessment of bankruptcy according to the model of Springgate SE "Mine named after M.S. Surgay" for 2018–2020

Indicator	Formula	2018	2019	2020
A	f. 1 r. 1195 / f. 1 r. 1300	0,254	0,340	0,268
B	f. 2 r. 2290 / f. 1 r. 1300	0,000	0,078	0,000
C	f. 2 r. 2290 / f. 1 r. 1695	0,000	0,061	0,000
D	f. 1 r. 2000 / f. 1 r. 1300	0,569	1,049	0,458
Z	= 1,03 × A + 3,07 × B + 0,66 × C + 0,4 × D	0,489	1,050	0,459

Table 6 – Bankruptcy assessment according to the model of R. Taffler and G. Tishaw SE "Mine named after M.S. Surgay" for 2018–2020

Indicator	Formula	2018	2019	2020
A	f. 2 r. 2190 or 2195 / f. 1 r. 1695	–0,025	0,062	–0,137
B	f. 1 r. 1195 / f. 1 r. 1595 + f. 1 r.1695	0,167	0,352	0,171
C	f. 1 r. 1695 / f. 1 r. 1300	1,409	1,292	1,550
D	f. 2 r. 2000 / f. 1 r. 1300	0,569	1,049	0,458
Z	$= 0{,}53 \times A_1 + 0{,}13 \times B_2 + 0{,}18 \times C_3 + 0{,}16 \times D_4$	0,353	0,479	0,302

ISSN Print 2414-0287
ISSN Online 2707-8426

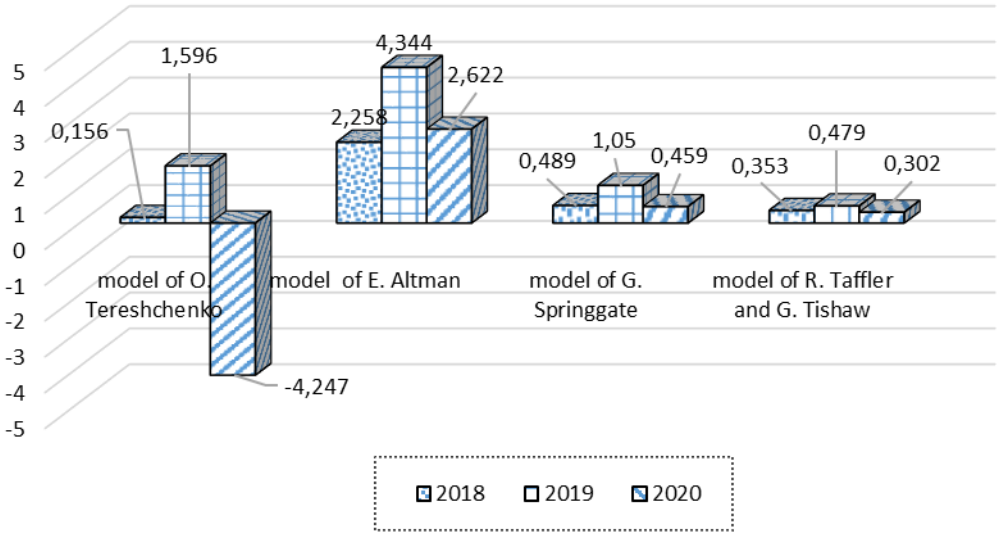

Fig. 1 – The results of the diagnosis of the probability of bankruptcy of SE «Mine named after M.S. Surgay» for 2018–2020

− increasing the competitiveness of coal as the main type of product;

− reduction of expenses covered by the company's profit;

− conducting a comprehensive analysis of internal factors that led to the crisis;

− implementation of financial planning taking into account external factors that may adversely affect the financial condition of the enterprise;

− conducting constant monitoring to identify risks «on weak signals» and timely implementation of internal reserves.

Conclusions

Today in foreign and domestic practice there are many models for predicting the probability of bankruptcy, each of which has certain advantages and disadvantages. There is no single right approach to assessing the risk of bankruptcy. The studied models of foreign scientists do not reflect the real financial condition of Ukrainian enterprises, because the basis in the process of developing these discriminatory models by foreign scientists was taken key economic indicators of a country that are not adapted to domestic economic realities. Also, the considered models of foreign analytical practice are generalized and do not take into account the sectoral features of the functioning of economic entities. Thus, it is expedient to apply bankruptcy probability assessment models developed by O. Tereshchenko, A. Matviychuk and R-model of bankruptcy risk assessment at Ukrainian enterprises, the peculiarities of practical application of which will be the object of our further research.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 336

DOI https://doi.org/10.26661/2414-0287-2021-3-51-08

FUNCTIONAL STRATEGIES IN MODERN ECONOMIC CONDITIONS: ESSENCE AND STRUCTURAL ELEMENTS OF THE FINANCIAL STRATEGY

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Key words:
strategic management, sustainable development, functional strategies, financial strategy, structural elements, types of financial strategy

Problems of enterprises development strategic management and their effective activity are topical topics of modern theoretical and practical researches. Modern conditions of management are characterized by accelerated pace of changes of enterprises functioning, political instability in the state, economic crisis, increasing competition. To ensure the sustainable development of enterprises and their sustainable market position in a dynamic competitive environment, it is necessary to have a well-thought-out long-term strategy and effective functional strategies. The article defines the place of financial strategy in the general enterprise strategy and the role of financial strategy in the general concept of strategic management of the enterprise, which was caused by the essence of the main economic categories as finance, money and credit, which are the basis for its construction. Thanks to a well-formed financial strategy it is possible to ensure the fulfillment of long-term goals to ensure the enterprise effective financial performance. The article discusses the essence and theoretical aspects of the financial strategy formation and determines the financial strategy development as an area of financial planning. The formation of a financial strategy is associated with the setting of goals and objectives of the enterprise, support of financial relations between the enterprise and environmental actors (financial market, state regulatory authorities, specialized financial institutions, business partners, etc.). The peculiarities of the enterprise financial strategy implementation in case of macro level and financial market situation changing have been reflected, which leads to adjustment of both the financial and general strategy of enterprise development. The characteristic features of the financial strategy which reflect its essence and content and form a system of financial resources management in order to ensure their effective use and sustainable development of the enterprise were considered. The main types of financial strategy implementation have been described. The type of financial strategy characterizes the ratio of results. It has been substantiated that the structural components of the financial strategy forms the same conditions and factors that affect the overall strategy of the business entity.

ФУНКЦІОНАЛЬНІ СТРАТЕГІЇ В СУЧАСНИХ ЕКОНОМІЧНИХ УМОВАХ: СУТНІСТЬ І СТРУКТУРНІ ЕЛЕМЕНТИ ФІНАНСОВОЇ СТРАТЕГІЇ

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Ключові слова:
стратегічний менеджмент, сталий розвиток, функціональні стратегії, фінансова стратегія, структурні елементи, види фінансової стратегії

Проблеми стратегічного управління розвитком підприємств та їх ефективної діяльності є актуальними темами сучасних теоретичних і практичних досліджень. Сучасні умови господарювання характеризуються прискореними темпами змін функціонування підприємств, політичною нестабільністю в державі, економічною кризою, посиленням конкуренції. Для забезпечення сталого розвитку підприємств та їх стійкої ринкової позиції в динамічному конкурентному середовищі необхідно мати продуману довгострокову стратегію та ефективні функціональні стратегії. У статті визначено місце фінансової стратегії в загальній стратегії підприємства та роль фінансової стратегії в загальній концепції стратегічного управління підприємством, що було зумовлено сутністю основних економічних категорій як фінанси, гроші та кредит, які є основою для його побудови. Завдяки грамотно сформованій

ISSN Print 2414-0287
ISSN Online 2707-8426

фінансовій стратегії можна забезпечити виконання довгострокових цілей для забезпечення ефективної фінансової діяльності підприємства. У статті розглянуто сутність та теоретичні аспекти формування фінансової стратегії та визначено розробку фінансової стратегії як напряму фінансового планування. Формування фінансової стратегії пов'язане з постановкою цілей і завдань підприємства, підтримкою фінансових відносин між підприємством та суб'єктами довкілля (фінансовий ринок, державні контролюючі органи, спеціалізовані фінансові установи, бізнес-партнери тощо). Відображено особливості реалізації фінансової стратегії підприємства у разі зміни макрорівня та ситуації на фінансовому ринку, що призводить до коригування як фінансової, так і загальної стратегії. Розглянуто характерні риси фінансової стратегії, які відображають її сутність та зміст та формують систему управління фінансовими ресурсами з метою забезпечення їх ефективного використання та сталого розвитку підприємства. Описано основні види реалізації фінансової стратегії. Тип фінансової стратегії характеризує співвідношення результатів. Обґрунтовано, що структурні компоненти фінансової стратегії формують однакові умови та фактори, що впливають на загальну стратегію суб'єкта господарювання.

Statement of the problem

The need and relevance of the enterprise financial strategy development are determined by the growing influence of the external environment on the nature and effectiveness of business, which is combined with certain negative internal factors in the Ukrainian enterprises development.

The financial strategy should be subordinate to the enterprise general strategy and be adequate to it for the purpose and objectives.

Allocation of financial strategy as part of the enterprise general strategy is justified by [1]:

– diversification of large enterprises activities in terms of mastering various markets, including financial ones;

– the need to find sources of financing for strategic projects;

– the presence of a single ultimate goal for all enterprises when choosing strategic benchmarks for maximizing the financial effect;

– rapid development of international and domestic financial markets.

In accordance with the main strategic goal, the financial strategy ensures [3–5]:

– formation of financial resources and centralized strategic management;

identification of the main directions and focus on their implementation of efforts, maneuverability in the use of reserves by the financial management of the enterprise;

– ranking and step-by-step achievement of tasks;

– compliance of financial actions with the economic condition and material capabilities of the enterprise;

– objective accounting of the financial and economic situation and the real financial condition of the enterprise during the year, quarter, month;

– accounting for the economic and financial capabilities of the enterprise and competitors;

– creation and preparation of strategic reserves;

– determination of the main threat from competitors, mobilization of forces of its elimination and skillful choice of directions of financial actions.

Analysis of recent researches and publications

Many scientists such as Y.V. Bas, T.V. Butenko, Y.A. Buchakchyska, T.S. Karpova, O.S. Korpan, L.Y. Naumova, G.O. Partin, R.V. Ruda, O.V. Ryabenkov, N.S. Tanklevska, M.S. Khavanova, I. Kimich, O. Shcherban and others deal with the development of issues related to the formulation of the economic essence and types of financial strategy of the enterprise, its tasks, management methods, stages of development, etc. In the works of scientists, in particular, the algorithm for building a financial strategy is considered, the macro- and micro-environment factors that are decisive in shaping the goals of the financial strategy are analyzed.

Formulation of the objectives

The purpose of the article is to study the essence of the "financial strategy of the enterprise" concept, its formation and structure peculiarities definition.

Presentation of the main research material

The financial strategy should be understood as the formation of a system of long-term goals of financial and economic activity and the choice of the most effective ways to achieve them, taking into account the trends in the development of the financial market. Financial strategy has certain characteristics (Fig. 1).

A financial strategy is a universal strategy through which all specialized strategies are integrated into a single and holistic strategy of the organization. The process of the enterprise financial strategy forming goes through a number of stages (Fig. 2).

An important point in the financial strategy formation is taking into account financial and marketing policy. Therefore, we can distinguish separate types of financial strategies (Fig. 3) [5].

Expansion strategy (expansion strategy) – is chosen in the case when the company conducts a so-called aggressive policy: it plans to acquire (absorb) other enterprises, expand production, capture a significant market share, enter new markets; its application is expedient if the products of

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ISSN Online 2707-8426

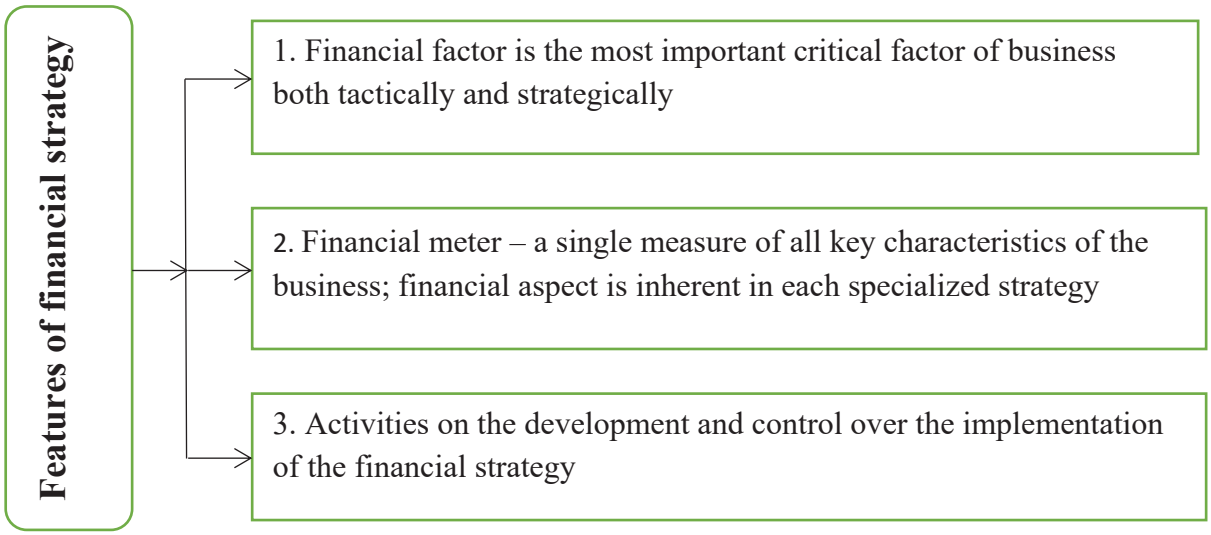

Fig. 1 – The main features of the financial strategy of the enterprise

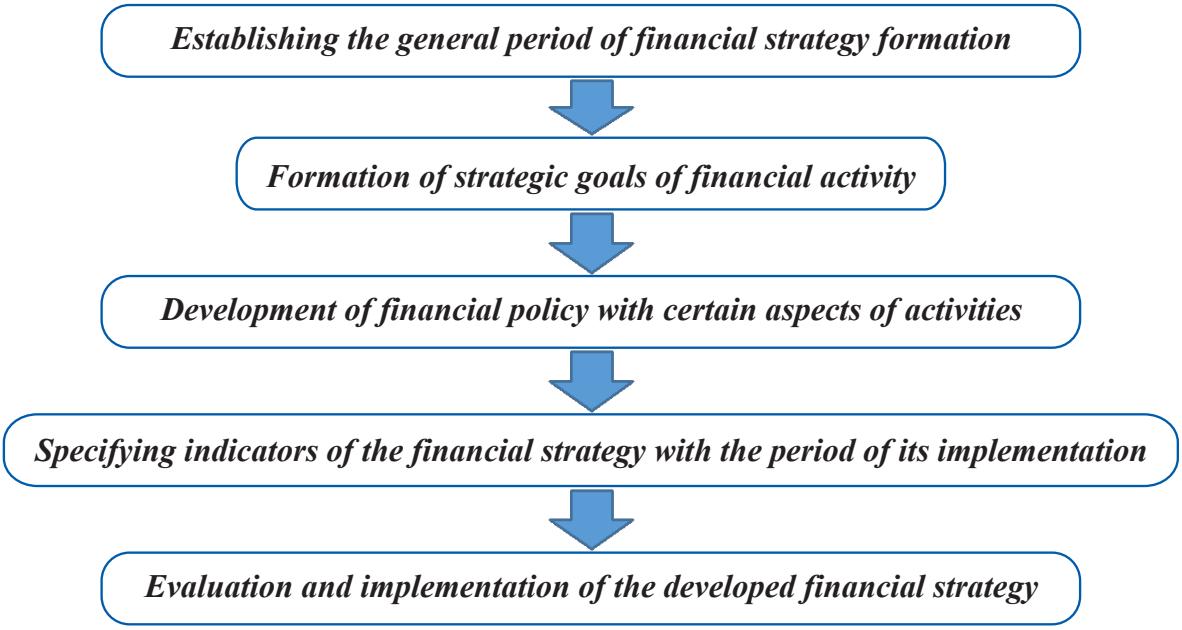

Fig. 2 – The main stages of formation of the financial strategy of the enterprise

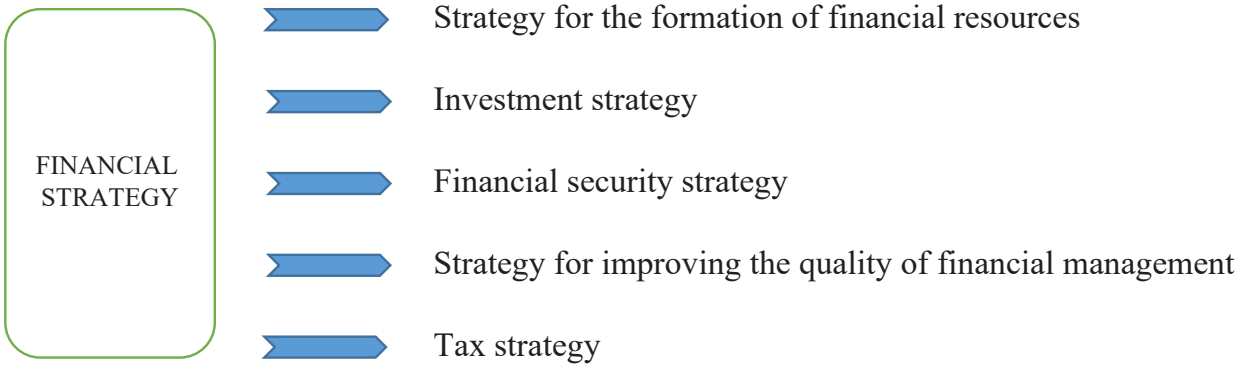

Fig. 3 – Structure of the financial strategy of the enterprise

ISSN Print 2414-0287
ISSN Online 2707-8426

a business entity are at the stage of introduction, formation or elevation and the company has sufficient labor and financial potential to implement the above measures.

The strategy of gradual development is typical for most industrial enterprises. This type of strategy involves directing a business entity to gradually increase the volume of activity, increases profitability, improves the main financial, production and economic indicators and characteristics and ensures a stable financial condition.

The protective strategy provides for a slight decrease in production capacity, partial or complete curtailment of investment and innovation activities in order to maintain a certain level of profitability and financial stability of the enterprise with a negative impact on its activities of endogenous and exogenous factors.

Stabilization strategy – arises in case of temporary loss of solvency by the enterprise, violation of the balance sheet structure, deterioration of performance indicators.

The anti-crisis strategy is implemented when the company is in crisis and needs sanitation. It provides for a set of measures aimed at restoring solvency (liquidity), creditworthiness, stabilization of its financial condition.

The economic literature proposes a different structures of the enterprise financial strategy. The methods and directions of achieving the stated goals are determined within the framework of the formation of individual components (modules) of the financial strategy and its components. This approach allows to define the financial strategy of the enterprise as an integrated structural composition of five interrelated and interdependent modules [6].

Table 1 presents the characteristics of the structural components of the financial strategy. The establishment of financial strategy is impossible without the information of the enterprise market environment (competitors, suppliers, clients, intermediaries, state organizations and services, banking organizations) and its detailed analysis.

At this stage financial managers should apply appropriate financial instruments: microeconomic financial planning, forecasting, strategic and financial analysis (in particular SWOT analysis, covering the analysis of weaknesses and strengths of the enterprise, risks and additional opportunities), statistical methods and economic and mathematical modeling.

Determining the set of factors influencing the development of a financial strategy allows to answer the question: will the developed financial strategy lead to the achievement of the enterprise's financial goal in the context of changes in the factors of the external financial situation. The company should make forecasts more often than its competitors, this will allow to control the future situation, unlike competitors who can only respond to it.

To facilitate the implementation of the financial strategy, it is advisable to carry out its detail by drawing up tactical plans.

Tactical planning is designed to form mechanisms for the implementation of the chosen strategy. Tactical planning has two kinds: operational and current. Current planning is a type of management activity aimed at developing parameters, measures, budgets and administrative and financial levers in order to form current plans for the

Table 1 – Characteristics of the components of the enterprise financial strategy

Component of the financial strategy of the enterprise	Essence	Main strategic objectives
Strategy for the formation of financial resources	Creation of the necessary volume and structure of financial resources, adequate development goals, allowing to achieve the strategic installations of the company with the greatest efficiency	Achieving a steady increase in the volume of own sources of financing; attracting the necessary external financing with minimal costs; optimization of the structure of sources of financial resources and ensuring financial flexibility
Investment strategy	Optimal distribution of investment resources owned by the company in certain areas and forms of investment	Ensuring the necessary proportionality of the distribution of investment resources by types and main directions of investment activity of the enterprise; ensuring the necessary proportionality of the distribution of financial resources in the strategic economic units of the enterprise; ensuring high efficiency of return on investment resources of the enterprise in the process of their use
Financial security strategy	Ensuring a stable financial balance throughout the entire period of the company's operation	Identification and assessment of the most significant financial risks and development of a set of measures to neutralize them; ensuring stable solvency and financial sustainability, implementation of comprehensive solutions in the field of crisis management (both in terms of preventive measures and in terms of actions in case of signs of crisis)
Strategy for improving the quality of financial management	Creation of a flexible financial management system adequate to the set long-term goals and objectives	Creation of an effective financial structure; ensuring a high level of qualification and organizational culture of financial managers; implementation and effective use of innovative financial technologies, including methods and tools that allow to model alternative development scenarios and predict their financial results
Tax strategy	Making decisions that allow to optimize the tax burden of the enterprise, preventing the growth of tax risks	Optimization of the tax burden, which ensures the growth of undisclosed profits of the company in the conditions of an acceptable level of tax risks; formation of tax policy with maximum consideration of possible benefits, prevention of fines and overpayments

ISSN Print 2414-0287
ISSN Online 2707-8426

functioning of specific areas of the organization's activities or its activities for a general annual period in the direction of achieving the tasks of the selected financial strategy. Operational planning is aimed at forming narrow, detailed, short-term plans on specific issues of the enterprise's activities, which are formed through the development of current plans. Operational and current plans should not deviate from the enterprise financial strategy, but to detail and supplement it [5].

Particular attention should be paid to optimizing the level of cash income, mobilizing internal resources, maximally reducing the cost of production, optimal distribution and use of profits, determining the need for working capital, rational use of enterprise capital. The financial strategy is developed taking into account the risk of non-payment, inflation and other unforeseen circumstances. It must meet production tasks and, if necessary, adjust and change.

In general, the financial strategy can be defined as one of the most important functional strategies of the enterprise, which provides all the main directions of development of its financial activities and financial relations by forming long-term financial goals, choosing the most effective ways to achieve them, adequate adjustment of the directions of formation and use of financial resources when changing environmental conditions.

The financial strategy does not exist as a separate economic category and is only a tool for implementing the overall strategy of the enterprise. The financial strategy of the enterprise includes analysis of the financial condition; optimization of own and working capital, profits distribution, non-cash payments, tax and pricing policy, securities policy. When general and operational financial strategies are distinguished, the period of operational financial strategy is limited to one year, giving it the function of operational financial planning [7].

Conclusions

The development and implementation of an effective financial strategy by domestic enterprises is the basis for the financial and economic crisis withdrawal. The main properties of the financial strategy of any enterprise are its effectiveness, adequacy, reliability, ability to create and maintain long-term competitive advantages of both financial resources and the enterprise as a whole, time-orientedness, reach, due to the compliance of the enterprise's potential with its strategic capabilities of functioning and development, planning, systemicity, differentiation, flexibility, riskiness.

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ISSN Print 2414-0287
ISSN Online 2707-8426

NATIONAL ECONOMY'S MARKET MECHANISMS OF ACCOUNTING, ANALYSIS AND AUDIT

UDC 657.1/.4:658.155 DOI https://doi.org/10.26661/2414-0287-2021-3-51-09

SUBJECTIVITY AS A PROBLEM ASPECT OF REFLECTION IN ACCOUNTING FINANCIAL RESULTS OF ENTERPRISE ACTIVITY

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Key words:
unemployment, growth, migration, emigration, immigration, frictional unemployment, seasonal unemployment, structural unemployment

The article examines the accounting essence of financial results of enterprises, including by identifying certain aspects of such accounting identification, namely the technical aspect of calculating financial results, the essential aspect of perception of financial results and the monetary aspect of financial results identification. It is proved that the main reason for the subjectivity of the definition in accounting for financial results is the need to calculate the results for individual reporting periods in terms of continuing business activities, because it is the presence and subjective assessment of balances of assets and liabilities leads to subjectivity in assessment financial result for a reporting period. It is determined that the subjectivity of the recognition moment of income and expenses leads to the emergence of alternative accounting methods for these categories – the cash method and the accrual method. It is established that the application of the cash method in modern conditions is almost impossible, because calculated in this way the financial result will be very questionable. Adoption of the accrual method solves the problem of cash gap for income and expenses in the presence of balances of assets and liabilities, which improves the quality of determination in accounting for financial results, but does not solve the problem of subjectivity, only moving it to the plane of accounting policy. The influence of some elements of accounting policy on the process of determining financial results is analyzed. The classification of elements of accounting policy developed by the author depending on presence and predictability of influence on the size of financial results of separate periods is presented. Classification involves the separation of elements of accounting policies that have a clearly predictable effect on the size of financial results, elements whose impact on the size of financial results is predictable, but depends on other factors, elements that affect the size of financial results, but the direction of influence depends on many factors and is unpredictable, as well as elements that do not affect the size of financial results. The influence of the subjectivity of the accounting definition of financial results on the process of corporate income taxation in accordance with current tax legislation is briefly considered.

СУБ'ЄКТИВНІСТЬ ЯК ПРОБЛЕМНИЙ АСПЕКТ ВІДОБРАЖЕННЯ В ОБЛІКУ ФІНАНСОВИХ РЕЗУЛЬТАТІВ ДІЯЛЬНОСТІ ПІДПРИЄМСТВА

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Ключові слова:
суб'єктивність, облік, облікова ідентифікація, фінансові результати, прибуток, збиток, доходи, витрати, чисті активи, власний капітал, облікова політика

У статті виконано дослідження облікової сутності фінансових результатів діяльності підприємств, у тому числі шляхом виокремлення окремих аспектів такої облікової ідентифікації, а саме технічного аспекту розрахунку фінансових результатів, сутнісного аспекту сприйняття фінансових результатів та грошового аспекту ідентифікації фінансових результатів. Доведено, що основною причиною суб'єктивності визначення в обліку фінансових результатів є необхідність здійснювати розрахунок результатів

ISSN Print 2414-0287
ISSN Online 2707-8426

за окремі звітні періоди в умовах продовження підприємством господарської діяльності, адже саме наявність та суб'єктивна оцінка залишків активів та зобов'язань призводить до суб'єктивності в оцінці фінансового результату за той чи інший звітній період. Визначено, що суб'єктивність моменту визнання доходів та витрат призводить до появи альтернативних методів обліку зазначених категорій – касового методу та методу нарахування. Встановлено, що застосування касового методу в сучасних умовах є практично неможливим, адже розрахований таким чином показник фінансового результату буде дуже сумнівним. Прийняття методу нарахування вирішує проблему касового розриву щодо доходів та витрат за наявності залишків активів і зобов'язань, що сприяє підвищенню якісного рівня визначення в обліку фінансових результатів, але не вирішує проблему суб'єктивності, лише переміщуючи її в площину формування облікової політики. Проаналізовано вплив деяких елементів облікової політики на процес визначення фінансових результатів. Презентована розроблена автором класифікація елементів облікової політики в залежності від наявності та прогнозованості впливу на розмір фінансових результатів окремих періодів, яка передбачає виокремлення елементів облікової політики, які здійснюють однозначно прогнозований вплив на розмір фінансових результатів, елементів, вплив яких на розмір фінансових результатів є прогнозованим, але залежить від дії інших факторів, елементів, які здійснюють вплив на розмір фінансових результатів, але напрямок впливу залежить від багатьох факторів та є малопрогнозованим, а також елементів, які не впливають на розмір фінансових результатів. Коротко розглянуто вплив суб'єктивності облікового визначення фінансових результатів на процес оподаткування прибутку підприємств відповідно до норм чинного податкового законодавства.

Formulation of the problem

The activity of any enterprise as a business entity is aimed at a stable profit and thus increase equity and, accordingly, net assets – economic resources that can bring economic benefits to owners. It is for the sake of achieving this goal that owners invest money, form the authorized capital, and spend time and entrepreneurial skills on strategic management of the enterprise. Determining the financial results of activities should be recognized as one of the central tasks to be solved by accounting. Historically, the emergence and development of accounting as a process of systematization of information in compliance with the principle of double entry, including justified by the need to adequately determine the financial performance of business structures. This task is still extremely important today. In accordance with Art. 3 of the Law of Ukraine «On Accounting and Financial Reporting in Ukraine» «the purpose of accounting and financial reporting is to provide users for decision-making complete, truthful and unbiased information about the financial condition and results of the enterprise» [1].

The financial result – profit or loss – of business activities, in our opinion, should be recognized as an objective value, the value that is formed under the influence of external factors for the accounting system, and accordingly should not depend on any accounting estimates and procedures, as well how the appearance of things does not depend on the quality of the mirror. But there is a fundamental remark to this thesis – it should be agreed only if we consider the period from the emergence of the enterprise to its liquidation – the financial result for the entire period of business. At the same time, the accounting system must regularly solve another task, namely to assess the financial performance for individual reporting periods in terms of continued business activities. In turn, the continuation of active economic activity leads to the formation of assets and liabilities balances, the presence and, accordingly, subjective assessment of which actually leads to subjectivity in assessing the financial performance of the enterprise for a given reporting period.

Analysis and understanding of the nature of specific reasons for the evaluation of financial results subjectivity of certain periods of time will, in our opinion, increase the quality of accounting information on profit or loss as a result of the enterprise, which justifies the relevance of researching the subjectivity of accounting both for economics and for accounting practice.

Analysis of recent studies and publications

The issue of reflection in the accounting of financial results of the enterprise is the subject of many modern scientific studies. At the same time, the issue of accounting subjectivity for financial results is usually not emphasized by scientists, although some aspects of it are considered quite actively.

Yu.O. Ivakhiv, researching accounting methods for recognizing the results of the enterprise, analyzes the cash method and the method of accrual to reflect in the accounting of income, expenses and financial results. In particular, the scientist notes that it is «the method of accrual allows to establish causal links between business transactions and reflect their impact on the financial performance of the enterprise in the reporting period» [2, p. 80], but at the same time draws attention to the fact that «it is necessary to form an accounting system so as to be able to adequately reflect in the reporting such an indicator as the cash flow of the

ISSN Print 2414-0287
ISSN Online 2707-8426

current period to perform certain tasks and the potential for change in the future properly present the financial results of the enterprise» [2, p. 83].

Another common direction in the scientific literature is the study of the process of reflection in the accounting of financial results. It should be considered the analysis of the impact on this process of accounting policy and its individual elements. Thus, in a scientific article by L.A. Kushnir, O.N. Korkushko, V.O. Kushnir noted that «through the application of accounting policies adequate to the needs of the business entity, you can significantly influence the results of activities, property and financial condition» [3, p. 251]. L.V. Koval singles out the elements of accounting policy, the choice of which «affects the decrease» and «increases the financial result of the enterprise» and accordingly concludes that «taking into account the impact of accounting policy on the performance of the enterprise can achieve both increase and decrease financial results» [4]. In the development of these ideas, O.P. Ratushna argues that «when forming the accounting policy of the company responsible persons must take into account the consequences of choosing one or another element of the method of accounting policy for financial results, because some of them allow to manipulate the amount of profit, and this will lead to inaccuracy» [5, p. 208].

The scientific literature also examines the relationship between accounting for financial results and the process of taxation. Thus, V. Sopko notes that «one of the areas of rational organization of accounting is to improve the accounting of financial results and their reflection in financial and tax reporting» [6, p. 138–139], and the study indicates that «special attention should be paid to the elements of accounting policy, the formation of which should be based on the analysis of the impact of alternative accounting methods on enterprise profits and taking into account the assessment of tax consequences» [6, p. 145]. The conclusions of the scientific research of V.V. Kirsanova and D.O. Pelipadchenko, who argue that «it is important in the activities of managers and accountants of the enterprise is the formation of such an accounting policy that will not only provide… complete and objective information about financial results, but also choose the optimal scheme of corporate income tax and avoid unreasonable overstatement or underestimation of profit indicators, which is especially relevant in connection with the prospects of using the profit determined by the accounting rules as a basis for calculating income tax» [7, p. 324].

Thus, despite the available research on the impact of certain accounting procedures and accounting policies on the process of recognizing the financial results of the enterprise, the issue of reflection subjectivity in the accounting of financial results is not finally resolved, which justifies the relevance of further research.

Formulation of the goals of the article

The study purpose is to critically analyze the reasons for the subjectivity of the enterprise financial results, including the impact of certain accounting procedures and estimates on the formation of financial results, in order to create conditions for improving the quality of accounting information on the results of the enterprise.

The main material of the research

Carrying out a critical analysis of subjectivity as a problematic aspect of reflecting in the accounting of financial results of the enterprise, it is necessary to first examine the accounting essence of the category «financial results», and it will be about accounting perception of financial results, because it should be borne in mind that economic and accounting essence categories of «profit» and «loss» in a sense differ. Thus, according to the traditional approach in the interpretation of C.R. McConnell and S.L. Brue «accounting profit is the total revenue of the firm minus external costs», and «economic profit is revenue minus all costs (external and internal, i. e. costs associated with lost opportunities, including the normal profit of the entrepreneur)» [8, p. 46]. The difference is that in determining the accounting profit only the actual costs are taken into account, and in determining the economic profit also the costs associated with lost profits, because equity, aimed at forming the assets of the enterprise, can alternatively be used to obtain other benefits, for example, placed in a deposit account or invested in securities.

The normative basis for accounting identification of the category «financial results» in the domestic legal field is the National Regulation (Standard) of Accounting 1 «General requirements for financial reporting». According to the norms of this normative document «profit – the amount by which revenues exceed the associated costs» [9], «loss – the excess of the amount of costs over the amount of income for which these costs were incurred» [9]. Thus, the normative identification of financial results (profit or loss) provides primarily a technical approach to comparing income and expenses, which in turn raises the issue of accounting identification of the latter. Accordingly, income is recognized as «an increase in economic benefits in the form of an increase in assets or a decrease in liabilities, which leads to an increase in equity (excluding capital growth due to owners' contributions)» [1], and costs – «a decrease in economic benefits in the form of reduced assets or an increase in liabilities that results in a decrease in equity (other than a decrease in equity due to its withdrawal or distribution by owners)» [1]. If you combine these definitions and accept the technical identification of financial results as the difference between income and expenses, the profit should be recognized as an increase in net assets of the enterprise, which leads to an increase in equity (excluding capital growth due to owners' contributions), and loss and decrease in net assets enterprise, which leads to a decrease in equity (except for the reduction of capital through its withdrawal or distribution by owners).

Accounting in compliance with the principle of double entry allows you to logically combine the technical approach to calculating financial results and their substantive perception. Thus, if the company's income for a certain period exceeds its expenses for the same period, the difference – financial result – profit – is capitalized by forming additional assets without any increase in liabilities, i. e. there is an increase in net assets or equity without additional contributions from owners. Such additional net assets are the essential purpose of entrepreneurial activity,

ISSN Print 2414-0287
ISSN Online 2707-8426

because it is about the emergence of additional economic resources that can meet the needs of the entrepreneur or business owners. If, on the other hand, the company's expenses for a certain period exceed its income for the same period, the difference between the financial result – losses – leads to loss of assets, i. e. a reduction in net assets or equity (without withdrawal of funds by owners).

Thus, financial results as a goal and integrated result of business activity is a change in the value of net assets and, accordingly, the amount of equity (without additional contributions or deductions by owners), which is technically the difference between income and expenses incurred over time.

Retained earnings in double-entry accounting according to the analyzed logic is perceived as a liability – a source of additional assets of the enterprise for the amount available before the distribution of profits between owners by accruing dividends. Losses as actually lost economic resources are formally recognized as specific, «contingent» assets, which accordingly leads to a decrease in equity.

Examining the accounting nature of financial results should also consider the plane of cash flow, because quite often entrepreneurs and business owners perceive profit as an increase in cash, as the most liquid assets, the value of which, unlike other assets, is not perceived as a subjective accounting estimate. Of course, an increase in cash is often not a reflection of a positive financial result – an increase in cash may be the result of a decrease in other assets or an increase in liabilities. But for the perception of the accounting nature of financial results is fundamental to the fact that profit in the absence of changes in the value of other assets, as well as the amount of other components of equity and liabilities leads to an increase in cash and losses on the same terms lead to a decrease in cash. Thus, if we consider the entire life cycle of the enterprise – from investing some capital in cash to its distribution in cash among the owners during the liquidation, the profit for the owners will be embodied in the additional amount of money they did not invest, but distribute among themselves and the losses will be the corresponding loss of cash of the owners.

Fig. 1 comprehensively presents the three aspects of accounting identification of the category «financial results», on which should be built reflections in accounting and reporting presentation of financial results of the enterprise.

The organization of determination in the accounting of financial results is based primarily on the technical aspect of identification of this accounting category, according to the process of determining financial results is preceded by a system of recognition and reflection in the accounting of income and expenses of the enterprise.

It is in the plane of income and expenses recognition is the first fundamental reason for the subjectivity of determining financial results, because the choice of the moment of recognition of income and expenses is not unambiguous.

Theoretically, the recognition of income and expenses can be organized in cash, i. e. by cash flow, and on an accrual basis. If for the calculation period the full economic cycle of the enterprise is accepted, then under certain assumptions the financial result, as an objective value, will be the same if the cash method is used, and if the method of accrual of income and expenses. But in determining the financial result of a particular reporting period (quarter or year), which does not correspond to the full business cycle, in the presence of balances and receivables and payables, the financial result determined by the cash method will differ significantly from the same indicator determined by accrual.

At first glance, the cash method of income and expense recognition is simple, transparent and even «fair», which is why it is still often used almost intuitively by small businesses. Its application avoids a situation in which the recognized profit is embodied in receivables from customers or other low-liquid assets. But the implementation of this method of recognition and accounting of income and expenses in a modern enterprise is a task almost meaningless, because the financial result obtained in such a calculation will be a very questionable indicator. The reason is to ignore the cash gap and the corresponding formation of inventories and current receivables and payables. Thus, if the received prepayment or payment for shipped products (goods) by cash method is considered income of the current period, then to adequately determine the financial results, all costs associated with such goods or products must be paid in the same period as soon as everything is unlikely. It is almost

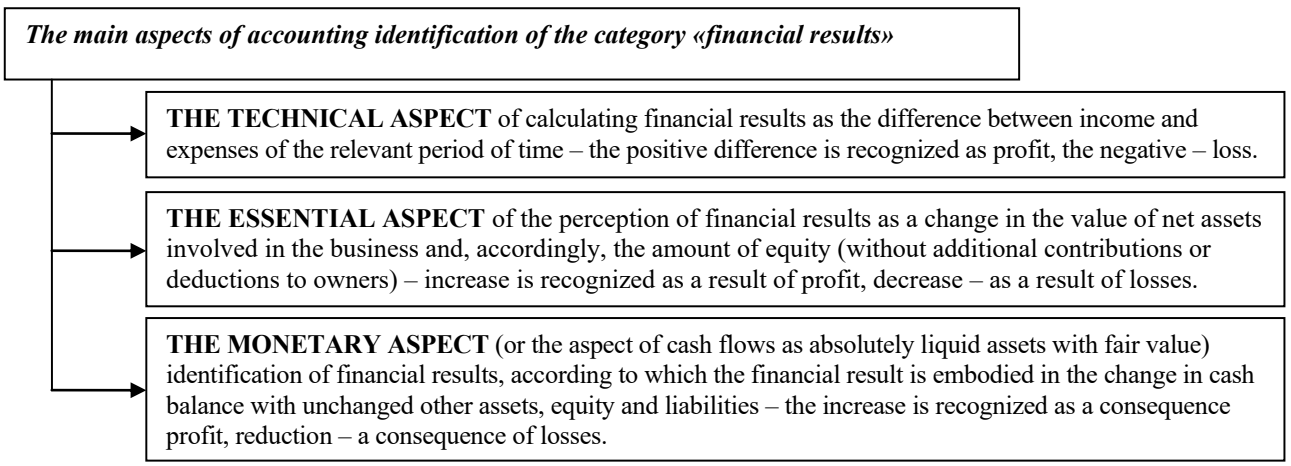

Fig. 1 – The main aspects of accounting identification of the category «financial results»

ISSN Print 2414-0287
ISSN Online 2707-8426

impossible to combine the logic of depreciation, as a gradual transfer of the value of fixed assets to costs, with the logic of reflection in the cost accounting, because the payment of fixed assets is almost not associated in time with the gradual loss of consumer properties. That is why even theoretically in modern conditions in the accounting of the enterprise it is almost impossible to apply the cash method of accounting for income and expenses. The only viable option, which, unlike the accrual method, will contain elements of the cash method, may be a hybrid method of recognition and accounting for income and expenses, in which income from the sale of assets will be recognized only after receiving cash from the buyer, for which as assets are introduced such as «shipped but unpaid assets».

The solution of the problem aspect of the cash gap in income and expenses in the presence of inventory balances and receivables and payables in modern accounting practice is carried out by applying an alternative to the cash method of determining income, expenses and financial results – the accrual method. This method is the most common in modern world practice of accounting, and is also mandatory for use by enterprises in Ukraine, because in accordance with the Law of Ukraine «On Accounting and Financial Reporting in Ukraine» among the principles of accounting and reporting provides the principle accrual, according to which «income and expenses are reflected in the accounting and financial statements at the time of their occurrence, regardless of the date of receipt or payment of funds» [1].

The application of the accrual method in the recognition of income and expenses fundamentally actualizes another important principle of accounting and financial reporting – «prudence, according to which the valuation methods used in accounting should prevent underestimation of liabilities and costs and overestimation of assets and income of the enterprise» [9]. In this regard, it should be noted that despite other significant shortcomings, the cash method of recognition of income and expenses is deprived of the dependence of income and expenses on subjective accounting estimates of assets and liabilities, because it takes into account cash flows, the size of which is objective, in contrast to the movement, for example, stocks, the assessment of which is already subjective. Similarly, an accounting estimate by amortizing the gradual loss of property, plant and equipment or forming collateral is undoubtedly subjective.

Thus, it is worth paying special attention to the fact that the adoption of the principle of accrual of income and expenses does not fully address the issue of objectivity of financial results, but moves the problem of subjectivity in the plane of individual accounting procedures and estimates, in the plane of so-called accounting policy – «principles, methods and procedures used by the company for accounting, preparation and submission of financial statements» [9].

The scientific literature actively investigates the impact of certain elements of accounting policy on the size of the defined and reflected in the financial result of the enterprise for a particular reporting period. F.F. Butynets and N.M. Maliuha note that «the main elements of accounting policy that most affect the financial performance of the enterprise include: the choice of implementation, determining the method of estimating the disposal of inventories, determining the method of depreciation» [10, p. 20]. V. Sopko among the most important basic elements of accounting policy that affect the formation and size of financial results, calls such as «methods of estimating inventories at disposal, the method of depreciation of fixed assets, recognition and recognition of expenses and income, creating provisions for future expenses, assessing the degree completion of operations for the provision of services and performance of works, the method of calculating the provision for doubtful debts» [6, p. 141]. In the above-mentioned study L.V. Koval elements of accounting policy are divided into those whose choice «affects the reduction» and «affects the increase in the financial result of the enterprise» [4]. Extremely interesting on this issue is the opinion of S.F. Holov, who studying the so-called «creative accounting», no longer pays attention to the impact of accounting policies on the size of financial results, but on the manipulation of profit, noting that in his opinion, «among accounting estimates most often overestimate the reserve doubtful debts» [11, p. 363].

It is indisputable that the decision to select many elements of accounting policies ultimately affects the amount of recognized financial results of individual reporting periods. At the same time, it should be noted that such an impact is subjective and temporary, because it is not about the full business cycle of the enterprise, but about the assessment of financial results of individual reporting periods. Accordingly, the existing overstatement of financial results of some reporting periods over time is offset by understatement of financial results of other reporting periods or vice versa.

A more thorough study of certain elements of accounting policy suggests that the level and predictability of such effects differ significantly.

Thus, the choice of individual elements of accounting policies unambiguously predicted leads to an increase in the profitability of some reporting periods and a corresponding decrease in the profitability of other reporting periods. For example, the result of choosing between accelerated depreciation methods (residual value reduction method, accelerated residual value reduction method and cumulative method) and the straight-line method of depreciation of fixed assets is quite predictable – the use of accelerated depreciation methods will reduce the profitability of first and higher periods in time periods, and the straight-line method – according to the opposite result.

The result of the influence of other elements of accounting policy is available, but it is not unambiguous, because it depends on the influence of other factors. For example, the effect on the size of the financial results of the choice of inventory valuation method when writing off depends on the dynamics of inventory prices, because only in conditions of constant price increases in the presence of inventory balances using the FIFO method compared to the weighted average cost method to reduce the profitability of more distant periods in time. Keep in mind that if inventory prices continue to fall, the opposite will be true.

There are some elements of accounting policy, the choice of which affects the size of financial results, but given that the direction of such influence depends on several, sometimes

ISSN Print 2414-0287
ISSN Online 2707-8426

ambiguous or unpredictable factors, clearly predict such impact is almost unrealistic (or really only carefully researching a particular company). Examples of such elements, in our opinion, are the choice of the base of distribution of overhead costs or the choice of the method of depreciation of fixed assets, when it comes to choosing between the production method and other methods, the mathematics of which depends primarily on useful life. It is also worth noting that the choice of individual elements of accounting policies is unlikely to affect the size of the financial results, in particular, the establishment of the size of the materiality limit.

The classification of elements of accounting policy depending on the presence and predictability of the impact on the size of financial results of individual periods, as a result of the study, is presented in table 1.

In addition, it should be noted that given the importance of the impact of accounting policies on the size of defined and reflected in the financial results of the enterprise, the accounting nature of individual elements of accounting policy deserves a separate careful analysis, especially interesting, in our opinion, are elements depends on the action of other factors and conditions.

The issue of the impact of accounting policy elements, including those analyzed above, on the amount of pre-tax profit and, accordingly, corporate income tax, also deserves special attention. In this area, the issue is resolved ambiguously. First, the presence or absence of such an effect will in principle depend on whether the income taxpayer adjusts the pre-tax financial result determined in the financial statements for differences that arise in accordance with the provisions of the Tax Code of Ukraine. If not, the pre-tax financial result will have the same effect as the financial results determined in the accounting. If an adjustment is made, the effect of the individual elements of the accounting policy will be offset by the adjustment, the effect of the individual elements will be maintained, and the effect of the individual elements will be limited in some way. The relevant issue deserves a separate analysis and can be selected as a promising area for further research.

Conclusions

Financial results are an extremely important accounting category and object of accounting of enterprises, because it is an integral indicator of performance, which reflects the achievement of the goal of entrepreneurial activity. Construction of a quality system for determining financial results in accounting and their presentation in the reporting should be based on the accounting essence of this category. In our opinion, such identification can be made as follows: the financial results of the enterprise (profit

Table 1 – Classification of elements of accounting policies depending on the presence and predictability of the impact on the size of financial results of individual periods

Type of accounting policy elements	Examples of relevant accounting policy elements	Normative document that regulates the domestic accounting practice of applying the relevant element of accounting policy
Elements of accounting policy, the choice of which clearly affects the size of the financial results of individual reporting periods	Choice of depreciation method for fixed assets (except for the choice of production method)	Regulation (standard) of accounting 7 «Fixed assets»
	Choice of method of accrual of amortization of intangible assets (except for the choice of production method)	Regulation (standard) of accounting 8 «Intangible assets». Regulation (standard) of accounting 7 «Fixed assets»
	The choice of method of accounting for financial costs – attribution to the costs of the current period or capitalization of costs associated with the creation of a qualifying asset	Regulation (standard) of accounting 31 «Financial expenses»
Elements of accounting policies, the choice of which affects the size of the financial results of individual reporting periods, but the direction of such influence depends on additional factors, although it is quite predictable	Choice of inventory valuation method when writing off	Regulation (standard) of accounting 9 «Inventories»
	Choice of method for assessing the degree of completion of operations for the provision of services (performance of works)	Regulation (standard) of accounting 15 «Income»
	Determination of normal capacity and the amount of fixed overhead costs at normal capacity	Regulation (standard) of accounting 16 «Costs»
Elements of accounting policies, the choice of which affects the size of the financial results of individual reporting periods, but the direction of such influence depends on many factors and is unpredictable	Selection of the base of distribution of overhead costs	Regulation (standard) of accounting 16 «Costs»
	Choice of method of accounting and distribution of transport and procurement costs – individual distribution or application of the average percentage of transport and procurement costs	Regulation (standard) of accounting 9 «Inventories»
	The choice of depreciation method for fixed assets, provided the choice between the production method and methods based on certain useful lives of the object	Regulation (standard) of accounting 7 «Fixed assets»
Elements of accounting policy, the choice of which has little effect on the amount of financial results of individual reporting periods	Establishing the materiality limit	Letter from the MFU dated July 29, 2003. № 04230-04108
	The choice of the method of reflecting exchange differences on the date of the transaction – in its volume or for the entire article	Regulation (standard) of accounting 21 «Impact of changes in exchange rates»

ISSN Print 2414-0287
ISSN Online 2707-8426

or loss) is technically the difference between income and expenses incurred by the enterprise for a certain period of time, which leads to changes in net assets and equity (excluding equity) additional contributions or withdrawals by owners), as well as to change the amount of cash as absolutely liquid assets with fair value, subject to constant other assets, equity and liabilities.

The main reason for the subjectivity of the definition in the accounting of financial results should be recognized the need to calculate the results for individual reporting periods in the continuation of the enterprise, respectively, the presence and subjective assessment of balances of assets and liabilities leads to subjectivity in assessing the financial result one or another reporting period.

The question of the subjectivity of the determination of financial results is logically related to the determination of the moment of recognition of income and expenses, because theoretically it can be done either in cash, by cash flow, or on an accrual basis. In modern accounting practice, the method of accrual dominates, because it is believed that the thus determined indicator of financial results at a significantly higher quality level reflects the results of activities, partially solving the problem of subjectivity of evaluation of such results.

At the same time, it should be noted that the adoption of the method of accrual to reflect in the accounting of income and expenses does not solve the problem of subjectivity in determining the financial results of individual reporting periods, but moves the problem to the plane of accounting policy.

The formation of accounting policies in terms of the choice of many elements ultimately affects the amount recognized in the financial results of individual reporting periods. It is also worth noting that the level and predictability of such impact individual elements of accounting policies differs significantly. Accordingly, in the course of the study, a classification of elements of accounting policy was developed and presented depending on the availability and predictability of the impact on the size of financial results of individual periods. Classification involves the separation of elements of accounting policies that have a clearly predictable effect on the size of financial results, elements whose impact on the size of financial results is predictable, but depends on other factors, elements that affect the size of financial results, but the direction of influence depends on many factors and is unpredictable, as well as elements that do not affect the size of financial results. This classification is useful in the formation of the accounting policy of enterprises, because it allows you to prospectively assess the impact of selected elements of accounting policy on the process of recognition in the accounting of financial results and understand a certain subjectivity of such recognition.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 311.17:336.748.12]:338(477)
DOI https://doi.org/10.26661/2414-0287-2021-3-51-10

ECONOMIC AND STATISTICAL ANALYSIS OF INFLATION AND ITS IMPACT ON THE ECONOMY OF UKRAINE

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Key words:
inflation, money circulation, capital, state regulation, money supply, consumer price index, anti-inflation policy

Inflation as an important economic phenomenon has long attracted the attention of researchers from different countries. However, even now it is a complex and heterogeneous socio-economic phenomenon that is not fully understood. Problems and specifics of inflation in Ukraine are considered. Since the problem of inflation plays one of the main roles in economics, a description of inflation. It is determined that the causes of the inflation process are extremely diverse. Inflation is not considered as a purely monetary phenomenon, but also as a multifactorial socio-economic process, so the reasons for its emergence and development may reflect both changes in aggregate demand and aggregate supply. It is determined that the mechanism of action of inflationary factors depends on the ratio of many economic processes – internal and external. In a state of inflationary instability, focusing only on regulation on the demand-supply side can lead to protracted crises with a slow period of stabilization and recovery of the economy. Despite the effect of market laws, the state does not refuse to influence prices, significantly increasing it in times of crisis for the national economy. It is established that inflation is the main destabilizing factor of a market economy. The dynamics of inflation in Ukraine for 2010–2020 is analyzed. The change of industrial production indices by types of activity for 2016–2020 is analyzed. The most frequently used indicator of inflation is the consumer price index, the dynamics of which is analyzed. It is established that there can be no consensus in the interpretation as external features of a particular inflation process, as well as its internal structure and qualitative characteristics. In addition, the changes that are taking place both in the economy and in the world economy as a whole, they cause the emergence of certain factors, forms and consequences of inflation. Inflation is one of the biggest manifestations of macroeconomic instability. For a country's economy and for the whole world, inflation is a very negative phenomenon. It reduces the results of labor and savings, restrains the inflow of investment and investment in modern technological developments in the country, creates social inequality through the redistribution of capital from poor to rich. Measures to improve the financial situation in Ukraine are considered.

ЕКОНОМІКО-СТАТИСТИЧНИЙ АНАЛІЗ ІНФЛЯЦІЇ ТА ЇЇ ВПЛИВ НА ЕКОНОМІКУ УКРАЇНИ

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Ключові слова:
інфляція, грошовий обіг, капітал, державне регулювання, грошова маса, індекс споживчих цін, антиінфляційна політика

Інфляція як важливий економічний феномен уже тривалий час звертає увагу дослідників з різних країн. Однак навіть в даний час вона становить складне й неоднорідне соціально-економічне явище, яке є не до кінця вивчено. Розглянуто проблеми та специфіка інфляції в Україні. Оскільки проблема інфляції відіграє одну з головних ролей в економічній науці, проведено характеристику інфляції. Визначено, що причини виникнення інфляційного процесу надзвичайно різноманітні. Інфляція розглядається не як суто грошове явище, а також як багатофакторний соціально-економічний процес, тому причини її виникнення та розвитку можуть відображати як зміну сукупного попиту, так і сукупної пропозиції. Визначено, що механізм дії інфляційних факторів залежить від співвідношення багатьох економічних процесів –

ISSN Print 2414-0287
ISSN Online 2707-8426

внутрішніх і зовнішніх. У стані інфляційної нестабільності орієнтація лише на регулювання з боку співвідношення «попит-пропозиція» може призвести до затяжних криз з повільним періодом стабілізації і оздоровлення економіки. Незважаючи на дію ринкових законів, держава не відмовляється від впливу на ціни, суттєво посилюючи його в кризові для національної економіки періоди. Встановлено, що інфляція є основним дестабілізуючим чинником ринкової економіки. Проаналізовано динаміку інфляції в Україні за 2010–2020 рр. Проаналізована зміна індексів промислової продукції за видами діяльності за 2016–2020 рр. Найбільш часто використовуваним показником інфляції є індекс споживчих цін, динаміку якого проаналізовано. Встановлено, що не може бути єдиної думки у трактуванні як зовнішніх рис певного інфляційного процесу, також і його внутрішньої структури і якісних характеристик. Окрім того, зміни, які відбуваються, як у економіці країн, так і у світовій економіці в цілому, вони обумовлюють появу певних факторів, форм та наслідків інфляції. Інфляція є одним з найбільших проявів макроекономічної нестабільності. Для економіки певної країни і для всього світу інфляція є досить негативним явищем. Вона призводить до зниження результатів праці і заощаджень населення, стримує приплив інвестицій та інвестицій у сучасні технологічні розробки в країні, створює соціальну нерівність через перерозподіл капіталу від бідних до багатих. Розглянуто заходи щодо оздоровлення фінансової ситуації в Україні.

Statement of the problem

In Ukraine, the long-term depreciation of the national currency is the main problem on the way to the stability of the national economy, which since the time of independence our country has not yet been able to cope with. Global processes in the economy over the past decade have led to the emergence of certain reasons that contribute to the development of inflation.

It is important to note that today Ukraine is suffering from a debilitating war that has been going on for six years. It is the longest military conflict in Europe since World War II. Against the background of hostilities in the east of the country, the decline in industrial production and construction work accelerated. Constant changes in government and laws, various reforms have a significant impact on the economic development of the state. The economy of such a country is in a state of crisis, instability, uncertainty. Another problem has been added related to the coronavirus pandemic, due to which people are forced to close their businesses. It also can not affect the Ukrainian economy.

Analisis of recent studies and publication

The issue of the development of inflationary processes was paid attention to by A.V. Bezkrovnyi [1], A.A. Revenko, who, on the basis of the analysis, identify the reasons that contribute to the emergence of inflationary processes in Ukraine [2]. The works of S.M. Oliinyk are devoted to the study of the problem of the essence of inflation, its regulation, the study of the main factors and factors affecting the current inflation [3]. Hrytsenko A.A., Krychevska T.A., Petryk A.I. having analyzed the advantages and disadvantages of the inflation targeting regime, they came to the conclusion that such a regime has all the necessary advantages to replace the existing exchange rate targeting regime in the domestic economy [4]. TiveriadskaL V., Yakymenko A.M. in their works investigate the socio-economic consequences of inflation in Ukraine [5].

Objectives of the article

The purpose of the article is to analyze inflationary processes and determine their impact on the economic situation in Ukraine, taking into account the conditions of the present.

The main material of the research

As an economic phenomenon, inflation has existed for a long time. It is believed that its appearance is associated with the emergence of paper money, with the functioning of which it is inextricably linked. The term inflation (from the Latin. Inflatio – inflation) was first used in North America during the Civil War of 1861–1865. And it marked the process of swelling of paper money circulation. In the 19th century, the term was also used in England and France. The concept of inflation became widespread in the economic literature in the twentieth century immediately after the First World War.

Inflation is the most effective means of redistributing national wealth – from the lower social class to the wealthy class, thereby increasing its social division. Inflation can manifest itself in various forms: depreciation of the monetary unit, depreciation of the national currency, etc. Schematically, the forms of manifestation of inflation can be traced in fig.1.

The general consequences of inflation are due to complex and different directions of socio-economic and political causes. For some economic agents, inflation can be very profitable, while for others it can be unprofitable. Therefore, those for whom inflation turned out to be profitable are looking for objective causes of inflation, and those for whom inflation has brought losses accuse the former of deliberately promoting it. In general, the causes of inflation can be external and internal [1, pp. 68–70].

External causes of inflation are as follows: rising prices in world markets; reduction in cash receipts from foreign trade; negative foreign trade balance. The internal causes of inflation are as follows: the introduction of paper

ISSN Print 2414-0287
ISSN Online 2707-8426

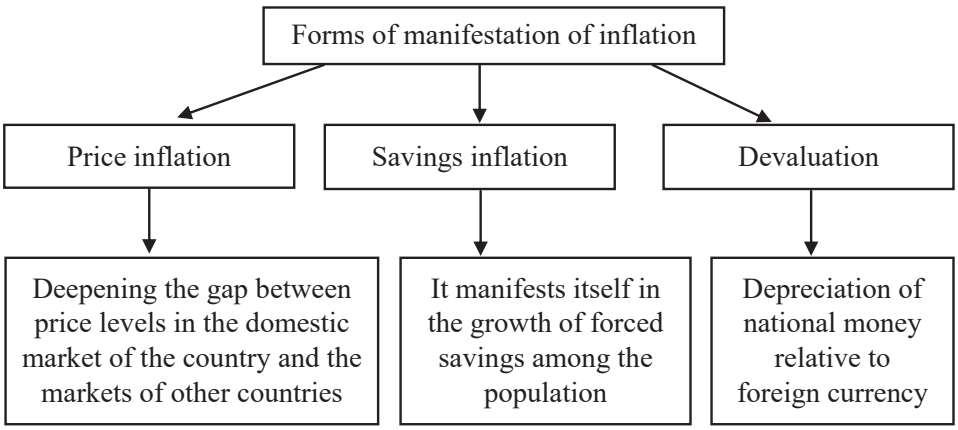

Fig. 1 – Forms of manifestation of inflation

(defective) money that cannot be exchanged for gold; imbalance in the state economy; monopoly of the state on the issue of money; the monopoly position of large producers and the establishment by them of monopoly high prices in the market; imposition of prohibitively high taxes and interest rates on loans.

Inflation can also be caused by an excess of demand over supply and a lag between demand and supply. The result of the excess of demand over supply is demand inflation, and the lag between demand and supply causes cost or supply inflation. In order to have a certain idea of inflationary processes in Ukraine, one should start with the reasons contributing to its occurrence. The following are the main reasons for the emergence of inflation in Ukraine: imbalance between domestic and world prices; high monopolization of the economy; external debt pressure on the state budget. The latter leads to the emergence of an unfavorable investment climate and gives impetus to speculative business [2, pp. 7–9].

The inflation problem for Ukraine is not so much theoretical as it is of purely practical importance. Each year for Ukraine has its own consumer price index, different from the previous one, this index can grow or, on the contrary, decrease. Its dynamics can be seen in fig. 2.

Each period since 1991 has been characterized by different levels and rates of inflation and usually has its own socio-economic consequences. But, in order to clearly understand the processes taking place now, let us consider the dynamics and development of inflation in Ukraine over the past 10 years [3, pp. 13–15].

In 2010, for the first time in Ukraine, GDP growth simultaneously exceeded budget forecasts, and inflation was lower than expected, the real indicator was the best by 4% (while the forecast was 13.1%, inflation was 9.1%). For the first time since 2003, annual inflation fell to one-digit level. This was due to a decrease in the growth rate of the consumer price index due to price correction in certain food markets and the application of the administrative impact of limiting further price increases. The reason for the decline in the producer price index was the decline in prices for the production of electricity, water and gas. Local authorities refrained from another increase in utility tariffs, which was expected by the public, which led to a slowdown in the growth rate of the administrative

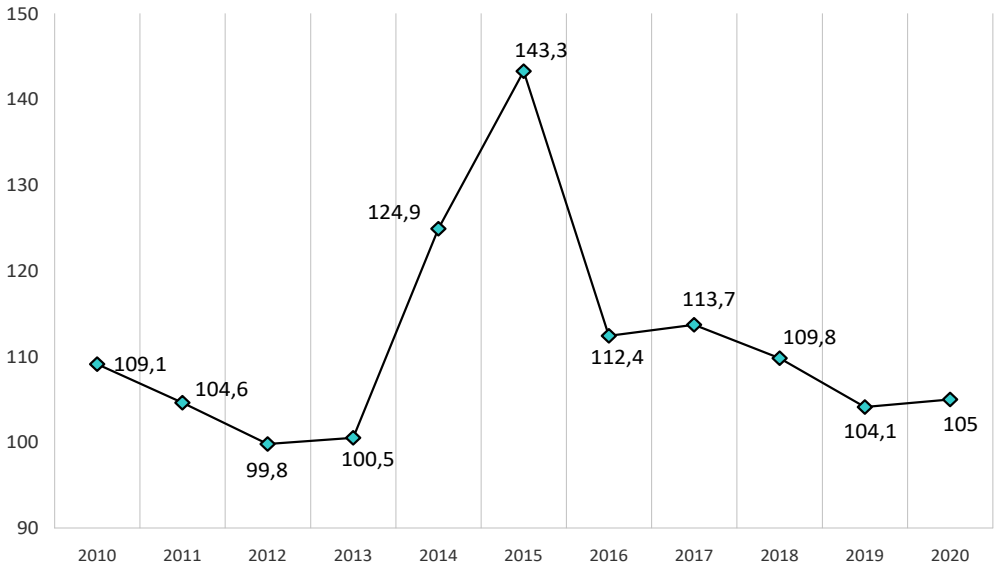

Fig. 2 – Dynamics of the inflation index in Ukraine for 2010–2020 years

ISSN Print 2414-0287
ISSN Online 2707-8426

component of non-core inflation, and the slow recovery of the credit process also contained inflationary pressures.

During 2011–2013, there is a downward trend in inflation, especially in 2012, the consumer price index decreased by 0.2% compared to the previous year (for the first time since 2002). The main factor behind the downward dynamics of the consumer price index in 2012 was a 2.9% drop in prices for food products due to a high level of supply in the domestic food market, ensured by a high harvest of fruits and vegetables in 2011–2012 and the development of infrastructure for storage and sale of food products. This led to a 4.6% reduction in raw food prices. Restraint of tariffs for services, which were administratively regulated, also had a significant impact on the reduction of inflation rates. In 2014, the implementation of the macroeconomic imbalances accumulated in recent years led to a rapid increase in inflation to 24.9%, which was due to the devaluation of the UAH in the context of a decrease in foreign exchange earnings and an increase in panic due to the military conflict in the East of Ukraine. Narrow core inflation, reflecting the rise in prices for non-food products, most of which are imported, amounted to 25.3% at the end of the year. The growth of administratively regulated prices amounted to 30.4% per year, mainly due to the increase in tariffs in the sphere of housing and communal services – by 34.3% per year (3,8 p. p. – contribution to inflation). The cheapening of oil on world markets only partially offset the effect of the devaluation on the cost of fuel, which increased by 60.7% in the reporting year [4; 5].

In 2015, consumer prices increased by 43.3%. Some economists have talked about galloping inflation. Real wages fell by an average of 21% in 11 months, while real disposable household income fell by 28%. D. Sologub, Deputy Governor of the National Bank of Ukraine. believes that the inflation rate of 43.3% was evidence that all the bad things that could have happened to prices have already happened. Moreover, in the first half of last year. Reasons for rising inflation:

– panic in the foreign exchange market in the first quarter led to an uncontrolled explosion of prices for basic consumer goods;

– increase of natural gas tariffs for the population by 5.5 times from April 1;

– inflation expectations remained high.

The growth of consumer prices in Ukraine in 2016 was 12.4%, which is in line with the forecasts of the National Bank [6, 7]. This figure was much lower than in previous years. In particular, in 2015 it was 43.3%, and in 2014–24.9%. Inflation in 2016 was 0.9% in December, 1.8% in November and 2.8% in October. At the same time, the average annual inflation in 2016 (January-December to January-December of the previous year) is 13.9%. Core inflation, ie inflation that does not take into account short-term uneven price changes due to seasonal factors and administrative regulation of tariffs, slowed to 5.8 percent from 34.7 percent in 2015 and 22.8 percent in 2014. In December, core inflation was zero after 0.5 percent in November, 0.9 percent in October and 2 percent in September. The NBU explained inflation in 2016 by rising utility tariffs and rising fuel prices.

In 2017, the government and the National Bank forecast a further slowdown in inflation to 8–8.1 percent, provided that economic growth accelerates to 3 percent. Inflation in January was 101.1, in February – 101 percent. NBU in comments and inflation reports [8; 9] explains the slight acceleration of annual inflation in January 2017 was expected and occurred due to increased production costs, rising commodity prices in world markets, including oil and food and the weakening of the hryvnia in late 2016 and first half of January 2017. In February 2017, year-on-year consumer inflation accelerated as expected to 14.2% (from 12.6% in January). On a monthly basis, the consumer price index grew by 1.0%. This is evidenced by data published by the State Statistics Service of Ukraine.

In 2018, inflation in the consumer market was 9.8%, according to the website of the State Statistics Service of Ukraine. According to this information, in 2018 the core inflation was 8.7%. The National Bank of Ukraine predicted that in 2018 inflation will be over 8%.

In 2019, consumer inflation slowed to 4.1%, the lowest level in six years. The NBU reached the medium-term inflation target of 5% ± 1 in. n., which he declared since 2015. This was due to a decrease in fundamental inflationary pressure, which was reflected in a slowdown in core inflation (to 3.9% yoy). The reduction of inflation to the target in 2019 was primarily due to the NBU's consistent monetary policy aimed at achieving price stability, combined with prudent fiscal policy. The strengthening of the hryvnia exchange rate due to the foreign exchange surplus on the market, which was maintained for most of last year, had a decisive impact on the rapid slowdown in inflation. In turn, the expansion of the supply of currency was due to high sales of foreign exchange earnings by exporters and the lively interest of foreign investors in government bonds. Against the background of long-term preservation of macroeconomic stability with attractive yields, the portfolio of IGLBs in the national currency owned by non-residents increased by $4.3 billion. during 2019. On the other hand, the growth of economic productivity, especially in agriculture and, as a result, another record harvest of grain and oilseeds provided high export earnings. Contributed to the growth of currency surplus in Ukraine and improved trade conditions due to a deeper fall in world import prices compared to export prices [10].

Despite the unprecedented development conditions in which Ukraine found itself as a result of the spread of the COVID-19 pandemic, price dynamics during 2020 remained broadly projected. The consumer inflation rate was 5%, which is fully in line with the NBU's inflation target.

The main conditions for the formation of domestic prices during 2020 were: relatively limited demand due to forced measures to prevent the active spread of the pandemic; state support of the economy in the current conditions; gradual devaluation of the hryvnia; dynamics of world prices, which was formed as a result of destructive processes in the world economy, as well as associated with measures to contain the spread of the disease in the world.

In difficult conditions against the background of quarantine measures, the formation of consumer prices depended on changes in consumption priorities and, accordingly, on the adjustment of sales agents to these

ISSN Print 2414-0287
ISSN Online 2707-8426

changes. Thus, both retail trade volumes and consumer prices, primarily for essential goods, grew at a high rate. And vice versa, the consumer's motivation to keep from non-priority expenses in the face of uncertainty about the prospects for earning income in the near future against the background of the deployment of the risks of the spread of a pandemic restrained the growth of prices for most goods and services or, on the contrary, strengthened the deflationary trend, for example, for clothes and shoes. (at the end of 2020, prices decreased by 7.3% compared to a decrease of 2.3% in 2019). Among the goods, prices for which were growing against the background of maintaining constant demand, it is worth highlighting food products (at the end of 2020, prices increased by 5.2% compared with an increase of 4.9% in 2019), healthcare services (increased by 7.7% compared to 3.8% in 2019). Dynamics of changes in the inflation rate for 2010–2020 Shown in fig. 3.

Therefore, consumer inflation accelerated in Ukraine. Among the reasons, which were named in the National Bank, there was a more significant than expected rise in the price of fuel, some food products (butter, cheese, bread, meat products) and excisable goods. The dynamics of the CPI for goods and services is shown in Table 1.

So, the consumer price index, as we can see, is constantly changing. That is, there are periods when it grows, in other periods it decreases. However, if we compare the value of this index for the year as a whole in 2020 with the same value in 2016, it can be noted that the consequences of the crisis for Ukraine are becoming less tangible, since this index has decreased.

The dynamics of indices of industrial production by type of activity in recent years has mainly shown a downward trend, except for the supply of electricity, gas and air conditioning (in 2020 compared to 2019). The decline is observed in the mining and processing industries. Thus, the index of industrial production in the mining and processing industry in 2020 amounted to 95.0%, which is 5.2% lower than in 2019 and 9.1% lower than in 2016 (Table 2).

As a result of the analysis of the inflation index, it can be concluded that today the fight against the general rise

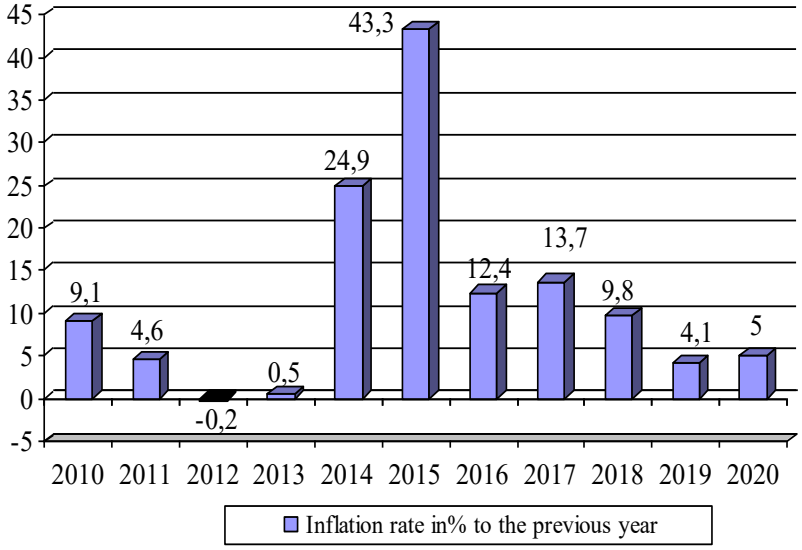

Fig. 3 – Dynamics of the inflation rate in Ukraine for 2010–2020 years

Table 1 – Consumer price indices for goods and services in 2010–2020

Years	Consumer price index	Food and non-alcoholic drinks	Alcoholic drinks, tobacco products	Clothe sand foot wear	Housing, water, electricity, gas and other fuels	Household items, appliances and routine maintenance
2010	109,4	110,9	125,6	103,7	109,4	103,2
2011	108,0	106,4	116,0	101,6	117,1	102,9
2012	100,6	97,9	107,5	98,9	102,6	101,9
2013	99,7	97,8	108,4	97,0	100,3	99,7
2014[1]	112,1	112,2	116,7	102,0	116,2	111,7
2015[2]	148,7	145,9	133,2	133,1	215,8	145,9
2016[2]	113,9	109,0	112,6	116,1	135,1	109,4
2017[2]	114,4	112,9	126,2	102,4	126,7	102,9
2018[2]	110,9	111,1	118,5	101,8	106,8	106,1
2019[2]	107,9	108,0	115,6	100,2	108,0	102,9
2020[2]	102,7	102,7	110,7	95,4	97,0	99,3

Note: 1 – Data are given without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea and the city of Sevastopol. 2 – The data are given without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and part of the temporarily occupied territories in the Donetsk and Luhansk regions

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Table 2 – Indices of industrial products by type of activity for 2016–2020

Indicators	2016	2017	2018	2019	2020
Industry	104,0	101,1	103,0	99,5	95,5
Extractive and processing industry	104,1	102,4	103,0	100,2	95,0
Mining and quarrying	101,1	96,5	103,4	98,4	97,0
Processing industry	105,6	105,2	102,9	100,9	94,1
Supply of electricity, gas, steam and conditioned air	103,1	94,0	103,0	95,6	99,1

in prices and its negative socio-economic consequences is still relevant for the national economy.

Conclusions

So, in Ukraine, there is a slowdown in inflation, as a result of the consistent monetary policy of the NBU, aimed at achieving price stability. Decrease in inflationary pressures was supported by a general decline in world prices for energy resources that Ukraine imports, and a weakening of pressure from food supply.

Today, there are certain problems that prevent the Ukrainian economy from developing and stabilizing. First of all, this is the war in the east of the country and the coronavirus pandemic. This is the reason that our state, like the whole world, is in a state of crisis and uncertainty: what will happen to the economy next?

Solving the problems of regulating inflationary processes requires time and constant monitoring. The gradual lifting of quarantine will lead to the recovery of the Ukrainian economy. This will be facilitated by soft fiscal and monetary policies. The government's increase in budgetary spending to overcome the crisis and measures to support the banking system will reduce the negative impact of the pandemic on economic development.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 339.5:336.244 DOI https://doi.org/10.26661/2414-0287-2021-3-51-11

THE INFLUENCE OF THE WTO IN THE TRENDS OF INTERNATIONAL TRADE

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Key words:
international trade, World Trade Organization, tariff rate, trade liberalization, export and import of goods

In the context of globalization, it is necessary to coordinate actions in order to prevent crises and develop common rules of the behavior in the global economic environment. Increasing of the competitiveness of national manufacturing is possible only if we provide the same opportunities for competition with foreign producers, especially in the domestic market, which will increase the level of competitiveness of the country in general. The article analyzes the dynamics of the main indicators of international trade in goods and services, including their amount, the dynamics of growth in terms of geographical regions, identifies the largest exporters and importers of goods and services on the world market. It is established that the trend of stable growth of international trade is confirmed, and both goods and commercial services with an average annual growth rate for 2016-2020 of 6%. The highest growth rates of trade, among product groups, are typical for agricultural products, which is, first of all, due to the stable growth of population. The WTO's impact on international trade trends was assessed on the basis of a comparative analysis of international trade and GDP growth dynamics, and a pairwise correlation-regression model was built to assess the impact of the weighted average tariff rate on all product groups on world trade. The inverse dependence between the volume of world trade in goods and the weighted average tariff rate for all products were detected. Thus, reducing the weighted average tariff rate by 1 percentage point increases world trade in goods by 4570.99 billion US dollars.

ВПЛИВ СОТ НА ТЕНДЕНЦІЇ МІЖНАРОДНОЇ ТОРГІВЛІ

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Ключові слова:
міжнародна торгівля, Світова організація торгівлі, тарифна ставка, лібералізація торгівлі, експорт та імпорт товарів

В умовах глобалізації необхідна координація дій з метою попередження криз та вироблення єдиних правил поведінки в глобальному економічному середовищі. Підвищення конкурентоспроможності національного виробництва можливе лише за умови забезпечення однакових можливостей для конкуренції з іноземними виробниками, особливо на внутрішньому ринку, що підвищить рівень конкурентоспроможності країни в цілому. У статті проаналізовано динаміку основних показників міжнародної торгівлі товарами та послугами, у тому числі їх обсяги, динаміку зростання в розрізі географічних регіонів, визначено найбільших експортерів та імпортерів товарів та послуг на світовому ринку. Встановлено, що підтверджується тенденція стабільного зростання міжнародної торгівлі, як товарів, так і комерційних послуг із середньорічним темпом зростання за 2016–2020 роки 6%. Найвищі темпи зростання товарообігу серед товарних груп характерні для сільськогосподарської продукції, що, насамперед, пов'язано зі стабільним зростанням населення. Вплив СОТ на тенденції міжнародної торгівлі оцінювався на основі порівняльного аналізу міжнародної торгівлі та динаміки зростання ВВП, а також була побудована парна кореляційно-регресійна модель для оцінки впливу середньозваженої тарифної ставки на всі групи товарів на світову торгівлю. Виявлено обернену залежність між обсягом світової торгівлі товарами та середньозваженою ставкою тарифу на всю продукцію. Таким чином, зниження середньозваженої тарифної ставки на 1 відсотковий пункт збільшує світову торгівлю товарами на 4570,99 млрд доларів США.

ISSN Print 2414-0287
ISSN Online 2707-8426

Statement of the problem

The globalization of the economy, which was intensified in the second half of the XX century and early XXI century, has led to the development of competition in world markets. Increased international competition has helped to reduce the pace of development of national markets. In modern conditions of development of the international trade system countries face a dilemma. On the one hand, trade liberalization stimulates the development of foreign trade relations, and on the other hand, it harms national manufacturing. Accordingly, there is a demand to protect it. Members of the World Trade Organization are constantly taking steps to create a fairer trading system that will expand market access and improve trade conditions around the world.

It becomes increasingly important for the competition and trade policy communities to engage in a constructive strategic dialogue to ensure that anti-competitive and trade-restrictive measures do not deny the growth and effectiveness in recent decades. At the same time, it is crucial that the experience gained by the Community on competition policy in many countries over the last decade has made an even greater contribution to sustainable trade growth. The studying of the real impact of the WTO on the development of international trade remains being a crucial problem. To solve this problem, the urgent task is to study the nature of the dynamics of key indicators of international trade and WTO decisions impact on them.

Analysis of recent studies and publications

Significant contribution to the study of theoretical and methodological and practical aspects of current trends in international trade, as well as the role of the WTO in these processes, raise in their scientific publications, analyze the mechanisms of interconnection, scientists such as Anistratenko [1], Andriychuk [2], Burakovsky [6], Gonchar [3], Ivanytska [5], Teremetsky [8]. Young scientists, such as Davydenko, [4], Sidenko [7], Yakovchenko [9] and others, also study this area in their works. They reveal the direction of current trends, conduct research and analyze the theoretical and methodological mechanism of the relationship. However, despite the large number of works, the issues related to the impact of the World Trade Organization on the main current trends in international trade in goods and services remain insufficiently studied, also little is known about the topic about rating of such impacts and predicting their consequences.

Objectives of the article

The purposes of the work is to identify current trends in international trade and assess the impact of WTO activities on them.

Objectives of the study:

− to analyze the main indicators of international trade;

− evaluate the role of the WTO in the identified trends in world trade;

The main material of the research

We begin with the analysis of current trends in international trade an rating of the dynamics of its volume in terms of value in terms of trade in goods and commercial services (Fig. 1).

According to Fig. 1, we can conclude that the amount of trade in goods traditionally exceeds the amount of sales of commercial services. At the same time, during the analyzed period the amount of international trade in both goods and services have a steady growing trend. It should be mentioned that the dynamics of international trade in goods is more volatile and is characterized by significant declines during economic crises. While for the global services market the biggest decline is characteristic of the COVID-19 pandemic in 2020. The COVID-19 pandemic has reduced trade in goods by 8 % and commercial services by 21 % per year in 2020 [10].

If we analyze the structure of international trade for the analyzed period, the share of trade in goods averaged 79 %, and commercial services – 21 %. Regarding to the growth rate of international trade, for both goods and commercial services during the analyzed period, its average value was 6 %. That is, the trend of steady growth in international trade is confirmed.

The table 1 shows the dynamics of annual growth of exports and imports of goods by major geographical regions.

According to table 1 we can conclude that the largest average annual increase in exports of goods is observed in Europe and Asia in the analyzed period, which are characterized by a relatively low decline in 2020, while in other geographical regions it was significant. Asia's relatively small decline in trade has been largely due to the effective management of the pandemic in Asian economies, as well as the region's role as a major supplier of consumer and medical goods in world trade. Regarding to the imports of goods, the largest average annual increase is characteristic of the CIS countries. It should be mentioned that all geographical regions are characterized by similar

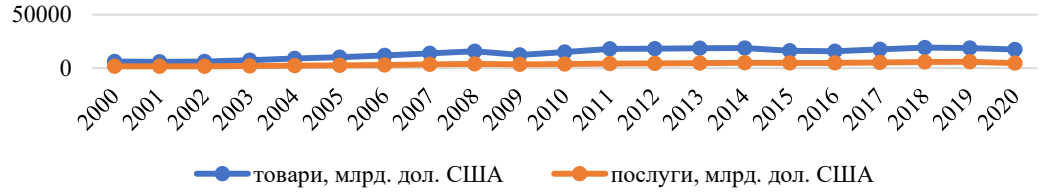

Fig. 1 – Dynamics of the amount of international trade in goods and services in 2000–2020, billion US dollars [10]

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Table 1 – Dynamics of annual growth of exports and imports of goods by major geographical regions of the world, % [11]

World region	2016	2017	2018	2019	2020	The average annual rate for 2016–2020
Export						
South and Central America	–5,6	14	8,2	–6,3	–10	0,06
North America	–3,2	7,3	7,9	–0,6	–12,2	–0,16
Europe	–0,3	9,4	9,3	–2,7	–6,6	1,82
Asia	–3,7	10,9	8,5	–1,5	–1,4	2,56
Africa	–11,5	18,3	13,6	–5,5	–20,3	–1,08
Middle East	–9,5	15,3	21,5	–8,8	–27,9	–1,88
CIS countries	–16,2	24,6	23,5	–4,3	–19,8	1,56
Import						
South and Central America	–14,5	8	11,2	–5,9	–14,4	–3,12
North America	–2,9	7,3	8,4	–1,8	–8,1	0,58
Europe	0,2	10	9,5	–2,9	–6,6	2,04
Asia	–4,7	15,5	13,3	–3,6	–7,1	2,68
Africa	–9,5	5,7	11,1	–0,5	–12,5	–1,14
Middle East	–7,2	2,8	0,9	–0,5	–13,5	–3,5
CIS countries	–2,6	21,5	8,4	5,3	–7,8	4,96

dynamics, so after the fall in international trade in 2016, during 2017–2018 they recovered, and after declining in 2019 in 2020, the pandemic led to a significant reduction in international trade.

The table 2 shows the dynamics of annual growth of exports and imports of commercial services by major geographical regions.

According to table 2 we can conclude that the growth rate of the international market for commercial services is lower compared to the commodity market. As specified by geographical regions, a positive average annual increase in exports of commercial services for the analyzed period is observed only in Europe, Asia and the Middle East, and imports – only in Europe. All geographical regions are experiencing a significant 20–35% drop in trade in commercial services in 2020 due to quarantine restrictions.

Fig. 2 shows the top 10 exporters of goods on the world market in 2020.

Table 2 – Dynamics of annual growth of exports and imports of commercial services by major geographical regions of the world, % [11]

World region	2016	2017	2018	2019	2020	The average annual rate for 2016–2020
Export						
South and Central America	0,0	5,5	1	–0,3	–36,9	–6,14
North America	0,5	5,4	4,1	1,9	–20,6	–1,74
Europe	0,2	8,4	8,1	1,3	–16,7	0,26
Asia	0,9	8,3	9,9	3,3	–21,4	0,2
Africa	–5,8	14,6	9,9	3,7	–34,3	–2,38
Middle East	3,8	8,0	5,4	12,6	–28,9	0,18
CIS countries	–2,2	13,5	12,1	–0,5	–28,5	–1,12
Import						
South and Central America	–5,1	6,2	0,8	–3,4	–30,8	–6,46
North America	2,2	6,8	3,2	3,7	–23,9	–1,6
Europe	2,3	5,0	8,4	4,9	–17,6	0,6
Asia	2,7	7	8,2	–0,5	–22,3	–0,98
Africa	–10,2	10,8	13,4	4	–25,2	–1,44
Middle East	–0,7	5,0	6,1	5,3	–30,8	–3,02
CIS countries	–12,2	15,3	17,4	4,8	–33	–1,54

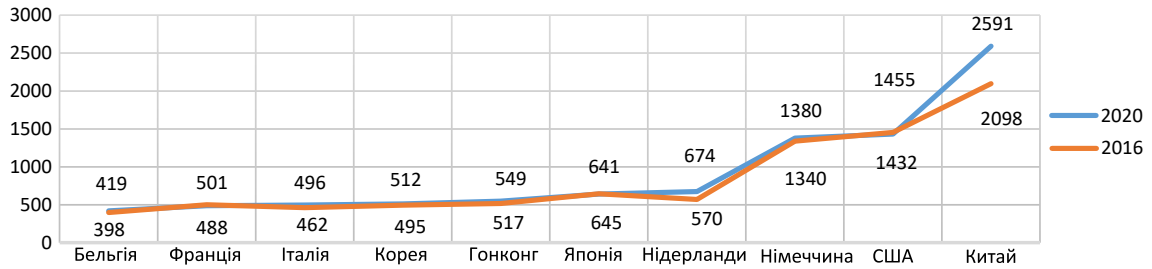


Fig. 2 – Top 10 exporters of goods in the world, billion US dollars [11]

ISSN Print 2414-0287
ISSN Online 2707-8426

It should be noted that the list of countries that are among the largest exporters in the world has not changed during the reviwed period. Compared to 2016, the UK moved from the top 10 to 12th due to the reduction in international trade with the EU due to the withdrawal of this integration association. Countries, such as the Republic of Korea, the Netherlands and Italy, have increased their positions in terms of merchandise exports. These countries, in addition to Belgium, are among the top importers in the world market, but, in contrast to the ranking of exporters, the largest importer is the United States, and China ranks the second position. The UK is also among the top 10 importers.

Fig. 3 shows the top 10 exporters of commercial services on the world market in 2020.

It should be mentioned that the list of countries that are among the largest exporters of commercial services in the world has not changed during the analyzed period. We should pay attention to Ireland, which in 2020 rose to 5th place compared to 10th in 2016. These same countries are world leaders in terms of imports of commercial services.

The impact of the WTO is that it contributes to the transformation of world trade. Establishing clear rules for international trade in goods and services has contributed to a sharp increase in cross-border business activity. Since 1995, the dollar volume of world trade has increased almost fourfold, and real world trade has increased 2.7 times [12]. This far exceeds the double growth of world GDP during this period.

Average tariffs have dropped significantly. In order to quantify the impact of lower average tariff rates on international trade in goods, we build a pairwise correlation-regression model, in which the dependent variable will be the volume of international trade in goods, and independent – the weighted average tariff rate for all products (Table 3).

The following correlation dependence of the volume of world trade in goods on the weighted average tariff rate for all products is obtained (formula 1).

$$Y = 29259 - 4570{,}99X, \quad (1)$$

where, Y – world trade in goods, billion US dollars; X – weighted average tariff rate for all products,%.

Regression coefficients show how much the average volume of world trade in goods changes when the factor of the weighted average tariff rate for all products changes. The identified dependence is inverse. Thus, reducing the weighted average tariff rate by 1 percentage point increases world trade in goods by 4570.99 billion US dollars.

The multiple correlation coefficient is 0.8905, which indicates the presence of high density of world trade in goods and the weighted average tariff rate for all products. The coefficient of multiple determination is 0.7931. This indicates that the volume of world trade in goods due to changes in the weighted average tariff rate for all products is 79.31 %. This indicates the presence of additional factors that also significantly affect the volume of world trade in goods, but the impact of the weighted average tariff rate on all products is significant (Table 4).

Next, we analyze the quality of the coefficients of the obtained correlation-regression model, which are summarized in table 5.

According to table 5 we can conclude that the weighted average tariff rate for all products is a statistically significant factor influencing the volume of world trade in goods. We present the results of constructing a correlation-regression model graphically (Pic. 5).

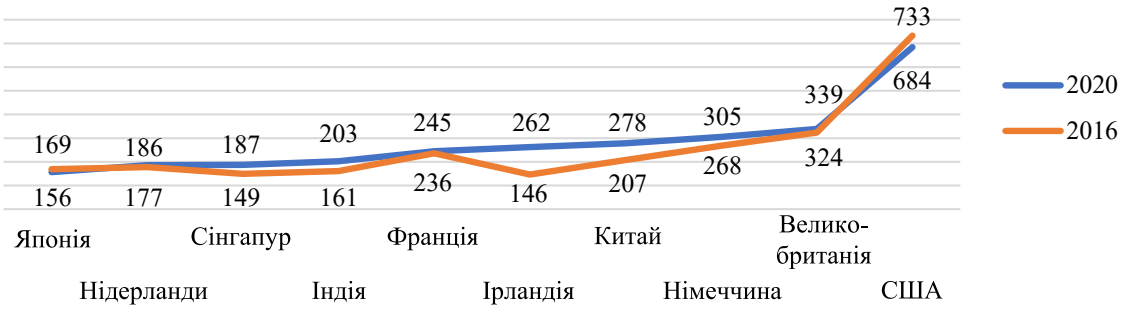
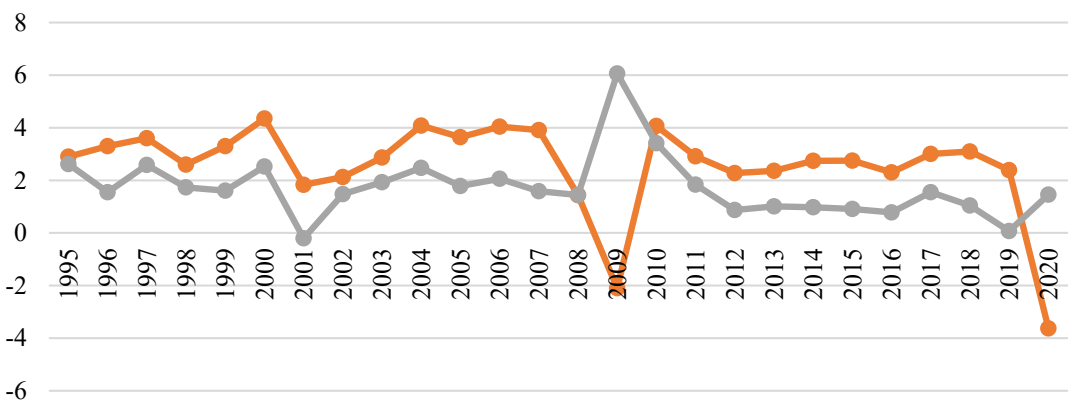


Fig. 3 – Top 10 exporters of commercial services in the world, billion US dollars [11]



ISSN Print 2414-0287
ISSN Online 2707-8426

Table 3 – Initial data for constructing a correlation-regression model [11; 13]

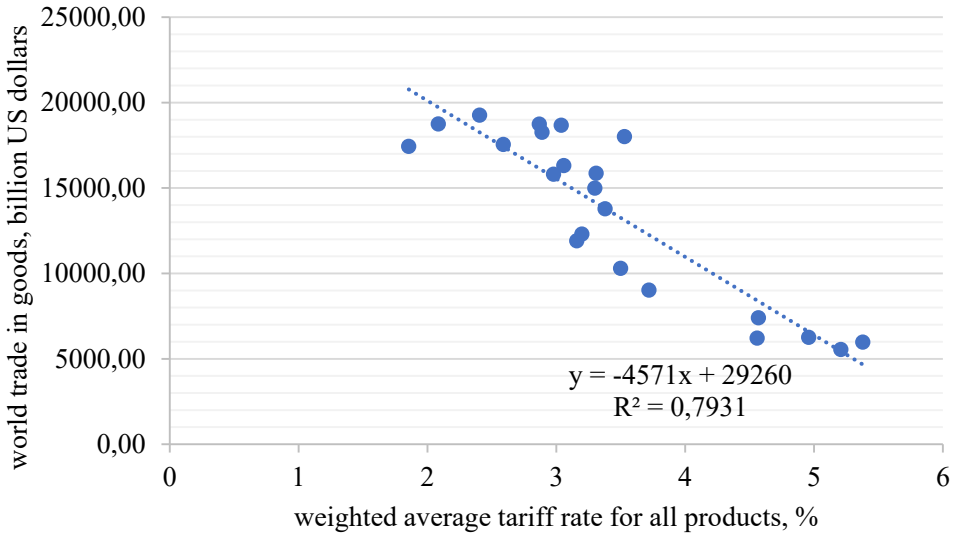
Year	Y - world trade in goods, billion US dollars	X - weighted average tariff rate for all products, %
1999	5545,99	5,21
2000	6252,55	4,96
2001	5979,89	5,38
2002	6205,19	4,56
2003	7397,83	4,57
2004	9021,78	3,72
2005	10298,63	3,5
2006	11907,33	3,16
2007	13779,12	3,38
2008	15863,59	3,31
2009	12301,91	3,2
2010	14988,75	3,3
2011	18005,55	3,53
2012	18262,49	2,89
2013	18676,82	3,04
2014	18737,08	2,87
2015	16309,61	3,06
2016	15809,61	2,98
2017	17547,10	2,59
2018	19264,64	2,41
2019	18745,56	2,09
2020	17440,50	1,86

Table 4 – Indicators of the correlation-regression model

Indicator	Weight
Multiple correlation coefficient	0,8905
Coefficient of multiple determination	0,7931
Adjusted coefficient of multiple determination	0,7827
Standard error	2292,61
Number of observations	22

Table 5 – Analysis of the coefficients of the correlation-regression model

Indicator	Coefficient	Standard error	t-statistics	Significance
Y – world trade in goods, billion US dollars	29259,95	1858,66	15,74	0,0000
X – weighted average tariff rate for all products, %	–4570,99	522,13	–8,75	0,0000



Pic. 5 – Graphical representation of the pairwise correlation-regression model of the dependence of world trade in goods on the weighted average tariff rate for all products

ISSN Print 2414-0287
ISSN Online 2707-8426

Fisher's F-test was used for rapid diagnosis of the adequacy of the multiple correlation-regression model. Since the significance of this criterion is 0.000000028, with a probability of 0.99 we can say that the model is accurate and adequate.

Conclusions

Based on the analysis of the dynamics of world trade, we can conclude that the trend of stable growth of international trade is confirmed, with both goods and commercial services with an average annual growth rate of 6% in 2016–2020. The highest growth rates of trade, among product groups, are characteristic of agricultural products, which is primarily due to stable population growth.

It is established that during the analyzed period the largest average annual increase in exports of goods is observed in Europe and Asia, which are characterized by a relatively low decline in 2020, while in other geographical regions it was significant. Regarding imports of goods, the largest average annual increase is characteristic of the CIS countries. By geographical regions, a positive average annual increase in exports of commercial services for the analyzed period is observed only in Europe, Asia and the Middle East, and imports – only in Europe. All geographical regions are experiencing a significant 20–35% drop in trade in commercial services in 2020 due to quarantine quarantine restrictions.

Regarding the impact of the WTO on international trade, it was found that the establishment of clear rules for international trade in goods and services has contributed to a sharp increase in cross-border business activity. Since 1995, the volume of world trade has almost quadrupled, and real world trade has grown 2.7 times.

The inverse relationship between the volume of world trade in goods and the weighted average tariff rate for all products. Thus, reducing the weighted average tariff rate by 1 percentage point increases world trade in goods by 4570.99 billion dollars. USA.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 339.9

DOI https://doi.org/10.26661/2414-0287-2021-3-51-12

FEATURES OF FORMATION OF FINANCIAL AND INDUSTRIAL GROUPS IN THE WORLD ECONOMY

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Key words:
international economy, financial-industrial groups, globalization, multinational companies, investments, enterprises, profits

The article is devoted to the study of the peculiarities of the formation of financial-industrial groups in the world. At the present stage in countries with developed market economies, the main form of functioning of financial capital is the financial-industrial group. It is a union of banking, industrial and other monopolies based on a system of participation, personal union, long-term financial relations and other ties. Within these groups, a certain coordination of economic activity of the enterprises included in it, redistribution of loan capital accumulated in banks, relative stability of capital accumulation is achieved. Integrated structures are becoming the basis of big business. Characteristic features of these groups were the completeness and integrity of the internal organization, the presence of functional management centers with a focus on both the financial core of the group and industrial and commercial specialization. The basis of the globalization of the modern international economy are transnational corporations (TNCs). It is noted that in modern conditions transnational FIGs occupy one of the key positions in the formation and functioning of international business and are the most active participants in international economic relations and a powerful driving force aimed at integrating national economic systems into the world economic system. The most important reason that motivates the organization of financial-industrial groups is to ensure the relative cheapness of investment resources that are accumulated in financial institutions (banks, funds, insurance companies) of the group. This allows to keep the whole structure active and is an important factor in competition. Financial industrial groups can be restructured in accordance with the requirements of dynamic changes in various markets at lower structural costs compared to other economic associations of similar scale. The innovative advantages of FIGs deserve special attention, especially since the insufficient intensity of innovation processes is a key flaw of Ukraine's economy. The presence of large capital in the economy of Ukraine ensures the strengthening of investment processes.

ОСОБЛИВОСТІ ФОРМУВАННЯ ФІНАНСОВО-ПРОМИСЛОВИХ ГРУП В СВІТОВІЙ ЕКОНОМІЦІ

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Ключові слова:
міжнародна економіка, фінансово-промислові групи, глобалізація, транснаціональні компанії, інвестиції, підприємства, прибутки

Стаття присвячена дослідженню особливостей формуванню фінансово-промислових груп у світі. На сучасному етапі в країнах з розвитою ринковою економікою основною формою функціонування фінансового капіталу є фінансово-промислова група. Вона являє собою об'єднання банківських, промислових і інших монополій на основі системи участі, особистої унії, довгострокових фінансових відносин і інших зв'язків. У рамках цих груп досягається визначена координація економічної діяльності підприємств, що входять до неї, перерозподіл акумульованого в банках позичкового капіталу, відносна стійкість нагромадження капіталу. Інтегровані структури стають основою великого бізнесу. Характерними ознаками цих груп стали завершеність і цілісність внутрішньої організації, наявність функціональних центрів управління з орієнтацією як на фінансове ядро групи, так і на промислово-торговельну спеціалізацію. Основою глобалізації сучасної міжнародної економіки є транснаціональні корпорації (ТНК). Зазначено, що в сучасних умовах транснаціональні ФПГ займають одну із ключових позицій

ISSN Print 2414-0287
ISSN Online 2707-8426

у формуванні та функціонуванні міжнародного бізнесу і є найбільш активними учасниками міжнародних економічних відносин і потужною рушійною силою, спрямованою на інтеграцію національних економічних систем окремих країн у світову економічну систему. Найважливішою причиною, котра спонукає до організації фінансово-промислових груп, є забезпечення відносної дешевизни інвестиційних ресурсів, що акумулюються у фінансових установах (банках, фондах, страхових компаніях) групи. Це дозволяє підтримувати всю структуру в активному стані і є немаловажним чинником у конкурентній боротьбі. Фінансове промислові групи можуть переструктуризуватися відповідно до вимог динамічних змін на різноманітних рийках при менших структурних витратах у порівнянні з іншими економічними об'єднаннями подібного масштабу. Особливої уваги заслуговують інноваційні достоїнства ФПГ тим більше, що недостатня інтенсивність інноваційних процесів — ключова вада економіки України. Присутність великого капіталу в економіці України забезпечує посилення інвестиційних процесів.

Formulation of the problem

The formation of financial-industrial groups is a natural process of emergence and development of large capital. This process should not be seen as a deformation of the economic development of society. Financial-industrial groups (FIGs) are becoming the carriers of innovative development. In modern conditions, the development of such groups is becoming one of the main directions of development of the world economy. Enterprises that are part of FIGs are interconnected by numerous ties regarding financial, production, sales and other activities. The holding mechanism of the group organization is dominant in the creation and operation of many foreign FIGs both at the national and transnational levels. Quite often the holding acts as a company that owns a controlling stake in the group and thus determines its strategy. World experience also shows that overcoming the investment crisis is possible only with the concentration of capital – through both the merger of banks and the creation of associations of banks and industrial enterprises. Recently, the motivation of enterprises to join FIGs has been growing. Such intentions are related to the ability to ensure control over enterprises in order to establish favorable technological and economic ties. Many economic entities are attracted by the prospect of joint implementation of priority national programs, obtaining the necessary state support, development of long-term and promising investment projects. FIGs, which cover industrial enterprises, research organizations, trading companies, banks and other structures based on internal contractual relations, have become a kind of framework for a market economy in many countries. The presence of large capital in the economy of Ukraine ensures the strengthening of investment processes. Large FIGs are becoming carriers of innovative development. Thus, the study of the process of formation of FIGs will contribute to the penetration into the Ukrainian business environment of Western business models.

Analysis of recent research and publications

Today, the interest of scientists is attracted to the study and systematization of the processes of concentration, centralization of production. A.H Movsesian and S.B. Ognivtsev studied the influence of FIGs on investment processes and their relationship. Researchers emphasize the transfer of part of the reproduction processes from one country to another (others) through foreign direct investment. The process of transnationalization, which underlies investment, is studied in detail [1]. O.I. Rohach highlights that transnationalization is a process of strengthening global integration as a result of global operations of transnational companies [2]. Kutsyk P.O., Kovtun O.I., Bashnianyn G.I. [3] do not ignore scientific works of Vasilevskyi T.L., Nalevieva M.A. [4], Temnichenko M. Yu. [5], Lenskyi E.V., Tsvetkov V.A. [6], whose research is devoted to the formation of principles and development and formation of FIGs, multinational companies.

Formulation of the purposes of the article

The purpose of the article is to study the features of the formation of financial-industrial groups in the world economy.

Presentation of the main research material

The most important reason that motivates the organization of financial-industrial groups is to ensure the relative cheapness and effectiveness of investment resources accumulated in financial institutions (banks, funds, insurance companies) of the group. This allows keeping the whole structure active and is an important factor in competition. Financial-industrial groups can be restructured according to the requirements of dynamic changes in various markets at lower structural costs compared to other economic associations of similar scale.

There are many tools for integrating enterprises into FIGs. The main mechanisms of capital consolidation include the following: holding form of management of the group's share capital; trust management of the parent company shares of group members; mutual ownership of shares of FIG participants; long-term financial relations; joint opening of a joint-stock company (parent company; trading house, etc.) [7].

In general, the creation of industrial and financial groups is an attempt to form a relatively small number of large stable and competitive alliances to catalyze diversified investment flows in the priority areas of industrial and economic growth.

FIGs are characterized by special properties of the internal movement of cash flows and assets, their cash flows, on the one hand, take the form of transfer prices for raw materials and products, the purpose of which is to redistribute funds among group members and generate profits where taxes are

ISSN Print 2414-0287
ISSN Online 2707-8426

minimized. On the other hand, the movement of cash flows in conjunction with barter is subject to the objectives of commodity lending. Complementing them with bank loans of their own financial institutions, FIGs provide themselves with increased financial stability in the place where it is currently most needed. As for the movement of assets, the transfer from one member of the group to another can significantly reduce the risk of losing the FIG of the required assets when imposing a penalty on them. The movement of cash flows and assets is often accompanied by the creation and elimination in groups of individual units to improve the system of accounts (production units, this is practically not the case) [8].

The special nature of cash flows allows influencing the financial condition of members of FIGs, first of all – producers. The safest, from the point of view of the owner, is the financing of the latter at the expense of borrowed funds of other members of the group, which creates opportunities for unlimited control over economic activities. In this case, the capital structure, liquidity and solvency are considered by the owner not in relation to individual production, but in relation to the business as a whole.

It is legitimate to emphasize that the internal relations in FIGs give them a very high stability due to low transactions – profit centers are moved by a simple change of contracts, the introduction of new firms in the scheme of calculations, documentary changes in income.

Thus, modern FIGs have succeeded to solve two key tasks for entrepreneurs: they have effective mechanisms for both profit maximization and cost minimization, and protection against bankruptcy. In addition, they managed to create a completely opaque picture of their activities, closed from external counterparties and fiscal authorities.

The experience of relations within the framework of Japanese inter-corporate alliances operating in dynamically developing industries is interesting, in which the stability of the situation is ensured for all members of the group. Suppliers cite long-term reliable relationships as a key reason for integration even more often (74.5%) than parent companies (46.5%). This is one of the modern forms of functioning.

In the Japanese automotive industry, the electrical industry a contract for the supply of specific parts for a particular product model is usually concluded with a single supplier and usually operates throughout the life cycle of the model. This does not preclude the presence of their suppliers of similar parts for different models. The absence of parallel contracts indicates that the parent company's relationship with its suppliers is not dominated by pressure on them, but by the desire to use the effect of scale of production. To counteract the overpricing of components, other levers are used: the terms of loans, other resources, participation in the capital of suppliers.

Preference is given not to short-term benefits from the forceful reduction of prices for their products, but to long-term cooperation. It is manifested when specifying prices, adjusted for risk, and incentives for innovation. In the automotive industry, as a rule, the smaller the supplier, the greater the risk assumed by the parent company. Naturally, it performs insurance functions for a fee. The design of new components is carried out in parallel with the relevant efforts of the parent company. This reduces the time to develop a new model. Gain in the pace is achieved by reducing the interval between the beginning of product design and the starting of the development of technology for its production, which is typical of Japanese industry. The long-term nature of intragroup relations leads to deep technical cooperation: the customer often rents equipment to performers, provides scientific and technical information, engineers of suppliers are included in the laboratory of the parent company.

Thus, the source of strategic benefits for all FIG participants is the competitive advantages provided by integration in the field of technological development. Combining the resources of individual firms is increasingly a necessary tool for developing or acquiring new technology, implementing the accumulated knowledge and experience, organizing new industries or overcoming barriers to entry into existing ones, the familiarization of foreign markets.

From the point of view of technological development the interdependence of well-being of the grouped enterprises is well visible. When all members of the financial-industrial group accumulate managerial skills, specific technological resources, and technical competence in the conditions of scientific and technological progress, the long-term viability of each FIG company is very important for the efficiency of the group as a whole. Human capital and technological knowledge accumulated in family firms cannot be discarded and restored in a short time by the parent firm. Confirmation of the growth of the economic weight of the «junior partners» in FIGs can be the manufacturing industry of Japan, where the share capital of subsidiaries in the mid-60's of the last century amounted to 11% of the capital of the main, reached – already 35% in the 90's.

The innovative advantages of FIGs deserve special attention, especially since the insufficient intensity of innovation processes. The circumstances constraining the innovation process include: 1) the complexity of interaction with related industries; 2) uncertainty of demand and results in general; 3) problems with funding, largely related to the above factors. The impact of these circumstances is exacerbated when new production is characterized by increasing scale efficiency.

Although Japan does not have such a venture capital market as the United States, it has a non-trivial alternative that provides the economy with a high degree of innovative dynamism. Takeovers of firms are not accepted in Japanese practice. If in the United States venture firms are given the role of pioneers of new technologies, in Japan the burden of the initial development of technology is borne by a large corporation. Another situation is more typical for Japan: small and medium-sized firms play a significant role as a channel for testing various options for the application of technological innovations mastered by large corporations. At the same time, typical cases when small entrepreneurs make certain technological improvements.

An innovative FIG firm receives diverse support from other members of the group. This helps it to overcome some of the initial difficulties of entering the market.

Firstly, many innovative products and processes are the result of long series of adjustments based on the results of different stages of the innovation process, in which different FIG participants are involved. Consumers of the equipment often express wishes that push to innovations of manufacturers of this equipment.

ISSN Print 2414-0287
ISSN Online 2707-8426

Even in vertically integrated Japanese FIGs, the relationship between the participants goes beyond the hierarchical division between planning and implementation of plans. Coordination is practiced based on prompt access to a posteriori information, i. e. obtained from practical experience. This kind of information about the reaction of consumers to new products, design problems, the complexity of the production process becomes the property of all members of the group involved in the innovation process.

Through interaction between them, a coordinated adaptation to new information is ensured. Due to this adjustment, the quality of new products and technologies is improved, innovation risk is reduced. In innovative competition, it is often not the inventor who wins, but the one who can embody more quickly the invention in products, give it a perfect design, and understand consumer demands.

Operative coordination of actions among all participants in the innovation process requires appropriate costs. However, they decrease with the development of information technology.

Secondly, FIGs share the strengths of networked industrial organizations in terms of access not only to information but also to other technological resources.

As is known, the key circumstance of the network model of economic integration is the actual closure of broad segments of industrial markets. When the German concern BMW lost to its compatriot Volkswagen in the competition for ownership of Rolls-Royce Motors, the concern decided to reduce the supply of components for Rolls-Royce. The new owners will need a lot of time and huge investments to ensure the production of engines comparable in quality to BMW products [9]. There is no open market for many products and technologies. This is the situation with dual-use technologies, including missiles, nuclear, etc. There is exclusive access to resources.

Thirdly, financial-industrial groups are able to provide a relatively massive and stable demand for new products in the critical period of its development, when reducing costs to an acceptable level depends primarily on the volume of production and sales of these products.

For example, in the late 1960s, about half of the computers used by leading Japanese FIGs were made by a member firm. At that time, Japanese computers were inferior in quality to imported ones. Today, most of the computers used by Sumitomo Group companies are made by NES Holding.

Fourthly, FIG facilitates the financing of innovations. Here is one of the most important advantages of FIGs.

The achievements of FIGs are largely due to the widespread use of borrowed funds to finance industrial members of these groups. The rapid postwar development of Japan and Germany took place with a relatively high share of borrowed funds in the capital structure of nonfinancial corporations. FIGs are the most important mechanism for reducing the equity ratio (shareholder equity / total funds ratio) in these countries.

In our opinion, in the framework of economic security, FIGs provide solutions to the following tasks: concentration of bank capital and expansion of the investment base on market priority areas of industrial development; structural restructuring of the entire system of banks with a focus on the real economy; survival in competition and creation of conditions for sustainable development of banks and enterprises; the possibility of implementing integration tasks within the CIS on market terms; increasing the manageability of the economy, creating new jobs; strengthening the position of national capital in foreign and domestic markets; accelerating the modernization of industry.

It should be noted that world economic development indicates a transition to oligopolistic competition. In all world economic centers, development is dictated by a limited number of FIGs and TNCs. Thus, in the United States they account for up to 60% of consumer goods, in Japan up to 45%. Large corporations provide scientific and technological progress, economic growth, and social security of citizens. It was the transnational FIGs that built the European Union in the shortest possible time, gave a powerful impetus to the development of the newly industrialized countries of Southeast Asia, and so on. Their importance in the development of the global world economy has been growing systematically over the past 50 years [9].

From the point of view of external security, it is also obvious that the ability to contact the environment (world economy) without violating its homeostasis is provided by the forces and means of adequate institutions. The main ones are transnational FIGs – this is due to the fact that: FIGs – a fairly rational form of economic integration. The economy is integrated not only by agreements (borders, fees, etc.), but by real economic entities. FIG is one of the main conditions for the inflow of foreign direct investment, because of the need to be in the recipient country of powerful companies capable of implementing investment projects and shaping the environment. FIG formation is an effective way to prevent unwanted takeovers of strategic industries by foreign companies.

It should be noted that for transnational companies (TNCs) foreign activity is no less, but increasingly more important. Specific reasons for the emergence of TNCs may be the existence of restrictions on the development of international trade; strong monopoly power of producers; currency control; transportation costs; differences in tax legislation.

TNCs, as a form of international business, have a number of undeniable advantages over national companies. Their foreign affiliates play an extremely important role in ensuring the firm's access to foreign markets, reducing production costs, and increasing profits. Expansion of the sphere of circulation and production at the expense of foreign branches and increase of their efficiency promotes strengthening of financial stability of TNCs and helps them to survive the periods of economic crises.

The advantages of TNCs in obtaining much higher profits compared to other forms of international business organization are also the reasons for the active development of corporations. Transnational FIGs can be created both on the basis of intergovernmental agreements and by concluding agreements directly between economic entities of various forms of ownership in accordance with national legislation. If a transnational FIG is established on the basis of an intergovernmental agreement, it is granted the status of an intergovernmental FIG. For participants in interstate FIGs, the national regime is determined by intergovernmental agreements on the basis of reciprocity.

The Convention on Transnational FIGs (Transnational Corporations) establishes the principles of cooperation

ISSN Print 2414-0287
ISSN Online 2707-8426

between the States Parties to this Convention (hereinafter referred to as the Parties) in the field of establishment and operation of transnational corporations. In the Convention, the concept of «transnational corporation» includes various transnational entities, including financial and industrial groups, companies, concerns, holdings, joint ventures, joint stock companies with foreign participation and others [10].

According to the UN, there are about 200,000 TNCs in the world, which own more than 250,000 branches abroad. Under the direct control of TNCs with varying degrees of integration are the vast majority of all production assets in the world and 80% of new technologies.

International transnational economic powers have a high degree of concentration. This is evidenced by the fact that 1% of parent TNCs own 50% of total foreign direct investment (total assets of foreign affiliates).

The decisive influence of TNCs on world development is manifested through the system of their international scientific and technical relations, the most characteristic of which are: foreign technological trade, including trade in machinery, equipment, patents, licenses, know-how, etc.; export of capital for the purpose of implementation of large scientific and technical projects, investments in science-intensive industries (electronics, computer science, biotechnology, new materials, etc.), construction of enterprises and other facilities, exploration works; military sphere, including joint research and arms trade; international engineering; international leasing; training of scientific and technical personnel abroad; control over the international market of information services; direct participation in the development of international agreements on standardization and other areas that ensure the coherence of the actions of TNCs on the world stage; scientific and technical relations in the framework of bilateral and multilateral agreements of TNCs, including their strategic alliances.

The main volume of foreign direct investment and, accordingly, production and other activities of TNCs are concentrated within the «triad»: the European Union (EU) – the USA – Japan, due to the specifics of the current stage of the scientific and technological revolution and, therefore, structural restructuring of national economies. This is evidenced by the location of foreign branches of TNCs: 45% are located in industrialized countries, 41% – in developing countries, 13% – in Eastern Europe. TNCs occupy the highest floors of the economic structure. Thus, 60% of American and Japanese TNCs operate in the manufacturing industry, 37% – in the service sector and only 3% – in the primary sector (mining).

The restraining circumstances of the formation of FIGs in Ukraine as a driving force include: the complexity of interaction with related industries; uncertainty of demand and results in general; funding problems are largely related to the above factors. The influence of these circumstances is amplified when new production is characterized by increasing scale efficiency [11].

Conclusions

The conducted researches allowed reaching the following conclusions: preconditions of formation and activity of financial-industrial groups are socialization, concentration and centralization of production. The socialization of production must be seen as the socialization of the entire reproductive economic process as a whole. Moreover, we understand it as a dual process of development of productive forces and economic relations, i. e. in organizational, technical and socio-economic aspects. Thus in the very process of socialization it is expedient to distinguish two dialectically interdependent and closely interacting, but at the same time existing relatively separately, directions: organizational-economic and socio-economic, which have the corresponding mechanism of realization. This mechanism, in our opinion, includes three blocks: functional forms of socialization (concentration and centralization, specialization and cooperation, combination and integration, etc.), its structural forms (subjects and levels), and objects socialization.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 338.45:687]:502.174.1 DOI https://doi.org/10.26661/2414-0287-2021-3-51-13

FASHION INDUSTRY SUSTAINABLE CIRCULAR BUSINESS MODEL: DEVELOPMENT AND IMPLEMENTATION AMID GLOBAL ECOLOGICAL CRISIS

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Key words:
circular economy, circular business model, fashion industry, fast fashion, global ecological crisis, sustainable development

The article considers ecological and economic problems of modern industrial enterprises. Based on the researches, the factors shaping the further sustainable economic development of industrial enterprises are identified and grouped into two directions: ecological and economic. The specific behavior of fashion industry enterprises in the conditions of global ecological crisis is analyzed. Based on the analysis, the importance of fashion industry business models' structural transformation is substantiated. It is defined that such transformation should become the gradual transform from a linear to a circular (closed-loop) model. Theoretical and practical aspects and difficulties of circular business models' introduction in the fashion industry are reviewed. The essence, advantages and problems connected with their application are revealed. The peculiarities of the transition process of companies in the industry to circular business models are analyzed. The main problems that may arise for entrepreneurs within the introduction of circular business models in the fashion industry are outlined. The basic two barriers are: the lack of special technologies in the fashion industry sector and incredibly rapid constant changes in the industry. Perspective options of fashion industry enterprises' transition to circular model are proposed. They are the following: rewards on used products being returned to the retail stores, industry should tend to a more classic designing, reuse of resources, creating long-term trust and brand-loyalty which are undeservedly forgotten amidst modern marketing instruments within fast fashion industry.

СТАЛА ЦИРКУЛЯРНА БІЗНЕС-МОДЕЛЬ ІНДУСТРІЇ МОДИ: РОЗВИТОК І ЗАПРОВАДЖЕННЯ В КОНТЕКСТІ ГЛОБАЛЬНОЇ ЕКОЛОГІЧНОЇ КРИЗИ

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Ключові слова:
циркулярна економіка, циркулярна бізнес-модель, індустрія моди, швидка мода, глобальна екологічна криза, сталий розвиток

У статті розглянуто еколого-економічні проблеми сучасних промислових підприємств. На основі досліджень визначено фактори, що формують подальший сталий економічний розвиток промислових підприємств, які згруповані у два напрямки: екологічний та економічний. Проаналізовано специфіку поведінки підприємств індустрії моди в умовах світової екологічної кризи. На основі аналізу обґрунтовано важливість структурної трансформації бізнес-моделей індустрії моди. Визначено, що таке перетворення має стати поступовим перетворенням з лінійної на циркулярну модель (замкненого циклу). Розглянуто теоретичні та практичні аспекти та труднощі запровадження циркулярних бізнес-моделей до індустрії моди. Розкрито сутність, переваги та проблеми, пов'язані з їх застосуванням. Проаналізовано особливості процесу переходу компаній галузі на циркулярні моделі бізнесу. Окреслено основні проблеми, які можуть виникнути у підприємців при впровадженні кругових моделей бізнесу в індустрії моди. Основними двома перешкодами є: відсутність спеціальних галузевих технологій в індустрії моди та неймовірно швидкі постійні зміни в галузі. Запропоновано перспективні варіанти переходу підприємств індустрії моди до циркулярної моделі. Вони полягають у наступному: винагорода за використану продукцію, що повертається в магазини роздрібної торгівлі, індустрія повинна прагнути до більш класичного дизайну і повторного використання ресурсів, створення довгострокової довіри та лояльності до бренду, які незаслужено забуваються на тлі сучасних інструментів маркетингу в індустрії швидкої моди.

ISSN Print 2414-0287
ISSN Online 2707-8426

Statement of the problem

World ecological and economic crisis among industrial enterprises is caused by dozens of factors. It is absolutely natural to divide them into two groups: external factors (COVID-19 pandemic, market stagnation, reduction of effective demand, intensification of competition etc.), and internal factors. Amidst the latter the following should be noted: imperfection of business models of economic entities; futile and idle business processes, energy- and material-overconsuming processes and staff «psychology»; significant defects in the location of production sites and shops (in terms of the logistical approach) and so on.

Such situation threatens to develop into the global industrial crisis in all the sectors in the near future, destructive for many of them. Moreover, this would affect the whole world's socio-economic development as it confronts with a large number of interconnected with industry problems. These include an increase in consumption of food, water, natural resources, energy demand in the context of climate change and environmental degradation. That is why it is the time to reconsider, actually, the concept of production and economic development of any industry, modeling business processes in a new way, allocating priorities in accordance with modern requirements.

One of the promising ways of industrial enterprises' sustainable development in the context of global ecological crisis is transformation to the circular business model.

Among the positive prerequisites for the shift to the circular economy, the main thing is the development of scientific sphere. The shift is facilitated, first of all, by the emergence of new technologies related to renewable energy sources, the reuse of resources and waste management, as well as the development of digital technologies. Moreover, business is interested in reducing cost of materials due to their reuse, which encourages it to increase investment in research and development related to this area. The awareness of the population and business about the negative impact on the environment has also increased, which contributes to the transformation of the economy and society as a whole according to the concept of the circular economy.

Objectives of the article

The objective of the article is to establish promising ways of fashion industry enterprises' sustainable development on the basis of the circular business model in the context of global ecological crisis.

Analysis of recent research and publications

In the economic literature, the problems of the shift from a linear economy to a circular one are considered in the works of Andrey Avramenko, Mikhail Gorbachev-Fadeev, Kenneth Boulding, Rachel Carson, Richard Dobbs, Jeremy Oppenheim, Fraser Thompson, Marcel Brinkman, Marc Zornes, Martin Lehmann, Bas de Leeuw, Eric Fehr, Donella Meadows, Dennis Meadows, Jorgen Randers, William Behrens III, Zengwei Yuan, Jun Bi, Yuichi Moriguchi, Di Wu [1], Ellen MacArthur [2] and others.

The shift from the linear to the circular economy is especially actual today, in conditions of complicating world ecological crisis, low-efficient usage of resources, critical exhaustibility of natural resources and high-level environmental pollution. Modern globalization processes increase the pressure on the environment, but they also increase the opportunity for the concept of circular economy realization. Therefore, it is rational to study the perspectives of circular business models as advanced in this field.

The main material of the research.

In the process of economic activity, each industrial enterprise consumes resources: natural, human, financial and, of course, ecological. Such consumption has a constant complex impact on the environment. Additionally, over time such impact is being born synergistic effect. Depending on the industry affiliation, the degree of harmfulness of such impact varies significantly, but none enterprise makes non harm at all.

The scheme of the industrial enterprise's impact on the natural and social environments and economic parameters is shown in Figure 1. Furthermore, environmental change is only one of the consequences of industrial activity. There are others that arise as a result of ecological imbalance – the negative impact on the physical and emotional state of

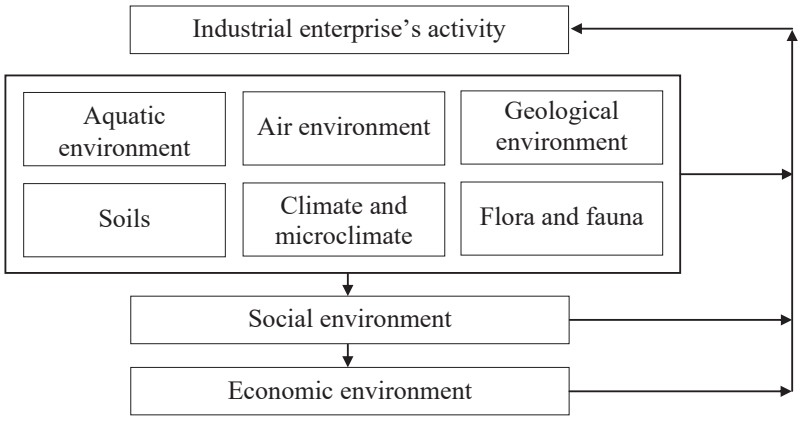

Fig. 1 – Scheme of the industrial enterprise's impact on the natural, social and economic environments
Source: formed by the authors

ISSN Print 2414-0287
ISSN Online 2707-8426

the social environment, the deterioration of the economic situation associated with social problems and so on.

Concerning economic environment and parameters, it should be noted that each enterprise chooses itself which system indicators to use depending on the management style, strategy, size of an enterprise, the availability of credit resources etc.

It is also advisable to emphasize that, first of all, the parameters of the natural environment and economic prospects should be the focus of the model of sustainable development of industrial enterprises. Only by examining together the environmental and economic components of the model, the most objective assessment of each of the alternatives' optimality can be reached. Herewith, the sustainable development model should be evaluated not only before and during the approval of one of the alternatives, but also in the process of its implementation and maintenance. This is due to possible changes in the components of the model, as well as the updating of the regulatory framework.

The key concept of an enterprise's sustainable transformation is the concept of «pollution». Pollution means the change of environmental factors in an unfavorable direction as a result of industrial enterprise's activities.

Such pollutants should be divided into three main groups:

1) chemical pollutants;

2) mechanical contaminants;

3) energy pollutants.

When released into the atmosphere, the components of pollutants lead to various negative and mostly irreversible natural environment's changes.

In such circumstances, the task of transforming existing business models of industrial enterprises into environmental ones can be grouped as follows:

− increasing the economic efficiency of environmental activities of an enterprise for the short-term period and further;

− economic and ecological processes' optimization and financial and economic activities' increasing efficiency along with industrial investments;

− environmental risks' minimization and managerial decisions' economic substantiation on economic activity's diversification, introduction of new low-waste or non-waste resource-saving technologies, creation of new productions on industrial processing or utilization of waste;

− economic and environmental processes' forecasting and assessing their impact on the long-term sustainable development of an enterprise;

− substantiation of tax rates and the amount of other environmental liabilities for the use of natural resources by an enterprise.

The solution of these problems is aimed at achieving the main goal of economic activity of an enterprise – to obtain the highest possible profit and ensure sustainable development as a system. They determine the choice of general approaches to the greening of production and specific methods of economic and environmental development.

In the process of choosing and implementing a model of sustainable development, it is advisable to consider not only its economic and environmental qualities in terms of overall long-term efficiency. Any business activity is associated with a variety of risks, especially in the areas of ecological development and investment.

That is why in the process of choosing a model of sustainable development of an industrial enterprise, it is important to assess also the risks associated with this direction of development. Considering the risks in general, we can separate its main indicator – the average value, which caused by the deterioration of the quality of the environment. This indicator is a mathematical expectation of the enterprise's, expressed in value terms, taking into account the probabilistic nature of its occurrence.

Depending on the heaviness of the negative ecological impact, and in order to reduce such impact, each enterprise adapts the model of sustainable growth. At the same time among the most effective ones are circular business models.

So, in order to analyses the possibilities and perspectives of circular business models, we should identify the meaning of the circular economy concept.

Today, there is no unified interpretation of the concept of circular economy.

According to Di Wu, the circular economy is an economy that develops via recycling and reusing the waste. Its target is minimization of the amount of natural resource consumed by economic production, pollution discharged into the environment, and the overall ecological damage caused to the environment by the economy [1].

Ellen MacArthur considers circular economy as an economy based on the principles of waste and pollution management, the conservation of products and materials in use, and regenerating natural systems [2].

According to the Global Forum on Environment, the circular economy is a concept that aims at closing materials loops and extending the lifespan of materials through longer use, and the increased use of secondary raw materials [3].

So, basing on the researches, the circular economy is a unity of industrial ecology and waste management, which acting together aiming at overconsumption reduction of natural resources by partial replacing with wastes and secondary resources.

Concerning the peculiarities of environmental impact of fashion industry enterprises, it should be said the following.

Fashion industry is an industry that includes design, production, distribution, marketing, trade, advertising and promotion of all types of clothing [4].

Today, the fashion industry is one of the most polluting industries in the world and, according to the current trajectory of development, it is projected that by 2050 it will use 25% of the world's CO_2 emissions budget. The spread of «fast fashion» has led to a sharp reduction in the service life of clothing. Since 2002, world clothing production has more than doubled, with the average consumer buying 60% more and each item of clothing stored twice as much [5].

Nowadays the textile and garment industries face the problem of meeting consumer expectations. But in some cases, they contradict each other. On the one hand, research has shown that there is an unhealthy «throwaway»

ISSN Print 2414-0287
ISSN Online 2707-8426

consumer culture, which causes excessive consumption and waste. Consumers are increasingly getting used to cheap, low-quality fashion, which they can throw away after a few washes. On the other hand, other studies have shown that consumers are increasingly interested in environmentally friendly products [6].

In general, the fashion industry is characterized by high consumption of fuel, water and chemicals. Extensive energy consumption, for example, occurs in the production of artificial fabrics, yarn and finishing, as well as in washing at the stage of use and direct emissions during transportation [7]. Regarding the use and release of toxic chemicals in cotton and agriculture, and in most textile industries, toxic chemicals are used in pre-treatment, dyeing and printing, leading to soil and water pollution [8].

So common linear fashion industry model causes and faces a lot of ecological and social problems.

That's why a concept of circular fashion industry was created.

Circular fashion industry is an industry in which waste and pollution are not created, products and materials are used for as long as possible, including through reuse and recycling, and where natural systems are regenerated [9].

Therefore, now in fashion industry there is a trend towards the introduction of circular business models.

Source: formed by the authors on the basis of [9, 10].

Circular fashion model assumes the use of materials which have been suitably made and designed with the circular economy in mind. Such products pass special certification (Cradle2Cradle, for example, which assesses whether products have been suitably designed and made across five critical performance categories: Material Health, Material Reutilization, Renewable Energy and Carbon Management, Water Stewardship, and Social Fairness).

Clothing also should be designed with sustainability and circularity in mind. Design of clothing should also consider perspective how a product will be made, used and ultimately disposed of. Design issues to consider include the use of single fibers rather than blends, ensuring hardware and trims are easily removable and can be recovered for reuse and the use of safe dyes and finishes.

Garments are made from high quality materials with maximum strength, durability and timeless style to maximize the duration of the consumer usage stage in garment's life cycle.

At the stage of consumer usage, such measures are applied to extend the life cycle of the garment: rent, reuse, repair, redesign, resell.

When the clothing isn't good enough for rent, reuse, repair or redesign, it is sent for recycling to reuse it in production of completely new clothing.

Finally, a circular fashion model considers the end-of-life stage, where if the product can no longer be used either entirely, for its parts or recycled back into raw materials it should be disposed of without harming the environment through biodegrading and composting [9].

There are still a lot of problems on the way towards circular fashion.

As for manufactures, the main problem is the absence of required technologies.

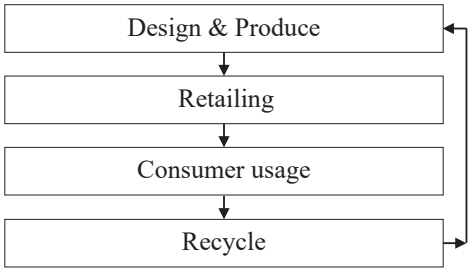

Fig. 2 – Scheme of the circular business model of the fashion industry

On the other side, the big problem is the need for constant change in the fashion industry. This trend promotes overproduction, overconsumption and increasing of wasting. Colors, shapes, materials, etc. are constantly changing, which is opposite to the idea of clothing durability.

Some of the possible solutions of these and some other problems can be:

1. Introduction of rewards on products being returned to the retail stores to make people more responsible for circular fashion.
2. Designers should tend to a more classic design that will be valuable to users for a longer period of time.
3. Companies should totally revise their current business models implementing retaking of sold products, reuse of resources like that of raw materials instead of using virgin raw materials, etc.
4. Creating trust among people regarding second-hand products by issuing certificates from trusted bodies with the product.

Fashion industry products are directly aimed at meeting the everyone's needs. Therefore, the sustainable development of this industry should be a priority. But development of these industry should be carried out taking into account the current trends towards the introduction of circular business models, which will ensure the competitiveness of the industry's products in the local and foreign markets in the long term.

Conclusions

Studies have shown that «classical» linear vector of economic development has proved its insolvency in modern ecological and socio-economic developmental stage. Transformations of industrial enterprises' business models are inevitable for those who are aiming to survive and achieve sustainable economic growth with positive long-term ecological effectiveness. From the one hand, there are lots of opportunities to start such a transformation: plenty of alternatives, solid scientific and practical information, dozens of proved cases. From the other hand, such variety of alternatives complicates the process of choosing, development, implementation and support of the transformation requires huge amounts of financial, human and time resources. In a long-term perspective, the most ecological and economic efficient business model is the circular one, as it is aimed at overconsumption reduction of natural resources by partial replacing with wastes and

ISSN Print 2414-0287
ISSN Online 2707-8426

secondary resources. Such business model is applicable for each industrial enterprise, including fashion industry, as this industry is one of the most economic active and its ecological impact is harsh.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 339.564(477):061.1ЄС+338.1(477) DOI https://doi.org/10.26661/2414-0287-2021-2-50-14

THE ROLE OF REGULATORY AND NON-REGULATORY ENVIRONMENT WHEN ENTERING EUROPEAN MARKETS BY NATIONAL COMPANIES

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Key words:
regulatory environment, non-regulatory environment, entering foreign market, European Union, national companies, export potential

The role of regulatory and non-regulatory environment of companies entering the European market has been studied in the article. It has been determined that entering new markets with competitive products requires innovative approaches to exports, taking into account modern trends and challenges both at national and international levels. It has been proved that national economic development stability and its competitiveness level depend on business` internationalization rate to ensure production, innovation, investment and socio-economic capacity. The structure of national exports of goods and services has been analyzed. It has been demonstrated that the European Union is the main trading partner of Ukraine. The impact factors of Ukraine's export activities with the European Union countries have been determined. The role of SMEs in the export potential of Ukraine and the world has been investigated. It has been determined that Ukrainian businesses do not sufficiently apply internationalization strategies to implement their potential opportunities, despite the fact that national enterprises have a high export activity level. It has been proved that companies` level of internationalization is affected by national regulatory and non-regulatory environment. Non-regulatory factors have been analyzed: access to funding, knowledge and information, as well as to technologies and innovations. The main problems which national companies face when entering external markets have been distinguished. It has been determined that inadequate financing is a significant obstacle to most entrepreneurs, although this is not the only resource for successful export activities. It is also important to organize business processes, be able to communicate and find new partners, understand peculiarities of product positioning and segmenting, take into account current trends, challenges and opportunities. It has been proved that high level of businesses` competitiveness is an important condition for internationalization being formed by the development and implementation of innovations.

РОЛЬ РЕГУЛЯТОРНОГО ТА НЕРЕГУЛЯТОРНОГО СЕРЕДОВИЩА В УМОВАХ ВИХОДУ НАЦІОНАЛЬНИХ КОМПАНІЙ НА ЄВРОПЕЙСЬКІ РИНКИ

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Ключові слова:
регуляторне середовище, нерегуляторне середовище, вихід на міжнародний ринок, Європейський Союз, національні компанії, експортний потенціал

У статті досліджено роль регуляторного та нерегуляторного середовища в умовах виходу підприємства на європейський ринок. Визначено, що вихід на нові ринки з конкурентоспроможною продукцією потребує використання інноваційних підходів до експорту з врахуванням сучасних тенденцій та викликів як на національному, так і міжнародному рівнях функціонування економіки. Обґрунтовано, що стабільність розвитку національної економіки та рівень її конкурентоспроможності залежить від ступеня інтернаціоналізації підприємств, що забезпечують реалізацію виробничого, інноваційно-інвестиційного та соціально-економічного потенціалу. Розглянуто структуру національного експорту товарів і послуг. Показано, що Європейський Союз є основним торговельним партнером України. Визначено фактори, що вплинули на експортну діяльність України з країнами Європейського Союзу. Досліджено роль малих та середніх підприємств в експортному потенціалі України та світі. Визначено, що рівень використання бізнес-стратегій

ISSN Print 2414-0287
ISSN Online 2707-8426

інтернаціоналізації українськими підприємствами є недостатнім для реалізації потенційних можливостей, незважаючи на те, що спостерігається високий рівень експортної активності національних підприємств. Обґрунтовано, що рівень інтернаціоналізації підприємства залежить від регуляторного та нерегуляторного середовища, що встановилось у державі. Проаналізовано нерегуляторні чинники: доступ до фінансування, доступ до знань та інформації, доступ до технологій та інновацій. Виокремлено основні проблеми виходу національних компаній на зовнішні ринки. Визначено, що недостатній рівень фінансування є значною перешкодою для більшості підприємців, хоча це не єдиний ресурс, необхідний для успішної експортної діяльності. Важливо також правильно організувати бізнес-процеси, здатність до комунікації та пошуку нових партнерів, розуміння особливостей позиціонування та сегментування свого продукту, орієнтація щодо сучасних тенденцій, викликів та можливостей. Доведено, що важливою умовою інтернаціоналізації є високий рівень конкурентоспроможності підприємства, що формується за рахунок розробки та впровадження інновацій.

Problem statement

At the present stage of development of the global economy there is the influence of globalization processes have been risen, which meets the need to adapt national economies to the features and conditions of the global space functioning. Therefore, new markets entrance, development and introduction of new competitive goods and services, innovative approaches aimed at deepening international trade relations play important role for the Ukrainian economy now. In addition, real position and prospects of future development of the national economy depends on the functioning of business entities. Thus, the study of the role of a regulatory and non-regulatory environment when entering foreign markets being priority and precondition for the stability of the Ukrainian economy development is particularly relevant.

Analysis of recent studies and publications

Much research has been devoted to business internalization as well as the challenges Ukrainian entrepreneurs face entering European markets by many foreign and Ukrainian economists, such as: S. Andersson [1], J. Johanson, J.E. Vahlne [2], P. Buckley, M. Casson [3], B. Andrushkiv [4], I. Kramar, N. Marynenko [5], O. Lytvyn [6], O. Pogaidak [4], I. Sytnik, N. Ragulina [7] and etc. However, the issue of the influence of regulatory and non-regulatory factors in the context of entering European markets requires more in-depth study.

Objectives of the article

The objective of the article is to determine the influence of regulatory and non-regulatory environment factors upon Ukrainian entrepreneurs entering European markets.

The main material of the research

At the present stage the European Union is Ukraine's main trading partner. According to the Ministry of Economy of Ukraine, foreign trade operations were conducted with partners from 227 countries all over the world in the first half of 2021, with a third of Ukrainian goods and services supplied to the EU countries (Fig. 1).

According to the results of the first half of 2021 (Fig. 1), goods and services exports to the EU amounted to $11,9 bn, respectively to 39,7% of total domestic exports. In comparison with the corresponding pre-pandemic period in 2019 goods exports to the EU increased by 20%. The greatest number of Ukrainian goods was exported to Poland ($2,3 bn), Italy ($1,5 bn), Germany ($1,2 bn) and the Netherlands ($1 bn) [9]. More than 14 thousand Ukrainian companies have exported their own products to the EU countries to date. It should be noted that goods exports structure from Ukraine to the EU countries is led by agribusiness and food industry products (34,1%), metallurgical sector products (19%) and machinery products (15,6%).

According to the experts, «The only way to become successful globally is to pursue an economic strategy that foresees an entrepreneur and internalization of Ukrainian

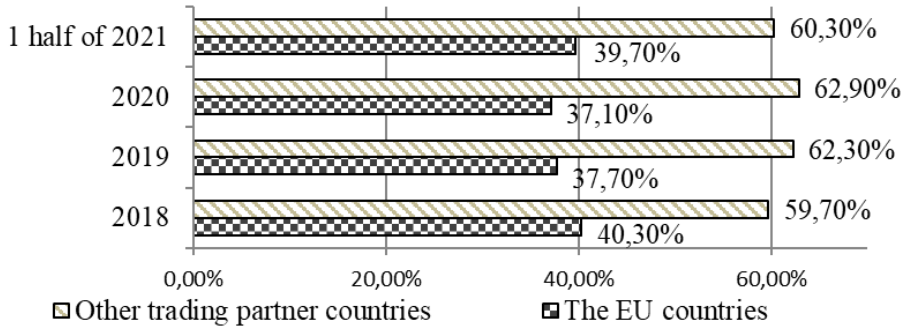

Fig. 1 – The share of the EU countries in Ukrainian goods and services exports

Note: Developed by the authors on the basis of [8; 9]

ISSN Print 2414-0287
ISSN Online 2707-8426

business as the foundation of development, and export development as the priority of Government policy…» [10]. According to the State Statistics Service, Ukrainian export activity is predominantly represented by large enterprises accounting for 70,5% of total exports, while the share of small and medium-sized enterprises (SMEs) merely amounts to 29,5% [11]. Such a situation exists nearly in all branches of the national economy, particularly in extractive and processing industries, wholesale and retail trade. At the same time agricultural commodities exports are mainly represented by small and medium-sized enterprises (SMEs). This situation is due to implementation of tariff-free quotas for agricultural products exports to the EU countries as well as to simplification of export activity administration in this sector.

Therefore, the level of implementation of internalization business strategies by Ukrainian SMEs is low. However, global experience shows that SMEs do export quite actively, the share of national export value and export volume per capita by small and medium-sized enterprises may vary significantly in different countries. In particular, in a third of the EU countries the share of SMEs in a total export value exceeds 40% due to predominantly small export volume per one enterprise – more than $1 mln per year (with the exception of Ireland, where the corresponding figure exceeds $6 mln). Leaders in the contribution of SMEs to export value include such small countries as Cyprus (65%), Estonia (60.3%), Latvia (52.1%), and Malta (49%) [12].

In recent years Ukraine has undergone a series of reforms to improve the regulation of SMEs activity. Nevertheless, some changes should still be made to approval procedures, customs, VAT administration and managing international payments. Thus, the experts of the World Economic Forum have identified the biggest obstacles to exporters' activity in Ukraine: limited access to trade access, difficulties in finding potential markets and buyers, improper production technologies and staff skills, insufficient compliance with international technical requirements and standards, problems of accessibility to imports resources at competitive prices [13]. According to Ukrainian exporters the most common issues of concern to SMEs include currency control (in particular, restrictions on the return of foreign exchange earnings, mandatory sale of foreign exchange earnings), inefficient and non-transparent VAT refund mechanism, corruption at customs, a large number of export permits, significant level of bureaucratization, lack of funding and information.

It should be recalled that the level of SMEs internalization depends not only on the regulatory environment established in the country, but also on non-regulatory factors, which can be grouped into three categories (Fig. 2).

It is indisputable that the development of SMEs is impossible without adequate funding. However, the share of small and medium-sized enterprises which take loans is much lower in comparison with the corresponding indicator for large enterprises (18.2% vs. 36.1%) [15]. The reason for this may be that SMEs are more likely to get an additional funding application rejected. Nevertheless, increasing access to financial resources is an essential component for further business internationalization.

It should be emphasized that financial resources accessibility is important for the majority of entrepreneurs but it is not the only resource needed for a successful start of export activity. It is also important to properly organize business processes, know how to seek partners, understand the positioning of your product, and navigate current trends and opportunities. Thus, a necessary condition for strengthening the competitiveness of business is to improve the practical skills of employees.

Another crucial condition of internalization is a substantial level of enterprise competitiveness, which is formed through the development and implementation of innovations. Regrettably, however, Ukrainian SMEs do

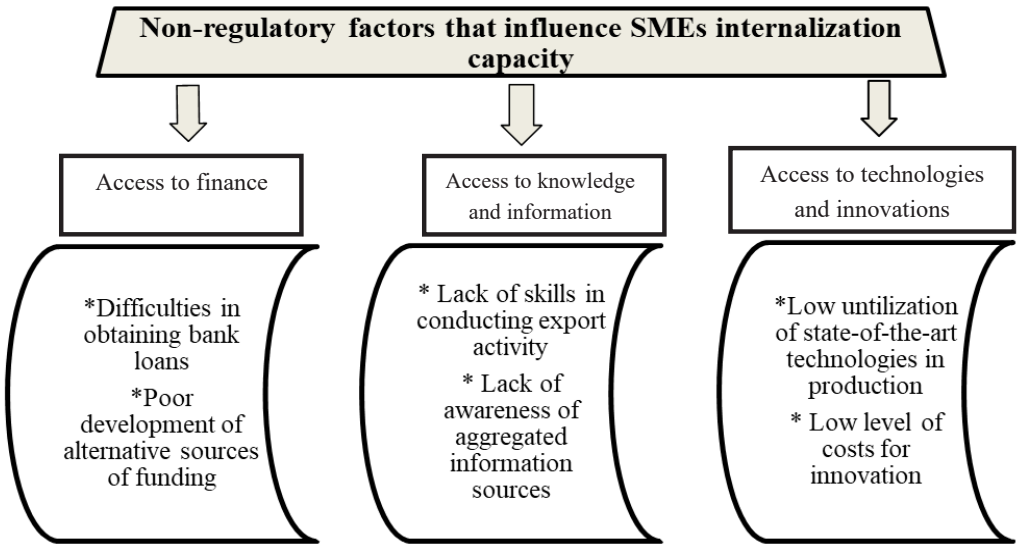

Fig. 2 – Non-regulatory factors that influence SMEs internalization capacity

Note: Developed by the authors on the basis of [14]

ISSN Print 2414-0287
ISSN Online 2707-8426

not invest enough in research and development. Only 3.5% of Ukrainian small and medium-sized enterprises invest in these types of work, while this figure is 10.3% among Ukrainian large enterprises and 23.2% among European enterprises [15].

Therefore, a regulatory and non-regulatory environment that has formed at the current stage in the national economy plays an important role in the internationalization of business. Today, the process of Ukrainian legislation harmonization with the relevant norms of the European Union is being actively carried out, but certain regulatory mechanisms should still be improved. To improve the non-regulatory environment, a large number of initiatives have been launched to stimulate the development of small and medium-sized enterprises. Most programs were developed in cooperation with international institutions, the Government of Ukraine and civil society. However, the issue of awareness of Ukrainian entrepreneurs about the possibilities of using these programs remains problematic.

Conclusions

The research has shown that the EU is currently Ukraine's main trading partner, accounting for a third of total Ukrainian exports. However, exports commodity groups are primarily represented by grain, metal and other products that are vulnerable to price fluctuations in global markets. Although the entry of small and medium-sized enterprises into the market of the European Union is an urgent problem today, Ukrainian entrepreneurs face numerous problems trying to enter the aforementioned market. Competitiveness for the success of domestic entrepreneurs in European markets depends on the company or specific owner, the level of their business culture and their aptitude for acquiring knowledge.

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ISSN Print 2414-0287
ISSN Online 2707-8426

FINANCE AND MONEY TURNOVER

UDC 336.71:005.591.6]:614.46“2019” DOI https://doi.org/10.26661/2414-0287-2021-3-51-15

INTRODUCTION OF INNOVATIONS AS A PRECONDITION FOR IMPROVING THE WORK OF UKRAINIAN BANKS IN THE CONDITIONS OF COVID-19 DISTRIBUTION

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Key words:
innovations; bank innovations; innovative bank technologies; bank development; bank activities; innovative development of banks

The article is devoted to analysis of Ukrainian banks innovations under conditions of pandemic spreading. The spread of the COVILD-19 coronavirus has an extremely negative impact on economic processes in Ukraine and the world. Ukrainian businesses and financial institutions are facing significant losses as a result of the quarantine, and the banking system is facing a whole host of large-scale disruptions and problems. The main role of innovative development of banks is a favorable impact of innovation on the activities of the banking sector, which predicts an increase in the competitiveness of the bank, increasing confidence in bankruptcy organizations and increasing efficiency of activity. Innovations allow you to facilitate the process of conducting activities and increase the new customer base. The main purpose of innovative development for banks of Ukraine on the present stage is the positive influence of innovations on activity of bank sector that is directed on increase of competitive capacity of bank and increase of trust to banks. The article contains the main theoretical approaches to the understanding of “innovation” and “bank innovation”. The main innovative technologies that are implemented in the bank activity of Ukraine were considered including: Contactless payments, customer identification using biometric technology, blockchain technology, NFC-technologies, online banking, technology of virtual banks, use of the “Dlya” add-on. The main risks that arise in the implementation of innovations in banking activities were also identified. The article revealed the factors that limit the process of implementation of innovative technologies in the banking activity. The article also demonstrates the main problems that are encountered by the clients in implementation of bank innovations in Ukraine and the ways of their solution.

ВПРОВАДЖЕННЯ ІННОВАЦІЙ ЯК ПЕРЕДУМОВА ПОКРАЩЕННЯ РОБОТИ БАНКІВ УКРАЇНИ В УМОВАХ ПОШИРЕННЯ COVID-19

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Ключові слова:
інновації; банківські інновації; інноваційні банківські технології; розвиток банків; банківська діяльність; інноваційний розвиток банків

Стаття присвячена аналізу інновацій банків України в умовах поширення пандемії. Поширення коронавірусу COVID-19 вкрай негативно впливає на економічні процеси в Україні та світі. Українські підприємства і фінансові установи унаслідок карантину несуть великі збитки, а банківська система наражається на цілу низку масштабних викликів і проблем. Провідною роллю інноваційного розвитку банків є сприятливий вплив нововведень на діяльність банківського сектору, що прогнозує збільшення конкурентоспроможності банку, збільшення довіри клієнтів до банківських організацій та підвищення ефективності діяльності. Інновації дозволяють полегшити процес ведення діяльності та збільшити нову клієнтську базу. Головна ціль інноваційного розвитку для банків України на сучасному етапі є позитивний вплив нововведень на діяльність банківського сектору, що

ISSN Print 2414-0287
ISSN Online 2707-8426

спрямована на збільшення конкурентоспроможності банку та збільшення довіри клієнтів до банків. В статті наведено основні теоретичні підходи щодо розуміння понять «інновація» та «банківська інновація». Були розглянуті основні інноваційні технології, які запроваджені в банківській діяльності України, серед яких: безконтактні платежі, ідентифікація клієнтів за допомогою біометричних технологій, технологія блокчейн, NFC-технологій, Інтернет-банкінг, технологія віртуальних банків, використання додатку «ДІЯ». Також визначені основні ризики, які виникають при впровадженні нововведень в банківській діяльності. Виокремили фактори, що обмежують процес запровадження інноваційних технології в банківську діяльність. Стаття також демонструє основні проблеми з якими зіштовхуються клієнти при запровадженні банківських інновацій в Україні і шляхи їх вирішення.

Statement of the problem

Negative events as a result of COVILD-19 in Ukraine significantly impacted the development of the market of banking services, resulting in decreased confidence in banks and, as a consequence, decreased demand for banking products, which in its turn undermined the financial performance of the banking system. This leads to the need for research of theoretical and practical aspects of implementation of banking innovations, as well as increasing the level of confidence and shaping customer loyalty.

Analysis of recent studies and publications

In today's conditions, the functioning and development of the banking system has been investigated by scientists such as: Andrushkiv I.P., Nadiyevets L.M. studied the features of digitalization in the banking sector [1]; in work Perepechay N.M. the prospects of development of the market of non-traditional banking services are determined [11]; trends in the innovative development of the banking system are identified in the work Stepanenko O.P. [13]; the structure of the modern market of banking services is analyzed in the work Trokhymenko V.I. [15]. Peculiarities of the implementation of innovations in banks have also been investigated in the works of Bondarenko L.P., Politylo M.P. [2], Yegopicheva S.B. [4], Matviichuk N.M., Burlachuk N. Yu., Harbar Zh.V. [5], Melnyk O.I., Bodnar O.A. [6], Khomenko V.O. [17]. In addition, prospects for the development of the latest services of commercial banks are analyzed in the paper Sidoruk I.S. [12] and current trends in the online banking market in Ukraine are studied in the work Tishchenko H.I. [14]. However, in the conditions of quarantine measures, there is a need to improve the banks' activity through the implementation of innovative products to improve their work.

Objectives of the article

The aim of the article is to research innovative products of the bank and improve them under quarantine conditions, as well as to explain the influence of bank innovations on the increase of confidence level and formation of loyalty of clients.

The main material of the research

The spread of the COVILD-19 coronavirus has a negative impact on economic processes in Ukraine and the world. Therefore, Ukrainian enterprises and financial institutions are already suffering significant losses as a result of the quarantine, and the banking system is affected by a whole low level of large-scale events.

Under these conditions, the National Bank of Ukraine as the main body regulating the money turnover, credits and the financial system in general [9], uses unreasonable measures to support the economy of the country, namely:

− maintains the liquidity of banks (refinancing);

− Internal audits of banks and other financial institutions;

− The financial sector development is constantly monitored (indicators of liquidity and quality of the loan portfolio of banks) [7].

During the quarantine period, the NBU introduced a number of priority measures to support the banking system. For example, the bank reduced the interest rate to 10%. It means cheaper financial aid to banks and indirectly lower cost of loans for businesses and individuals, as well as reduced risks from bad loans. Also the possibility of refinancing is proposed (on March 13 and 20, 2020 the regulator allocated UAH 17 billion for the support of financial institutions) [8].

Due to the fact that the majority of people are forced to stay at home and unable to earn money, the NBU has ordered banks not to charge fines and penalties to customers. For the businesses that are affected by the quarantine, the regulator prepares credit conditions. Banks continue to provide an uninterrupted service to their customers, and the NBU is ready to do everything necessary to ensure an uninterrupted supply of cash and increase the number of ATMs in case of increasing population's demand for cash [8].

Today, it is difficult to imagine the functioning of any market without innovative technologies. The banking market is also no exception. The main role of innovative development of banks is a favorable impact of innovation on the activities of the banking sector, which predicts an increase in the competitiveness of the bank, increasing confidence in bankruptcy organizations and increasing efficiency of activity. Innovations allow to facilitate the process of increasing the new client base.

Today there are different approaches to defining the notion of innovation activity (tab. 1).

Innovation activity is the activity, which is focused on the use and commercialization of the results of scientific research and development and predicts the release of new competitive goods and services to the market [10].

ISSN Print 2414-0287
ISSN Online 2707-8426

Table 1 – Approaches of scientists to defining the notion of "innovation activity"

Scientists	Approaches to identification
П. Tufano	is the creation and expansion of new financial technologies, financial instruments, institutions and markets [17].
B. Kornierov	It is noteworthy that while there are some differences in the understanding of "financial innovation" and "bank innovation," these definitions are shared as a whole and a part, which may not often be even different. Therefore, there is a reason to equate financial innovation with banking innovation in many cases, the essence of which is disclosed through the updating of tools and areas of financial and banking activity [3].
E.A. Utkin	he formulated a "broad" approach to the understanding of bank innovation, which, in the scientist's opinion, "includes not only technical or technological developments, but also any changes for the better in all spheres of bank activity" [6].
A.I. Polischuk	It is noteworthy that bank innovation as a set of uncompromisingly new banking products and services is a synthetic notion of the target and result of activity of a banking institution in the field of innovative technologies, which are focused on obtaining additional revenues [17].
T.B. Rubinstein	"Innovation in a commercial bank is the end result of innovative activity realized in the form of an improved or new bank product, market implemented on the market, improved or new technology of client service used in the practical activity of the bank, or a number of fundamentally new services" [3].
K. Shmigelska	is the result of the bank's activity aimed at creating new products and technologies as well as innovative ways of bank management in order to gain additional income and new competitive advantages. The notion of innovation can be applied to all innovations in all spheres of bank functioning that will enable to achieve a certain positive strategic or economic effect [4].
S.B. Goricheva	The bank's innovative activities are aimed at improving, updating tools and areas of bank activities, in other words, any changes that improve the quality of the basis for the renewal of banking services. Orientation of bank innovation activity is focused on the convergence of interests of consumers, the bank and the society in general in the framework of creating products and services of higher quality than those of competitors [4].

Source: compiled by the authors on the basis of [3; 4; 6; 17]

There are also different definitions of the concept «innovation»:

− «Any new approach to the implementation, production or sale of goods, as a result of which the innovator and his company gain advantages over competitors» [10];

− «the product of creative work, which has the completed look of the product, ready for use and distribution in the market» [9];

− «it is the end result of innovative activity in the form of a new or improved product or technological process, which has a quality advantage in use and design, production, marketing, is used in practical activities and has a universal advantage» [9];

− «investing money into the economy, which ensures changes in technology and technology» [9];

− «New technology, technology that is the result of scientific and technological progress. The historical factor of innovation is the development of innovation, rationalization, the emergence of great discoveries» [9];

− «the result of systematic activity aimed at the implementation of the achievements of scientific and technological progress and their improvements» [9].

Innovations currently include the development and implementation of new organizational structures of the organization. Modern bank institutions are developing under conditions of globalizatsii telekomunikatsiyhnyh means, development meshnojnyh form of business organizations, so at this stage neabikoyi relevance nabuet vinodyennya new forms of organizational structures. Thus, the concept «bank innovations» can be applied to all innovations in all spheres of bank functioning, which will enable the bank to achieve a certain positive economic or strategic effect (increase in the customer base, increase in the market share, reduction of costs for certain types of operations, etc.) [9].

One of the varieties of innovation is bank innovation. Bank innovation has its own peculiarities. In the opinion of Professor. I.T. Balanov, «bank innovation is a final product of innovative activity implemented in the form of a new bank product or operation» [17].

Thus, taking into account different approaches to the definition of the concept of «bank innovations» it can be summarized that the implementation of innovations in banks is of great importance, enhances their image, privatization for customers.

We will review the bank's innovative activities during the pandemic using the example of FUIB. First Ukrainian Bank during the first days of the epidemic COVID-19 carefully monitored the course of events and analysed the state of its customers, realizing that many may require support. FUIB was one of the first banks to respond to the quarantine situation and took a number of decisions aimed at supporting its small and medium-sized business customers [8].

Above all, the bank gave its customers a chance to receive a loan cancelling (postpone loan principal and instalment payments during quarantine period to the next 3–6 months). FUIB was aware of the force majeure circumstances, even taking into account possible delays in settlements between counterparties, and therefore imposed penalties for untimely loan payments [7].

FUIB did not suspend lending to small businesses during the quarantine period, but reduced lending rates and developed partner lending programmes for agricultural customers, As well as a product aimed at financing short-term business needs in working capital – overdraft «Light», increasing the period of continuous use of the limit to 90 days [19].

The bank was aware of the force majeure circumstances and discounted the fee for foreign and domestic payments

ISSN Print 2414-0287
ISSN Online 2707-8426

in national currency, discounted the fee for POS-terminals on clients who had no turnover [19].

The Bank introduced electronic signing of contracts via EDI (Electronic Digital Signature) and online verification of business and registered property in order to reduce customer contact during the period of increasing COVID-19 incidence. In 2020 FUIB launched remote opening of videoconferencing accounts. During the pandemic the bank revamped all possible online service processes, so as not to put customers at risk. Card validity periods were extended so that customers did not need to visit the bank's branch [19].

FUIB was named «Best Bank Antivirus» in the ranking of «Business» magazine. The bank was ranked first for the best comprehensive solutions for supporting small and medium-sized businesses under quarantine, loan facilities, loan restructuring programmes, flexible lending, cancellation of penalties, etc. [19].

In 2020, the Bank's investments in business modernization amounted to over UAH 404 million, and social investments – in improving the safety of employees and their development, Improvement of quality of the bank's products and services, business environment development, improvement of financial literacy of Ukrainians, and support of the healthcare system – amounted to over UAH 93 million. In 2020 FUIB transferred to the budget more than UAH 1.8 billion in taxes [8].

It should be noted that the features of innovations implemented in the banking sector are as follows:

1. The process of implementation of innovative technologies is being disrupted due to the fact that banking institutions are under the influence of the system of regulation and supervision.

2. Most of the bank's innovative technologies were generated by consumer demand.

3. Know-how and copyrights are the main means of protecting the intellectual property of the Bank's innovations.

4. Spending on innovative activities of banks decreases due to the fact that innovative technologies are based on applied and practical research [5].

Under the conditions of integration of the Ukrainian banking system into the global economic space, competitiveness of the banks depends partly on their desire and ability to shift from Use of traditional mechanisms and procedures for customer service to implement innovative methods of development and implementation of banking products and services, expansion of assortment of offered services.

The main innovative technologies that have been introduced in banking activities include: contactless payments, identification using biometric technology, blockchain technology, NFC technology, online banking, technology of virtual banks, etc. During the period of the pandemic, most banks introduced the possibility of opening bank accounts using the «DIIa» add-on, and most functions were transferred to remote service, such as: card reissuance, opening of accounts, consultations about the bank's existing products. In addition, the most mobile banks have introduced card delivery to work or home [17].

In banking practice, the widest division of services into traditional (deposit, credit, cash and settlement and other services) and non-traditional (have not belonged to the typical banking services before, they appeared relatively recently) is used.

Among the non-traditional services of commercial banks that are actively used in Ukraine, we should distinguish:

- Internet banking, telephone banking, video banking;
- Cardless payment via mobile phone;
- 24/7 mode of operation;
- electronic share: the share in kopecks is transferred to the client's account or is replenished by the mobile phone;
- merchant acquiring: allows trade and service enterprises to accept bank payment cards as payment for their goods and services;
- Factoring: a type of trade and commercial transaction, which is combined with crediting of receivables;
- Forfeiting: a form of short- and medium-term crediting of foreign economic transactions through the purchase by a commercial bank of bills of exchange accepted by the importer, i. e. the exporter assigns to the bank its claims to the buyer;
- self-service centers;
- leasing operations: lease of machinery, equipment, transport vehicles, production facilities;
- Cash management is a set of services offered by commercial banks that enables clients to reduce costs and efficiently manage their financial flows. As a rule, there are several components: management of bank accounts, liquidity, cash management, interest rate management, electronic banking and various information services [16].

It is reasonable to distinguish benefits from the use of contactless payment technologies for Ukrainian banks, namely: Diversification of services; competitive advantages; receipt of a compulsory fee from POS-terminals placement; innovative activity; expansion of potential clientele; acquisition of new niches in the market of banking services; development of online banking; receipt of value from transactions; Increase in retail lending volumes; membership in international payment systems; growth of the customer base due to more secure customers; flexibility in the provision of services; increase in the speed of receipt of money for the service provided or goods sold [4].

Along with this, the use of innovations in banking activity is associated with a great part of risks. Therefore, among Ukrainian banks PJSC First Ukrainian International Bank prioritizes clients' needs and positions itself as client-centered. Throughout the period of its existence the Bank has been consistently introducing innovative technologies and products, inter alia: Internet banking «FUIB Online 2.0», mobile extension of FUIB Online, social banking technologies, prepaid card reader, as well as the number of SCTs is constantly growing [16].

The comparative characteristics of Internet banking services among Ukrainian banks are shown in Table 2 [19].

Innovations contribute to the development of the banking system and make it easier to expand the client base. To increase their competitive advantages, Ukrainian banks need to make more use of Internet technologies,

ISSN Print 2414-0287
ISSN Online 2707-8426

Table 2 – Comparative characteristics of Internet banking services among Ukrainian banks in 2020–2021

Name of service	PJSC CB Privatbank Privat24	PJSC "FUIB" FUIB Online 2.0	"Oschadbank" Oschad 24/7	"Alfa bank" My alfa bank
Cost of WebMoney connection and service	0	0	0	0
Availability of a mobile add-on	+	+	+	+
Client identification by fingerprint	+	+	+	+
Opening of the account	–	+	+	+
Repayment of the loan	+	+	–	+
Payment of utility bills	+	+	+	+
Regular payments	+	+	+	+
Buying tickets	+	–	+	–
Transactions in foreign currencies	+	–	–	–
Retail Sales	+	+	+	+
Popovneniye/Zyateniye WebMoney	+	+	–	–

Source: difficult by authors on the basis [4]

update their systems to the level of foreign countries and satisfy their customers to a greater extent.

The assessment of the development and efficiency of electronic services and online banking by means of the performance and functional approach is given in Table 3 [17].

To assess the efficiency of innovation implementation it is suggested to use such indicators as the level of transaction costs, composite costs, rate of deposit base growth, profitability of assets. The calculation of indicators based on publicly available financial accounting data as of December 1, 2020, showed that the bank was not able to fulfill its obligations as of December 1, 2020. The results of the analysis showed that the banks with the highest ranking in terms of development of electronic services and online banking are PrivatBank and FUIB, Indeed, they have the lowest transaction costs and the highest return on assets, which is also supported by the positive impact of the development of electronic services and online banking on the performance efficiency of these banks. As we know, the implementation and development of online banking requires significant costs (Table 3).

We can distinguish three main components of bank innovations:

1. Increasing automation of banking processes and transition of most banking activities online, mainly through mobile add-ons. Expansion of digital banks where all banking operations are performed only online.

2. Further deepening of «bank-client» relations into more partner and client-oriented ones (e. g. birthday announcements and gifts for family or friends).

3. Integration of banking operations into new spheres of customers' life (e. g., transfer of money by fathers to their children's electronic handset, which looks like a toy).

As a result of the conducted research, it should be noted that at the current stage of development of innovations in Ukrainian banks the most popular are these types of products:

1) Mobile banking is a service where a bank customer can manage his/her own non-loaned funds by using a mobile phone;

2) Internet banking (web-banking) is a remote banking service that helps you manage your accounts via the Internet;

3) «Zone 24» is a zone where bank customers can freely access the services;

4) POS-terminals in retail stores – providing an opportunity to pay by card for purchased goods and services;

5) QR-banking is a service through which it is possible, without using a plastic card, to pay for goods, services and Internet purchases through a QR code;

Table 3 – Assessment of development and efficiency of electronic services and online banking using the performance and functionality approach

No. s/p	Banks	General indicator of the development of electronic services and online banking	01.12.2020, %			
			Level of transaction costs	Level of compulsory income	Growth rate of clients' funds in three years	ROA
1	FUIB	17.78	3.08	3.1	1.9	1.3
2	Privatbank	16.70	3.78	2.68	1.8	0.9
3	Alfa-Bank	13.34	5.89	2.2	1.1	0.4
4	Motor Bank	12.61	6.78	2.1	1.25	0.4
5	Agrikol Bank	13.23	10.56	1.1	0.9	0.6
6	Bank Credit Dnipro	14.45	11.55	3.5	0.98	0.56
7	UkrSibbank	16.11	8.74	4.8	0.96	0.98
8	VTB Bank	10.49	8.99	2.22	1.0	1
9	According to the banking system	–	4.10	1.89	1.15	0.12

Source: difficult by authors on the basis [13]

ISSN Print 2414-0287
ISSN Online 2707-8426

6) Reasonable refueling is an add-on that makes it possible to fill up with gasoline at the ticket office without having to leave the vehicle;

7) Send money – a service that allows you to transfer money to the recipient's account using a mobile phone number;

8) Photokasa – the possibility for the bank employees to create all necessary documents using photos of the bank account and utility payments, which then come to the e-mail as a scanned photo [13].

We believe that today it is impossible to imagine the banking system without the above-mentioned services that enable easy and quick implementation of operations and at the same time significantly save time. It is possible to distinguish the main problems of innovative development in bank activity of Ukraine:

− Insufficient protection of domestic communication channels, which increases the risk of becoming victims of shahraj;

− Low level of legal regulation of bank innovation technologies, which leads to the creation of risky conditions;

− Lack of permanent access to the Internet and a permanent connection in many settlements;

− The cost of implementing innovative solutions used in the current development of banks is increasing;

− Low level of technological development of Ukrainian banks that are implementing innovative technologies;

− low level of training of bank staff and deficit of qualified personnel;

− Insufficient level of information awareness among the population [16].

Also, banks often want to implement everything at once, but their technological capabilities do not allow this, resulting in customers encountering technical problems and errors through add-on upgrades. Also, do not forget that each update requires more space in the phone memory and a more powerful Android and iOS system, and, unfortunately, not every customer can afford it.

To ensure that our banking services are always at the highest level, it is necessary not only to communicate with bank employees and specialists, but also to communicate with customers who use these services, to conduct surveys in social networks and take into account the needs of customers. It is also necessary to properly communicate information to those people who work on technical errors and products in banking activities.

Conclusions

Anyway, problems in Ukrainian economy and banking system cannot be avoided in any case, but the NBU tries to minimize possible expenses at the expense of implementing complex measures for support of banks and other financial institutions during the quarantine period and the state of emergency in Ukraine. However, banks, just like any other company, try to minimize their costs and constantly create something new and innovate. Thus, the innovation potential of Ukrainian banks is very high.

Domestic banks actively use the experience of foreign partners. The spread of the COVILD-19 coronavirus has an extremely negative impact on economic processes in Ukraine and the world. Ukrainian enterprises and financial institutions are already suffering significant losses as a result of the quarantine, and the banking system is affected by a whole low level of large-scale events.

A key driver of banking sector development is the improvement of banking infrastructure and information technology. In the future, banks should focus their efforts on the development of advisory, information, trust, guarantee services and ancillary operations, which help ensure the activity of the bank's services customers and should not forget about the continuous improvement of banking products.

Development of modern banking services is largely dependent on the willingness and desire of the banks themselves to change and adapt in accordance with the needs of their customers and conditions of functioning.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 338

DOI https://doi.org/10.26661/2414-0287-2021-3-51-16

TOOLS FOR DIAGNOSTICS OF TAXATION AIMED AT ADAPTATION OF THE SPHERE OF PUBLIC FINANCIAL MANAGEMENT OF UKRAINE TO EU STANDARDS

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Key words:
tax revenues, GDP, diagnostics, transparency, tax administration systems – TADAT, EU standards

The tendencies of taxation in Ukraine, EU and OECD countries are investigated: the ratio of total tax revenues to GDP, the ratio of tax revenues from corporate profits and personal incomes to GDP, the ratio of tax revenues from corporate profits, personal incomes and capital gains to GDP. The dynamics of socio-economic indicators of Ukraine's economy is also analyzed. The dynamics of technical and economic indicators of the economy of Ukraine is analyzed and the expediency of reforming the tax system is substantiated. It is proved that the implementation of budget tasks is not the only indicator of the effectiveness of the tax system. It is proposed to include economic efficiency in the list of tax principles, in the framework of global trends to strengthen fiscal surveillance and ensure transparency and accountability of the budget and tax sphere. The experts from the World Bank, IMF and EU structureshave formed the tools for diagnosing financial clarity, which are carried out in accordance with the Financial Transparency Code that is one of the keys to its effectiveness. It issuggested to assess the main components of tax administration using the Methodology of Tax Administration Diagnostic Assessment Tool (TADAT), which characterizes the activities of the fiscal department for its main functions and procedures of tax administration, based on 28 indicators, each of which includes an evaluation of 1 to 4 parameters, which makes a total of 47 evaluated parameters, thus providing the widest possible coverage of the studied phenomenon. The proposed Diagnostic Tool is aimed not only at assessing the institutional component of administration, but also at the transparency of payers.

ІНСТРУМЕНТИ ДІАГНОСТИКИ ОПОДАТКУВАННЯ, СПРЯМОВАНІ НА АДАПТАЦІЮ СФЕРИ ДЕРЖАВНОГО ФІНАНСОВОГО УПРАВЛІННЯ УКРАЇНИ ДО СТАНДАРТІВ ЄС

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Ключові слова:
податкові надходження, ВВП, діагностика, транспарентність, прозорість, системи адміністрування податків – TADAT, стандарти ЄС

Досліджено тенденції оподаткування в Україні, країнах ЄС та ОЕСР: відношення загальних податкових надходжень до ВВП, відношення податкових надходжень від прибутку підприємств та доходів громадян до ВВП, відношення податкових надходжень від прибутку підприємств, доходів громадян та доходів від приросту капіталу до ВВП. Проаналізовано також динаміку соціально-економічних показників економіки України. Проаналізовано динаміку техніко-економічних показників економіки України та обґрунтовано доцільність реформування податкової системи. Доведено, що виконання бюджетних завдань є не єдиним показником результативності податкової системи. Запропоновано включити економічну ефективність до переліку принципів оподаткування, в рамках глобальних тенденцій щодо посилення фіскального нагляду та забезпечення прозорості і підзвітності бюджетно-податкової сфери, фахівцями Світового банку, МВФ та структур ЄС. Сформовано інструменти діагностики фінансової прозорості, що здійснюються у відповідності до Кодексу фінансової прозорості, яка є однією із запорук її ефективності. Запропоновано проведення оцінки основних компонентів податкового адміністрування з використанням Методики діагностики податкового адміністрування (TADAT), які характеризують діяльність фіскального відомства за його основними функціями і процедурами адміністрування податків, базується на 28 показниках, кожен з яких включає оцінку від 1-го до 4-х параметрів, що загалом складає 47 оцінюваних параметрів, забезпечуючи, тим самим, максимально широке охоплення досліджуваного явища. Запропонований Інструмент діагностики спрямовано не лише на оцінку інституційної складової адміністрування, але і на транспарентність платників.

ISSN Print 2414-0287
ISSN Online 2707-8426

Results

Tax trends in the European Union indicate a high level of the ratio of taxes to GDP (about in 10 percentage points GDP exceeds those recorded in the United States and within 5 – in Japan). Among the main European members of the OECD (Organization for Economic Cooperation and Development) in 2019, the highest share of taxes in GDP, respectively, in Denmark (46.3%), France (45.4%) and Belgium (42.9%). Mexico (19.7%), Chile (20.2%) and Korea (24.3%) show the lowest ratios. The average tax burden in OECD countries in 2019 amounted to 34.5% of GDP and in recent years has a steady upward trend (Table 1).

If we take into account only the data on corporate income tax and personal income tax, their share in GDP is lowest in Slovakia (3.8% of GDP, which is twice less than the OECD average) and Turkey (3.8% to GDP), the largest – in Denmark – 24.3%, which is three times higher than the average for OECD countries [3]. The corresponding indicator for Ukraine is above the average value for OECD countries – 9.9%, which is 1.6 percentage points higher than the OECD average (Table 1).

As the volume of GDP in Ukraine is relatively low, the real tax burden is more significant, mainly in the field of personal income taxation, because there is no socially just and economically reasonable non-taxable minimum income in Ukraine.

It is believed that countries that redistribute more of their GDP can provide better competitive conditions on their territory and social justice. Thus, it is important for Ukraine not only to form a balanced tax system that is attractive for raising capital and their subsequent taxation, but also to establish competitive parameters of the tax system, taking into account the requirements of inclusive development. For such a large country in terms of territory and population, one of the defining areas of tax and budget reforms is to assure equal conditions in taxation and its fairness, the conditions of budget redistribution to ensure further development of human capital, increase of commercial, medical and social infrastructure.

The political foundations of sustainable growth create an environment for significant investment, job creation, competition, resource transfer, social protection, justice and inclusiveness. According to the Growth Report [4], no country has been able to sustain rapid economic growth without maintaining significant public investment in infrastructure, education and health. In the tables 2 and 3 present data on the dynamics of socio-economic indicators of the economy of Ukraine for the period from 2000 to 2019 including. The data are presented separately in these tables due to certain changes about the occupied territories.

As can be seen from Table 2 against the background of reforms in Ukraine (since 2011), including in the

Table 1 – Tax trends in some EU and OECD countries

Years	Country										
	Ukraine	**Poland**	**Slovakia**	**Turkey**	**The USA**	**Japan**	**Germany**	**France**	**Denmark**	**Belgium**	**averageinOECD**
	The ratio of total tax revenues to GDP, %										
2012	36,4	32,0	28,8	24,8	24,0	28,2	36,8	44,4	45,5	44,3	33,1
2013	35,4	31,9	31,0	25,2	25,6	28,9	37,0	45,4	45,9	45,0	33,4
2014	23,2	31,9	31,9	24,5	25,9	30,3	36,8	45,4	48,5	44,8	33,6
2015	32,8	32,4	32,7	25,0	26,2	30,7	37,3	45,3	46,1	44,1	33,7
2016	32,8	33,4	33,3	25,1	25,8	30,7	37,7	45,4	45,5	43,3	34,4
2017	34,1	34,1	34,2	24,7	26,7	31,4	37,8	46,1	45,8	43,8	34,2
2018	33,3	35,2	34,3	24,0	24,4	32,0	38,5	45,9	44,4	43,9	34,3
2019	32,5	35,4	34,7	23,1	24,5	no data	38,8	45,4	46,3	42,9	34,5
	The ratio of tax revenues from corporate profits and personal incomes to GDP, %										
2012	8,4	no data	2,9	3,6	8,6	5,2	9,4	8,0	23,3	12,3	8,1
2013	8,4	no data	2,9	3,5	9,3	5,5	9,6	8,4	25,1	12,8	8,2
2014	7,3	no data	3,0	3,6	9,2	5,7	9,6	8,5	26,3	12,9	8,3
2015	7,0	no data	3,1	3,6	9,6	5,8	9,9	8,5	25,4	12,4	8,4
2016	8,3	no data	3,3	3,7	9,6	5,7	10,0	8,5	24,2	12,0	8,3
2017	8,7	no data	3,4	3,6	9,4	5,9	10,3	8,6	24,4	11,9	8,4
2018	9,4	no data	3,6	3,7	9,0	6,1	10,5	9,4	24,1	11,9	8,5
2019	9,9	no data	3,8	3,8	9,2	6,1	10,6	9,6	24,3	11,4	8,3
	The ratio of tax revenues from corporate profits, personal income and capital gains to GDP, %										
2012	8,5	6,5	5,5	5,4	11,2	8,8	11,1	10,6	28,2	15,4	11,0
2013	no data	6,3	6,0	5,1	12,0	9,4	11,4	11,1	28,8	16,0	11,1
2014	7,4	6,3	6,5	5,2	12,4	9,6	11,4	10,8	31,7	16,0	11,2
2015	7,1	6,5	6,9	5,1	12,7	9,6	11,6	10,6	29,2	15,7	11,2
2016	8,4	6,7	7,0	5,3	12,3	9,4	12,0	10,6	28,6	15,4	11,3
2017	8,8	6,9	7,1	5,3	12,0	9,6	12,3	10,9	29,1	16,0	11,5
2018	9,5	7,4	7,1	5,8	11,0	10,2	12,6	11,5	27,6	16,2	11,7
2019	10,0	7,6	7,1	5,6	11,1	10,3	12,7	11,8	30,0	15,2	11,5

Source: compiled according to data [1; 2]

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Table 2 – Dynamics of socio-economic indicators of the economy of Ukraine in 2001-2013, %

Indexes	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP dynamics (in actual prices)	20,1	10,6	18,4	29,1	27,9	23,3	32,5	31,5	–3,7	18,5	20,3	8,2	4,4
GDPdynamics (inprev. yearprices)	9,2	5,2	9,6	12,1	2,7	7,3	7,9	2,3	–14,8	4,1	5,2	0,2	8,0
Dynamics of GDP per capita (in actual prices)	22,1	11,7	19,3	30,1	28,9	24,1	33,2	32,3	–3,2	19,0	20,7	8,5	4,6
Population dynamics	no data	–0,8	–1,0	–0,8	–0,6	–0,8	–0,6	–0,4	–0,6	–0,2	–0,4	–0,4	–0,22
Dynamics of tax revenues	17,2	23,6	19,7	16,3	55,3	28,2	28,3	40,9	–8,4	12,7	42,8	7,7	–1,8
Dynamics of public investment*	41,0	20,9	81,2	109,9	–18,6	41,7	49,6	14,1	–48,8	21,3	57,0	–3,3	–47,8

Note: * – capital investments at the expense of the State and local budgets

Source: compiled according to data [5]

Table 3 – Dynamics of socio-economic indicators of the economy of Ukraine in 2011–2019, %

Indexes	2014	2015	2016	2017	2018	2019
GDP dynamics (in actual prices)	8,3	25,3	20,0	25,1	19,3	11,7
GDPdynamics (inprev. yearprices)	-2,5	4,6	42,3	20,0	26,2	19,1
Dynamics of GDP per capita (in actual prices)	8,7	25,8	20,4	25,6	19,9	12,4
Population dynamics	-5,47	-0,36	-0,4	-0,44	-0,51	-0,57
Dynamics of tax revenues	3,8	38,1	28,2	27,3	19,1	8,5
Dynamics of public investment*	-33,3	144,7	70,4	57,6	28,7	19,3

Note: * – capital investments at the expense of the State and local budgets. Without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, Sevastopol and since 2014 – also without part of the temporarily occupied territories in Donetsk and Luhansk regions)

Source: compiled according to data [5]

tax sphere, there were no positive changes in socially significant indicators, and for some parameters, their deterioration was observed (population dynamics was negative, as well as the dynamics of public investment). The growth rate of GDP dynamics decreased against the background of a significant increase in tax revenue rise, and the paltry dynamics of GDP growth per capita occurs against the background of a steady decline in the population in Ukraine (last 20 years). This indicates a weak focus of the implemented reforms on the inclusiveness of further economic development and the disloyalty of society to the reforms, due to distrust of the state.

As can be seen from Table 3 decline in the dynamics of GDP since 2015, both in actual prices and in previous year's prices (especially significant), and the dynamics of GDP per capita demonstrate the ineffectiveness of state economic and social policy. The trends observed from 2016 to 2019 indicate a further decline in the economy and its protracted nature, as the country's economy slows down and tax revenues fall, which occurs against the background of decreasing population. The dynamics of public investment in Ukraine is correlated with the dynamics of GDP in the coming periods, those in which significant public investment was made. This can be traced in 2005–2006, in 2008–2009, and in 2010–2011, a similar connection can be seen in 2012–2014. And the growth of state investments in 2015 was unsystematic and since 2016 has a significant downward trend. However, it should be noted that the pair of indicators «dynamics of public investments – dynamics of tax revenues» has a much closer relationship, while the relationship with GDP is much weaker. This testifies that public investment in Ukraine has had a somewhat distorted impact and a small multiplier effect in the economy. At the same time, it has had a significant influence on taxation, which is anambiguous signalfor the business environment.

We believe that the implementation of budget tasks is not the only indicator of the effectiveness of the tax system. We proposed to include economic efficiency in the list of tax principles, in the framework of global trends to strengthen fiscal surveillance and ensure transparency and accountability of the fiscal sphere, the experts from the World Bank, IMF and EU structures have developed tools for diagnosing financial transparency in accordance with the Financial Transparency Code. Clarity and transparency of the tax system is one of the keys to its effectiveness.

In order to adapt the sphere of public financial management of Ukraine to EU standards, the Center for Adaptation of the Civil Service to the Standards of the European Union (hereinafter SIGMA) was established within the OECD program [6]. The Center conducted a number of evaluations of the effectiveness of public financial management (in 2007, 2012, and 2016) [7; 8; 9], on the basis of which a System for evaluating the effectiveness of public financial management (SPFM) was developed under the joint donor program UCAID, EU, the governments of France, Norway and Sweden, the IMF and the World Bank «Performance Expenditure and Financial Accountability» (PEFA) [10]. In terms of fiscal transparency, this assessment includes indicators where the main issues relate to the budget process and budget transparence.

However, given the global risks of taxation, where tax evasion is recognized as a global economic risk [11], the issues of transparency in taxation, the activities of fiscal agencies and tax control are more fully covered by a special diagnostic tool for the tax administration system – TADAT (Tax Administration Diagnostic Assessment Tool – TADAT [12; 13]). It is based on (methodology, structure of evaluated indicators, and system of their evaluation) the same principles as for the structure of the above-mentioned system of evaluation of the efficiency of the public

ISSN Print 2414-0287
ISSN Online 2707-8426

expenditure system and financial accountability of PEFA (see above). The tool aims to provide a standardized assessment of the institutional effectiveness of the evaluated object and to obtain objective information on the status of the most important components of the national tax administration system. Assessment of the real effectiveness of the fiscal department in accordance with the TADAT Methodology is in the following areas [14]: ensuring the availability of a reliable, complete and regularly updated database of registered payers; efficiency of the risk management system; providing conditions for voluntary compliance with tax legislation by taxpayers; timeliness of filing declarations and of payment of tax liabilities; completeness and reliability of information provided by payers in reporting; existence of a fair, simple and accessible system for resolving tax disputes; availability of an effective income management system; accountability and transparency of tax authorities to the government and the public.

According to the methodology [15], these areas characterize the activities of the fiscal department in its main functions and procedures of tax administration. The assessment of their actual effectiveness is based on 28 indicators, each of which includes an assessment of 1 to 4 parameters, which makes a total of 47 evaluated parameters, thus providing the widest possible coverage of the phenomenon under study. Each of the parameters is evaluated separately on a four-point scale: «A», «B», «C» and «D», where «A» – is the highest score and means full compliance with international best practices (which implies a proven and reliable approach that used by most advanced tax authorities). Given the dynamic nature of administrative processes, best practices taken as a basis in this methodology can be revised and replaced over time. «B» – the work of tax authorities achieves acceptable results, relatively close to the standards of best practice, «C» – the work of tax authorities achieves minimum performance standards for this parameter, «D» – is used when the conditions set for obtaining an assessment are not met « C «, or when due to lack of information it is impossible to establish an assessment of the actual effectiveness of the relevant parameter.

With the help of this assessment tool, a survey of the tax administration systems of Jordan, Liberia, Georgia, Zambia, Armenia, the Kyrgyz Republic, and Peru has been conducted. According to the Action Plan for the implementation of the Public Financial Management Reform Strategy for 2017–2020 [16] the diagnostic tool is aimed not only at assessing the institutional component of administration, but also at the transparency of payers. Thus, within certain key areas of actual performance (hereinafter – KAAP), detailed attention is paid to the integrity of the database of registered taxpayers (reflected in KAAP 1), completeness and accuracy of information provided by taxpayers in their tax returns (reflected in KAAP 6). Transparency and accountability of the tax authorities themselves to the government and taxpayers is assessed within the KAAP 9 (availability of internal control mechanisms, external oversight of fiscal authorities, mechanism for monitoring public confidence in tax authorities, publicity of information on activities, results and plans) [15]. Other key areas of TADAT's actual effectiveness relate to the institutional capacity of tax administrations and their methodological readiness to properly ensure the tax administration process.

Conclusions

The functioning of tax systems largely depends on the completeness and accuracy of the information that taxpayers submit in their declarations. In line with global best practices, in terms of taxpayer transparency, the main desired outcome is that taxpayers voluntarily provide complete and accurate information in their tax returns. This primarily applies to declarations received from enterprises and natural persons-entrepreneurs, because in most cases, the taxation of income of individuals who do not carry out business activities occurs when calculating wages (at the source of income) and reporting is entrusted to employers as tax agents. Therefore, the main attention of fiscal authorities is mainly focused on tracking the loss of tax revenues as a result of inaccurate reporting from enterprises and entrepreneurs.

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ISSN Print 2414-0287
ISSN Online 2707-8426

LABOUR ECONOMICS, PERSONNEL MANAGEMENT AND MARKETING

UDC 332.2(477)
DOI https://doi.org/10.26661/2414-0287-2021-3-51-17

THEORETICAL AND METHODOLOGICAL FUNDAMENTALS OF LAND MARKET FORMATION

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Key words:
experience, land policy, land relations, land, market, development, land market, Ukraine, market formation

In the modern world, one of the most important economic resources, which has a central place in the politics and strategy of economic development of the state are land relations and land resources. In an urbanized world, the lives of the citizens of any country cannot be significantly improved without a rational land policy. This determines the exceptional importance of the land issue for successful sustainability. The study of the problem of land market formation in Ukraine, the development of recommendations and algorithms for the implementation of the experience of foreign countries, these are the issues that are considered in the theoretical and methodological provisions of land relations. The essence and meaning of the concept of «earth», which depending on the context is used in many ways: as a planet, as land, as soil – the upper layer of the «earth» surface, suitable for plant life, as an economic category - a common means of labor and basic means of production in agriculture, as an area with land that someone owns, an area with a legal regime, and so on. Within one comprehension, there may also be different approaches to filling the concept of «land» with specific meaning. Given that the issue of land market formation is quite important and difficult, the main important issue addressed in this article is the definition of the strategic goal and implementation of land policy of the state, which focuses on solving problems of land ownership, market formation land, increasing the efficiency of state management of land resources, improving state control over the use and protection of land. As an example of creating a successful and effective model of the land market, the experience of European countries is reviewed as an example of effective use for the formation of the land market in Ukraine.

ТЕОРЕТИКО-МЕТОДОЛОГІЧНІ ОСНОВИ ФОРМУВАННЯ РИНКУ ЗЕМЛІ

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Ключові слова:
досвід, земельна політика, земельні відносини, земля, ринок, розвиток, ринок землі, Україна, формування ринку

У сучасному світі одним із найважливіших економічних ресурсів, що займає центральне місце в політиці та стратегії економічного розвитку держави, є земельні відносини та земельні ресурси. У урбанізованому світі життя громадян будь-якої країни неможливо істотно покращити без раціональної земельної політики. Це визначає виняткову важливість земельного питання для успішної стійкості. Вивчення проблеми формування ринку землі в Україні, розробка рекомендацій та алгоритмів впровадження досвіду зарубіжних країн – це питання, які розглядаються в теоретико-методологічних положеннях земельних відносин. Суть і значення поняття «земля», яке залежно від контексту вживається різноманітно: як планета, як суша, як ґрунт – верхній шар поверхні «землі», придатний для життя рослин, як економічна категорія - загальний засіб праці та основні засоби виробництва в сільському господарстві, як територія із землею, яка комусь належить, територія з правовим режимом тощо. В межах одного розуміння

ISSN Print 2414-0287
ISSN Online 2707-8426

також можуть бути різні підходи до наповнення поняття «земля» конкретним змістом. Враховуючи, що питання формування ринку землі є досить важливим і складним, основним важливим питанням, яке розглядається в цій статті, є визначення стратегічної мети та реалізації земельної політики держави, яка зосереджена на вирішенні проблем власності на землю, формування ринку землі, підвищення ефективності державного управління земельними ресурсами, удосконалення державного контролю за використанням та охороною земель. Як приклад створення успішної та ефективної моделі ринку землі розглянуто досвід європейських країн як приклад ефективного використання для формування ринку землі в Україні.

Statement of the problem

The purpose of the article is to determine the steps and goals that need to be achieved for the formation of the land market in Ukraine. Using the successful experience of European countries that have achieved positive results in the development and formation of the land market.

Analysis of recent studies and publications

Regulation of land relations is the subject of research and works of many Ukrainian and foreign scientists – D. Babmindra, S. Bulygin, V. Budziak, D. Dobryak, V. Drugak, S. Ibatullina, O. Kanash, N. Kuzina, V. Kryvov, A. Martin, L. Novakovsky, T. Salnikov, A. Sokhnych, M. Stupenya, M. Fedorov, A. Tretyak and others. The issue of ensuring the formation of stable land use on the basis of the economic assessment remains relevant.One of the works focuses on the question of the possibility of lifting the moratorium on land sales, the consequences of which this decision may lead. On the one hand, land can be seen as a product to be sold and bought. However, on the other hand, the economic situation in the country is quite difficult, so is it worth enacting such an important law for every citizen right now? Today, Ukraine is the only democratic state in the world where landowners are not able to freely dispose of their property. People who own agricultural land have not been able to sell it for 15 years. The moratorium on the sale of agricultural land slows down the process of forming a land market. The paper analyzes and compares some indicators of land markets in European countries. Prospects for creating a land market in Ukraine are reviewed.

Objectives of the article

The possibility of its creation at present is defined. The conditions under which it is possible to build a land market in Ukraine are formulated. We define strategic purposes of the state policy for the regulation of the land relations in Ukraine. We will consider experience of the European countries in the field of land turnover, formation of the land market. The experience of countries that set requirements for efficient and ecological land use, which will reflect the national interests of Ukrainian landowners and producers to strengthen Ukraine; competitive position in the international market.

The main material of the research

Presentation of the main research material A special place in the chain of national wealth is the land. As the basis of national wealth, land is a part of the earth s surface located above the subsoil within state borders with a fertile layer of soil used for the production of absolute and additional value in agriculture, which must be distributed between agriculture, industry and the state through private and public types of ownership according to the objective natural law of active economic development of society, which ensures the preservation and increase of soil fertility, recovering of human labor and expanded reproduction of capital in order to meet the requirements and interests of every citizen and all Ukrainians. The current state of land policy requires in the content of land management the category of land market; to keep in the status of important. The market is not necessarily the sale and purchase of items in their material, natural and physical form, ending in the alienation of property. It also provides for the alienation of land use rights from one entity to another. The land market is a sphere of commodity exchange in which land is a product. It regulates the redistribution of land and the change of ownership from one landowner to another. According to I. Ikonytska, in the literature the land market is defined as a part of land turnover, in which the determination, change and termination of land rights occur as a result of a legally executed contract and are mediated by cash or in-kind payment. The concept of land market; is a category not only economic but also legal and is understood as a circle of social relations that arise between the subjects of land rights. A. Tretyak notes that the land market, at this stage, is a tool and at the same time a guarantee of the realization of the basic constitutional rights of citizens and legal persons; the right to own land in private ownership, the right to freely (without harming the environment and without violating the rights and legitimate interests of others) own, use and dispose of land; an important tool of land reform; an essential condition for the implementation of economic reforms in general. The market should promote the efficient use of land and the formation of rational land use.

This requires the participation of the state in regulating the use of land resources, not only at the organizational and legal level, but also as an active landowner, stimulating market processes, and their direct participant. A special place in the course of land reform in terms of both amount and importance was occupied by work on privatization of land with the issuance of documents for ownership and permanent use of land. Privatization of land in Ukraine began after the enactment in January 1992 Law «Forms of land ownership», according to along with the state form of land ownership, private and collective were enshrined.

ISSN Print 2414-0287
ISSN Online 2707-8426

The concept of the Land Code of Ukraine (1992) was based on the fact that citizens of Ukraine should be provided standards free of charge, except for plots that are transferred to farmers over the area of the land share. Changes in the field of land relations during the years of independence in Ukraine have had large-scale socio-economic consequences:

− land privatization was carried out;

− monetary valuation of agricultural lands was carried out;

− payment for land use was introduced; there is a market turnover of land (purchase, sale, lease, gift, inheritance, pledge); – mainly market land legislation has been created.

With the adoption of the Land Code of Ukraine in 2001, the directions of state land policy have been outlined, which concentrates on solving problems of land ownership development, land market formation, improving the efficiency of state land management, improving state control over land use and protection, etc.

Very important for the introduction of the land market in Ukraine was the adoption of the «Law of Ukraine»; On the «State Land Cadaster» which came into force on January 1, 2012. The purpose of this law was to register land plots and organize information about them. Since the beginning of 2015, an electronic land cadaster has been begun in Ukraine. This system officially called the Automated System of State Land Cadaster, provides online access to the public cadastral map makes information on land plots publicly available. The public map is the first step for greater openness of land relations in Ukraine. According to the latest information until January 1, 2019 there was a moratorium on the purchase and sale of agricultural land and it was lifted under the terms of entry into force of the Law of Ukraine «On the Transfer of Agricultural land» At the end of 2019, the Cabinet of Ministers of Ukraine has been submitted bill of Ukraine on amendments to certain legislative acts of Ukraine on the circulation of agricultural land. The Verkhovna Rada of Ukraine has agreed to certain changes to the laws. It was decided to set out Article 130 in a new wording, which states the acquisition of ownership of agricultural land. This article will guide the acquisition of ownership of agricultural land during the implementation of the land market. One of the points to which amendments were expended was the section which testifies that citizens who have the right of permanent use, the right of lifelong land ownership of the state and municipal property intended for conducting peasant (farmer) economy, have the right to purchase such land plots in the property with installments of up to five years at a price equal to the normative monetary value of such land plots, without land auctions.

On March 31, 2020, the Law of Ukraine № 2178–10 «On Amendments to Certain Legislative Acts of Ukraine Concerning the Transfer of Agricultural Land» was adopted, according to which the land market is opened starting from July 1, 2020 and aspects limiting land acquisition opportunities are determined.

Within the framework of the aims presented: operational tasks; conceptual approaches to developing a strategy for state regulation of land relations; implementation of measures in the field of land relations development, which should be carried out in 2020–2028 in stages.

Within the framework of strategic goals, the following are presented: operational tasks;

− conceptual approaches to developing a strategy for state regulation of land relations;

− implementation of measures in the field of land relations development, which should be carried out in 2020–2028 in stages.

The strategic vector of land market formation is based on the requirements for efficient and ecological land use, which will reflect the national interests of Ukrainian landowners and producers to strengthen Ukraine' competitive position in the international market. This issue is especially important in the context of European economic integration the national market is becoming more open to European counterparties, which has both advantages and disadvantages.

As the experience of European countries has shown the creation of a land market should not be an end in itself. The land market must reflect the interests of all participants' inland relations, which in turn will lead to the creation of an effective economic system in the field of land relations. The formation of an efficient land market is a key factor in economic growth.

A positive example of creating an effective model of the land market is the experience of land formation and functioning in EU member states. Particular attention should be paid to how the market was formed in the young EU member states, as their economic integration and the condition of land relations are quite relevant to Ukraine. In particular, the European integration prospects of the agricultural economy are one of the main factors in the active development of the land market, so it is important to study models of land markets in those EU countries where such a transition to a market system of land relations has occurred recently.

Indicators of land use in EU member states point the effective transformation of land relations and high productivity of available resources in the context of the land market.

For example, the dynamics of income of the agro-industrial complex of Romania and Poland – members of the Eurozone, which includes 19 countries, for the period from 2010 to 2019. Successful examples of land market introduction in the EU are a confirmation of the effectiveness of the land market model for the formation of which several conditions are compilated. The main conditions are:

a) effective state regulation of land relations;

b) market mechanism of land valuation and developed market infrastructure;

c) transparent lease relations;

d) optimized land cadaster – created a system of land resources management (SLRM);

Practice of land market formation in European countries is quite useful for building an effective land market strategy in Ukraine, it should be taken into account that it is impossible to copy the experience of European countries to achieve stable development and similar socio-economic indicators of the EU countries.

ISSN Print 2414-0287
ISSN Online 2707-8426

Conclusions

In general, based on the results of the assessment of the current organizational and legal support of land use management in Ukraine, four strategic goals of the state policy of land relations regulation in Ukraine have been established and substantiated, in particular: reform of land ownership relations; registration and valuation of land resources as a national treasure; organization of effective land relations management;

− rationalization of land use and land protection. Researching the prospects for the

– implementation of the land market in Ukraine, important to take into account the

− negative factors of land reform faced by EU member states.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 005.311:005.52

DOI https://doi.org/10.26661/2414-0287-2021-3-51-18

EVALUATION OF INVESTMENT PROJECTS IN THE MANAGEMENT OF AN INDUSTRIAL ENTERPRISE IN THE CONDITIONS OF THE MODERN ECONOMY

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Key words:
enterprise management, investment project, return on investment

The paper proposes a method of evaluating an investment project in the process of enterprise management in modern conditions, taking into account the risk, which includes six stages: analysis of inventories and costs; calculation and analysis of the structure of profits and losses of industrial enterprises; calculation and analysis of the structure of losses on a complex economic object; calculation and analysis of indicators of profit from sales; calculation of the feasibility of the investment project; choice of investment project or investor. The paper uses estimates of the characteristics of the efficiency of use of financial resources, uses an estimate of the return on investment of all funds of the enterprise.

ОЦІНЮВАННЯ ІНВЕСТИЦІЙНИХ ПРОЕКТІВ В УПРАВЛІННІ ПРОМИСЛОВОГО ПІДПРИЄМСТВА УМОВ СУЧАСНОЇ ЕКОНОМІКИ

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Ключові слова:
управління підприємством, інвестиційний проект, рентабельність вкладених коштів

У статті запропоновано метод оцінки інвестиційного проекту в процесі управління підприємством у сучасних умовах з урахуванням ризику, що включає шість етапів: аналіз стану запасів та витрат; розрахунок та аналіз структури прибутків та збитків промислового підприємства; розрахунок та аналіз структури збитків на складному економічному об'єкті; розрахунок та аналіз показників прибутку від реалізації; розрахунок доцільності реалізації інвестиційного проекту; вибір інвестиційного проекту чи інвестора. У статті застосовано оцінки характеристики ефективності використання фінансових ресурсів використовується оцінка рентабельності вкладень всіх коштів підприємства.

Statement of the problem

The evaluation of an investment project in the context of coronavirus (Covid-19) and the process of inflation in the management of an industrial enterprise is an urgent task, which necessitates the development of a method that takes into account all components of the modern economy.

Analysis of other researches and publications

Scientific research of domestic and foreign scientists Grebenyuk N.A. [1], Butinko V.V. [4], Butov A.M. [6], Blank I.A. [8], Kharlamova G.O. [9], Bryukhovetskaya N. Yu. [10], Onishchenko S.V. and Klimova G.V.[11], Sytnik L.S.[12], Kayumova V.V. [13], Yastremskaya O.M. [14], Skrinkovsky R.M. [15] confirmed the relevance of this article. A significant contribution to their research in solving the issues of evaluating investment projects was reflected in the works of Bril K.G.[2], Katan L.I.[3], Epifanov A.O.[5], Boyarko I.M.[7] According to such a study of an urgent problem, it is significant for the economy not only of enterprises, but also of states. The introduction of new technologies and new equipment leads, taking into account investments and leads to the emergence of new products with new characteristics, contributes to the constant study of the issues of evaluating investment projects and their application in enterprise management makes this task relevant.

Objectives of the article

The aim of the article is to build a method of evaluating an investment project in the process of enterprise management in modern conditions, taking into account the risk. Also apply the assessment of the characteristics of the efficiency of use of financial resources, which uses the assessment of the return on investment of all funds of the enterprise.

The main material of the research

The proposed assessment of an investment project in the process of managing an enterprise, taking into account the degree of risk, includes six stages:

- analysis of the state of stocks and costs;

ISSN Print 2414-0287
ISSN Online 2707-8426

− calculation and analysis of the structure of profits and losses of an industrial enterprise;

− calculation and analysis of the structure of losses on a complex economic object;

− calculation and analysis of indicators of profit from sales;

− calculation of the expediency of the implementation of the investment project;

− choice of investment project or investor.

Inventory and cost analysis

Stocks and costs are working capital of an industrial enterprise, directly involved or participated in the production process. Obviously, for a normal production process, subject to a successful marketing policy of an industrial enterprise, such a structure of its current assets is necessary, in which certain proportions would be maintained for a long period of time.

At the same time, it must be taken into account that a change in the volume of reserves can be the result of both an improvement and a deterioration in the position of an industrial enterprise, that is, it is necessary to adhere to such a structure that would ensure maximum profit with a sufficient level of liquidity. The main data for the analysis of the state of stocks are given in Table 1.

From Table 1 it can be concluded that stocks and costs account for 15.5 % of the volume of all assets. The state of stocks is characterized by a high share of work in progress (39.51 %) and inventories –53.72 %. If we take into account the fact that in the past period their share was 33.44 % and 46.05 %, it can be assumed that the company slightly increased its stocks. Under these conditions, the increase in the share of WIP to 6.1 %, in view of the foregoing, rather indicates the rhythm of production and an increase in its volumes.

A good indicator can be considered a decrease in stocks of finished products in warehouses by UAH 17,594.3 thousand, because. this is due to the successful marketing of products, that is, it is not stale.

Attention is drawn to the presence of losses in the reporting year.

The volume of products sold in 2003 amounted to UAH 561,498 thousand, of which UAH 128,476.6 thousand were offset, which is 22.5 %. from sold products.

For 2021, the enterprise has losses in the amount of UAH 39,849 thousand, which are reflected in Table 2.

Losses from non-operating transactions resulted from changes in the exchange rate of foreign currencies against the hryvnia. The structure of losses at the enterprise is given in table 3.

Profit from sales operations was received from discounts on bill settlements for consumed electricity.

This trend indicates the expansion of the production and commercial activities of an industrial enterprise, as it is associated with an increase in the volume of production and sales of products. This strengthens economic independence and financial stability, which increases the reliability of the industrial enterprise as a partner. At the analyzed complex economic object, there was an increase in the volume of production and sales of products. Consequently, the identified trend of losses is due to inflationary processes, which increases the risk of financial and economic activities of an industrial enterprise.

Table 1 – Structure and composition of the current assets of an industrial enterprise

The material working capital	**The actual balances at the beginning of the year**		**The actual balances at the end of the year**		**Deviations from last year (+, -)**	
	thousand UAH	**% to the end**	**thousand UAH**	**% to the end**	**The absolute values (thousand UAH**	**By structure (%)**
The productive reserves	54063,71	46,058	56723,03	53,728	2659,32	7,669
The Low-value consumables (LVC) at residual value	2420,28	2,061	2880,93	2,728	460,65	0,666
The unfinished production	39259,83	33,446	41713,31	39,511	2453,48	6,064
The deferred costs	584,32	0,497	769,41	0,728	185,09	0,230
The finished products	20220,46	17,226	2626,12	2,487	– 17594,3	– 14,738
The products	831,66	0,708	859,05	0,813	27,39	0,1051
Total	117380,3	19,1	105573,5	15,5	– 11806,8	x
The total balance:	613955,2	100	681667,4	100	67712,23	x

Table 2 – Structure of profits and losses of the enterprise

The profit from the sale of marketable products	thousand UAH	61973 (The profit)
The profit from other sales	–	1633 (The profit)
The profit from non-operating operations	–	103455 (The losses)

Table 3 – The structure of profit at the enterprise

The loss structure	**thousand UAH**
according to calculations for finished products	11067,5
prepaid for finished products	1723,1
for the sale of currency	10641
according to the calculations for raw materials and materials	8235,3

ISSN Print 2414-0287
ISSN Online 2707-8426

Thus, the impact of inflation on the activity of an industrial enterprise has been revealed to a large extent. Therefore, the task of determining the degree of influence of inflation on the activity of an industrial enterprise is urgent and relevant in the current situation on a complex economic object.

Criteria – coefficients for evaluating the profitability of investments, like most of the criteria of different groups discussed below, as a rule, are chosen by firms based on their own experience in evaluating the commercial activities of an entrepreneurship and can be used both to assess the financial condition of an industrial enterprise and to assess the investment attractiveness of projects.

It is proposed to use 17 coefficients of the following four groups:

- liquidity of current assets;
- attraction of borrowed funds;
- turnover – coefficient of business activity;
- profitability.

In the main provisions of the methodology for the commercial evaluation of investment projects, three groups of «financial evaluation coefficients» are used:

profitability indicators;

assessment of the use of investments;

assessment of the financial situation.

The numerical values of all considered groups of criteria are determined on the basis of the consolidated analytical balance sheet, income statement and cash flow statement of the operating facility or its blocks put into operation, if the project provides for the commissioning of the facility in parts, for each step of the calculation period.

The results of the functioning of an industrial enterprise are evaluated not only by absolute, but also by relative indicators. A relative indicator is the system of profitability indicators.

Profitability indicators characterize the relative profitability or profitability, measured as a percentage.

The influence of the main factors on the value of the profitability of production assets and functional assets is assessed for the change in profitability and is affected by:

- change in the level of capital productivity,
- change in the level of turnover of material circulating assets,
- change in the profitability of sold products.

To characterize the efficiency of the use of financial resources, the return on investment of all funds is used. In this case, three coefficients are calculated.

$$Kp1 = \frac{The\ profit\ from\ sales}{The\ average\ annual\ balance\ sheet\ total}, \quad (1)$$

$$Kp1 = 74666 / 681667{,}4 = 0{,}109.$$

The most complete picture of the profitability of investments in the production activities of an industrial enterprise is given by the ratio of profit to operating assets. Especially when the numerator takes profit from the sale of products.

The profitability of own funds allows you to determine the effectiveness of the use of investment by the owners of the funds of an industrial enterprise and compare it with the possible income from investments in securities:

$$Kp1 = \frac{The\ profit\ from\ sales}{The\ average\ annual\ equity}, \quad (2)$$

$$Kp2 = 74666 / 141022{,}81 = 0{,}53;$$

$$Kp3 = \frac{The\ sales\ profit}{The\ average\ annual\ final\ balance}, \quad (3)$$

$$Kp3 = 74666 / (681667{,}4 - 10638 - 6640{,}83) = 0{,}112.$$

The three most important criteria for this group are:

- return on capital;
- gross margin (profit ratio);
- profitability.

The listed criteria must be determined when studying the investment attractiveness of projects at any stage of work: both in the preparation of preliminary materials and in the preparation of a business plan based on the results of project study.

Profitability (profitability) of capital: the criterion is defined as the ratio of net profit to the amount of assets. Since a complex economic object suffered a loss in the reporting year, this indicates that the assets of an industrial enterprise are used without benefit and efficiency for an industrial enterprise.

The Vmr criterion is calculated as the ratio of the sales cost minus the cost and VAT to the sales cost:

$$Vmr = (712556 - 36053 - 594955) / 712556 = 11{,}5\%. \quad (4)$$

This criterion shows the limit of the «total profit», i. e. the share of gross profit attributable to the monetary unit of sold products. It allows you to determine the amount of income that remains after deducting the cost and VAT to cover other expenses: interest on a loan, operating expenses, paying taxes and generating net profit.

Return on sales (Ren) is defined as the ratio of net profit to the amount of sales (sales value):

$$Ren = 74666 / 712556 * 100\% = 10{,}5\%. \quad (5)$$

Expressed as a percentage. The criterion shows the amount of net income received by a complex economic object per monetary unit of sold products (Table 4).

Factor analysis of profit from sales according to these factors is carried out according to the following formulas:

– the impact of changes in the volume of sales of products on the amount of profit:

$$\Delta P1 = P0 * \left(\frac{F1}{F0} - 1 \right), \quad (6)$$

Table 4 – The Analysis of profit from sales indicators for 2021

The indicator, thousand UAH	The symbol	The last year, thousand UAH	The symbol	The present year, thousand UAH
Sales of products at wholesale prices	*Q*0	700837	*Q*1	712556
The Full cost of production	*FO*	627689	*F*1	594955
The Implementation result	*PO*	70773	*P*1	74666
The product sales profitability	*Rp*0	6,29	*Rp*1	7,97

ISSN Print 2414-0287
ISSN Online 2707-8426

– the impact of shifts in the structure on the range of products sold:

$$\Delta P2 = P0 * \left(\frac{Q1}{Q0} - \frac{F1}{F0} \right), \quad (7)$$

– the impact of changes in the cost of production due to structural changes:

$$\Delta P2 = F0 * \left(\frac{Q1}{Q0} \right) - F1, \quad (8)$$

$\Delta P3$ = 627689*(712556/700837) – 594955 = 39010,89 (thousand UAH).

Conclusions

The paper proposes a methodology for evaluating investment projects in enterprise management. This method made it possible to determine the increase in profit from the sale of products, which amounted to about UAH 144,114 thousand, which was caused by a change in the sales volume (UAH 11,719 thousand) and the cost of production (UAH 32,734.6 thousand). The results obtained indicate that all factors influence the process of managing an industrial enterprise and make it possible to increase the volume of its production.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 658:331.108
DOI https://doi.org/10.26661/2414-0287-2021-3-51-19

DIRECTIONS OF IMPROVEMENT OF QUALITY ASSESSMENT SYSTEMS OF ENTERPRISE MANAGEMENT STAFF

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Key words:
quality assessment of management staff, quality of work, qualimetric approach, weighted average assessment, expert evaluation

The article deals with method of assessing the quality of management staff based on a system of general indicators and partial criteria for the quality of work of the manager and a qualimetric approach. The system of general indicators includes indicators of the manager's performance of duties and tasks, professional competence and ethical behavior. The qualimetric approach involves the establishment of weights for each partial criterion and the use of a scoring scale. The characteristics of the standard with which the comparison was made, correspond to a score of 401–500 points, or the level of "excellent", and the sum of the weights of the partial criteria of one indicator is equal to one. The determination of weights can be done by experts or senior management, taking into account the importance of each criterion to achieve the goals of operation and development of the enterprise. Experts can be senior managers, external consultants, partners and other stakeholders. The final score of each indicator that characterizes the qualities of managers can be calculated as the sum of weighted average scores of each partial criterion that is part of it, and the overall score of managers – as the sum of scores of indicators. The practical value of using the proposed method lies in the possibility of its application to determine the amount of remuneration of each manager for a certain period, to determine the most problematic characteristics and further planning areas of training, to rank management staff for further intangible incentives, responsibilities and interest managers in improving working methods. The methodology can also be used to assess the qualities of senior management.

НАПРЯМИ ВДОСКОНАЛЕННЯ СИСТЕМ ОЦІНКИ ЯКОСТІ КЕРІВНИХ КАДРІВ ПІДПРИЄМСТВА

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Ключові слова:
оцінювання якостей управлінського персоналу, якість праці, кваліметричний підхід, середньозважена оцінка, експертне оцінювання

У статті запропоновано методику оцінювання якостей управлінського персоналу на основі системи загальних показників і часткових критеріїв якості праці менеджера та кваліметричного підходу. Система загальних показників включає показники виконання менеджером посадових обов'язків і завдань, професійної компетентності та етичності поведінки. Кваліметричний підхід передбачає встановлення вагових коефіцієнтів для кожного часткового критерію та використання бальної оціночної шкали. При цьому характеристики еталону, з яким відбувалося порівняння, відповідають оцінці у 401–500 балів, або рівню «відмінно», а сума вагових коефіцієнтів часткових критеріїв одного показника дорівнює одиниці. Визначення вагових коефіцієнтів може здійснюватись експертами або вищим керівництвом з урахуванням важливості кожного критерію для досягнення цілей функціонування і розвитку підприємства.

ISSN Print 2414-0287
ISSN Online 2707-8426

У якості експертів можуть виступати керівники вищих рівнів, сторонні консультанти, партнери та інші зацікавлені сторони. Підсумкова оцінка кожного показника, що характеризує якості управлінців, може розраховуватись як сума середньозважених оцінок кожного часткового критерію, який входить до його складу, а загальна оцінка якостей менеджерів – як сума оцінок показників. Практична цінність використання запропонованої методики полягає у можливості її застосування для визначення розміру винагороди кожного менеджера за підсумками певного періоду, для визначення найбільш проблемних характеристик та подальшого планування напрямів підвищення кваліфікації, для складання рейтингів управлінських кадрів з метою подальшого нематеріального стимулювання, підвищення рівня відповідальності та стимулювання зацікавленості менеджерів у вдосконаленні методів роботи. Також методику можна застосовувати для оцінки якостей керівників вищого рівня управління.

Statement of the problem

The theory and practice of personnel evaluation in Ukraine is in its infancy. Characteristic features of management appraisal systems are the focus on simplified evaluation procedures, lack of constructive feedback between the object and the subject of evaluation, lack of systematicity and regularity in the application of evaluation procedures, the use of many techniques that provide different levels of assess efficiency of results, adherence of scientists and practitioners to opposing views on the appropriateness of the use of certain methods of personnel evaluation or the level of their objectivity.

Analysis of recent studies and publications

Assessing the performance of workers, their personal and business qualities is the most developed area in the field of personnel management. There are many works of Ukrainian and foreign scientists devoted to the problems of personnel evaluation and directions of improvement of its methodological support. They are: V. Sokolovska, O. Babchynska, G. Ivanchenko define and analysis basic approaches to personnel evaluation, criteria and prospects of their application at enterprises, systematization methods of management, identifying their advantages, disadvantages and determining the characteristics of the impact on the personnel of the enterprise [12], S. Tsymbalyuk, O. Bilyk determine the place of employee appraisal in personnel management, staff appraisal tools, methods of collecting and processing information about employees, consideration of different approaches and technologies of performance appraisal, organizational and methodological principles of final comprehensive employee appraisal, including in the form certification [14], I. Chavychalov systematize data on approaches to the assessment of management personnel of industrial enterprises [15], G. Josan, N. Kirichenko study current trends in the formation of an effective system of personnel evaluation at the enterprise and development of proposals to improve personnel management [4]. According to these authors, we note that the search for more convenient, simple and effective methods of assessing management staff has not lost relevance.

Objectives of the article

The purpose of the article is to develop a methodology for assessing the quality of management personnel based on a system of general indicators and partial criteria for the quality of work of the manager and a qualimetric approach.

The main material of the research

The essence of the «personnel assessment» has quite different interpretation among Ukrainian and foreign scholars (Table 1).

Summarizing the above definitions, we can conclude that personnel assessment is a procedure carried out in order to determine the degree of compliance of professional, business and personal qualities of the employee, as well as quantitative and qualitative results of his work to certain requirements.

Work assessment is a complex creative process specific to each organization. However, the basic elements of the personnel appraisal process are general (Fig. 1).

L. Mikhailova says that personnel assessment allows: to plan careers and promotion of employees; determine the level of competence of specialists; to carry out reshuffling taking into account the competence and potential of employees; get a psychological portrait of employees of the organization; to carry out effective selection of the necessary specialists; to study the specifics of interpersonal relationships and the psychological climate in the team; determine the degree of satisfaction and interest of employees in the organization; find the means to consolidate the necessary specialists in the organization; to develop an effective system of work motivation; streamline methods of working with staff [9, p. 23]. We completely agree the researcher's point of view.

The activities of management staff are largely determined by how objectively their work is evaluated. Systematic and impartial evaluation disciplines, increases responsibility, and with a fair and timely reward – stimulates interest in improving working methods.

The most common methods of personnel evaluation are methods based on expert assessments. Experts can be senior managers, external consultants, partners and other stakeholders. In order to reduce the subjectivity of evaluations, it is desirable to involve several experts in the evaluation.

An important task in the assessment of management staff is to determine the evaluation criteria. The criterion is a sign on the basis of which the assessment is formed. A trait is a quantity characterized in the process of research, and an indicator is a quantitative characteristic of any trait. The

ISSN Print 2414-0287
ISSN Online 2707-8426

Table 1 – Analysis of the definition of «personnel assessment»

Scholars	Definition
L. Balabanova	Personnel evaluation is a purposeful process of establishing compliance of qualitative personnel characteristics (abilities, properties) with the requirements of the position or workplace [1]
M. Holovatyi, M. Lukashevich, G. Dmytrenko	Personnel assessment is a procedure by which the degree of compliance of the employee's qualities, his work behavior, performance with certain requirements is determined [3]
G. Zavinovska	Personnel assessment is a planned, formalized description of the employment of employees, the efficiency of staff [5]
O. Kyrychenko	Personnel assessment is used to determine an employee's suitability for the vacancy or job position he or she currently holds. [7]
A. Kolot	Personnel assessment is to determine the extent to which each employee achieves the expected results of work and meets the requirements arising from his production tasks [8]
V. Savchenko	Personnel evaluation is a procedure carried out in order to identify the degree of compliance of professional, business and personal qualities of the employee, quantitative and qualitative results of his work to certain requirements [10]
I. Skopylatov, O. Yefremov	Business assessment of personnel is a component of personnel diagnostics, a purposeful process of establishing compliance of quantitative and qualitative professional characteristics of personnel with the requirements of the position (workplace), department and organization as a whole [11]
L. Fedulova	Business assessment of personnel means a purposeful process of establishing compliance of qualitative characteristics of personnel with the requirements of the position and the workplace [13]
A. Shegda	Personnel assessment determines the level of qualification of employees, the level of knowledge, skills, abilities, gives an idea of business and moral personality traits [16]

Source: made by the author

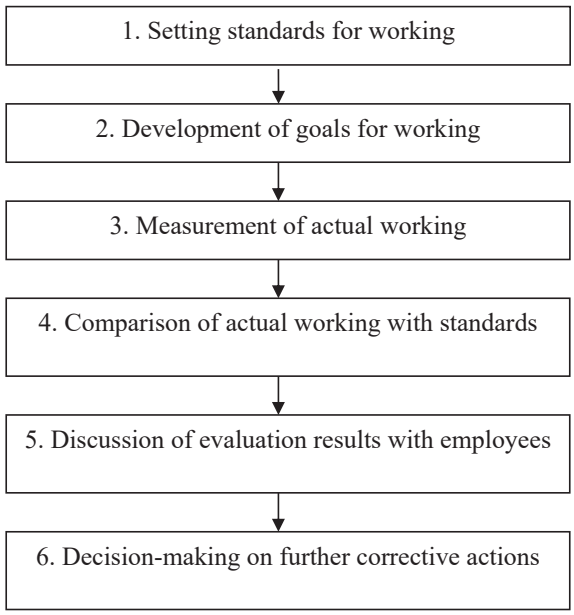

Fig. 1 – Fundamental elements of the personnel assessment process [2]

efficiency of the manager is determined by the aggregate criterion of efficiency, which includes some partial criteria that form a system of certain indicators.

The most successful classification of aggregate and partial evaluation criteria is the system of general indicators and partial criteria of quality of work of the manager, proposed by I. Zinoviev [6, p. 66], which includes indicators of the manager's performance of duties and tasks, professional competence and ethical conduct.

The combination of this classification with the qualimetric approach. The approach involves the establishment of weights for each partial criterion and the use of a scoring scale, creates an opportunity to quantify the quality of management staff. In this case, the characteristics of the standard with which the comparison was made, correspond to a score of 401–500 points, or the level of «excellent», and the sum of the weights of the partial criteria of one indicator is equal to one (Tables 2, 3, 4). The weighted average score of each criterion is calculated by the formula:

$$K_i = \frac{\sum_{n=1}^{N} R_i \times p_j}{N},$$

i.e. R_i – score of the i-th expert; p_j – weighting factor of the j-th criterion; N – total number of experts.

ISSN Print 2414-0287
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Table 2 – Criteria, weights and scale for expert assessment of the manager's performance of duties and tasks

Criteria	Weights	Levels of quality of duties and tasks			
		low	satisfactory	good	high
		100–200 score	201–300 score	301–400 score	401–500 score
Volume of work performed	0,3	does not meet expectations, the deadline is exceeded	corresponds to the set deadline	fully fits the deadline, has time for additional work	performs tasks with less time
Work quality	0,4	the results of the work must be fundamentally corrected	the results of the work require almost no corrections	work results can be used	work results of the highest quality, have innovative character
Work planning	0,3	low level of working time planning	is able to organize his work in compliance with deadlines (close to the risk of violation)	is able to organize their work, the work is performed rationally	high organization and concentration, work is purposeful
Total	1,0				

Source: compiled by the author on the basis [6, p. 66]

Table 3 – Criteria, weights and scale for expert assessment of professional competence of the manager

Criteria	Weights	Levels of professional competence			
		low	satisfactory	good	high
		100–200 score	201–300 score	301–400 score	401–500 score
Professional knowledge	0,13	Superficial knowledge	Satisfactory professional knowledge	Systematic knowledge	Deep knowledge and flexibility of thinking
Professional skills and abilities	0,13	Underdeveloped	Developed mediocre	Provide the required level	Performs high-level tasks
Ability to formulate a view	0,07	Limited vocabulary	Sufficient level of state language proficiency	Expires clearly and convincingly	Logically constructed expressions, the order in the documents
Initiative	0,09	Passive, requires direct work	Activity and creative approach to the case does not stand out	Shows initiative, but without creativity	Proactive, creatively solves problems
Prompt thinking	0,09	Slowly adopts new decisions	Adapts to new tasks and situations	Perceives new tasks willingly, understands their essence	Quickly accepts new tasks, identifies influencing factors
Performance and endurance	0,11	Performance is low	Performance is satisfactory	Workable, increasing the load does not affect the quality of work	Working capacity is high, corresponds to the activity to increase the requirements
Responsibility	0,11	Shows indifference, irresponsibility	Shows a sense of responsibility is not stable	Shows a sense of responsibility constantly	Highly developed sense of duty, excellent executive discipline
Independence	0,07	Does not make independent decisions	Can make independent decisions, but they are not always proven	In decision-making is often independent, determined	Independent, has foresight skills
Ability to lead	0,10	Does not have the qualities of a leader	Can have a positive effect on people, but rarely uses it	Can positively influence people, has the qualities of a leader	The qualities of a leader are evident
Ability to accumulate and update experiences	0,10	Experience is slowly gaining, professional innovation is rejected	Experience accumulates and updates as needed, works on a template	Works to update the experience, has innovative approaches	Purposefully works to enhance professional experience
Total	1,00				

Source: compiled by the author on the basis [6, p. 66]

Determination of weights can be carried out by experts or senior management, taking into account the importance of each criterion to achieve the goals of operation and development of the enterprise. The final score of each indicator that characterizes the qualities of managers can be calculated as the sum of weighted average scores of each partial criterion that is part of it, and the overall score of managers – as the sum of scores of indicators.

Thus, this method can be used to determine the amount of remuneration of each manager for a certain period, to determine the most problematic characteristics and further planning of training areas, to compile ratings of management staff for further intangible incentives.

One can also use this technique to assess the qualities of senior management (Table 5).

ISSN Print 2414-0287
ISSN Online 2707-8426

Table 4 – Criteria, weights and scale for expert evaluation of the ethics of managerial behavior

Criteria	Weights	Levels of performance and responsibilities			
		low	satisfactory	good	high
		100–200 score	201–300 score	301–400 score	401–500 score
Communication style	0,45	The level of culture is low and tactless	The level of culture is satisfactory, but not always appropriate	Tactful, friendly in communication	Has a high level of culture, in critical situations is correct
Cooperation	0,30	Helps others are rare	Cooperates with others, offers assistance	Fruitfully cooperates with others	Shows the ability to work in a team
Discipline	0,25	Violates internal labor regulations	Follows the rules, but needs control	Complies with the rules without violations	Highly disciplined
Total	1,00				

Source: compiled by the author on the basis [6, p. 66]

Table 5 – Criteria, weights and scale for expert assessment of the quality of work of senior management

Criteria	Weights	Levels of performance and responsibilities			
		low	satisfactory	good	high
		100-200 score	201-300 score	301-400 score	401-500 score
Propensity to negotiate	0,18	Insecure, unconvincing	Presents ones view convincingly	Can convincingly prove ones point	Purposefully presents ones view
Ability to organize the work of subordinates	0,22	Does not help streamline the workflow	Appropriately distributes work tasks	Sets a goal, informs subordinates	Clearly sets a goal, achieves high efficiency
Management professionalism	0,22	The formulation of tasks is not clear	Does not always explain and provide the necessary information	Clearly explains the tasks	Explains the task in an accessible, detailed, timely manner
Control	0,18	No control or ineffective	Occasionally monitors tasks	Systematically monitors	Controls skillfully and unobtrusively
Evaluation and encouragement of employees	0,20	Does not understand the achievements of employees, does not know their abilities, hinders their independence	Familiar with the capabilities of employees, tries to evaluate them	Familiar with the achievements of employees. Correctly evaluates them, stimulates independence	Carefully studies the achievements of employees, purposefully stimulates their interests, encourages independent thinking
Total	1,00				

Source: compiled by the author on the basis [6, p. 66]

Conclusions

The study proposes a method of assessing the quality of management staff of any management level based on a system of general indicators and partial criteria for the quality of work of the manager and a qualimetric approach that allows to quantify the quality of management staff. The proposed method can be used to determine the amount of remuneration of each manager for a certain period, to determine the most problematic characteristics and further planning of areas of training, to compile ratings of management staff for further intangible incentives.

The prospect of further research in this area may be to expand the system of indicators and evaluation criteria.

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ISSN Print 2414-0287
ISSN Online 2707-8426

ECONOMIC AND MATHEMATICAL MODELING AND INFORMATION TECHNOLOGIES IN ECONOMICS

UDC 330.4 DOI https://doi.org/10.26661/2414-0287-2021-3-51-20

CONCEPTUAL MODEL OF DIGITAL MARKETING SYSTEM IN ECONOMIC FACILITIES MANAGEMENT

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Key words:
Big Data, marketing system, model, method, expert assessments

The article considers digital marketing systems, which are based on the use of the Internet with cloud technologies and Big Data. New types of business models are considered, the basis of which became the Internet itself and for which it plays a major role in B2B relationships. A number of requirements of digital marketing to the target market are investigated, which were analyzed from the standpoint of the possibility of their implementation in the enterprise. A conceptual model of a digital marketing system for managing economic objects has been built, which includes market research of goods and resources with the ability to analyze and forecast. This conceptual model uses a method of assessing consumer efficiency, which is based on the use of ratings obtained on the basis of ranking expert opinion on several scales. Experts can be both consumers and the company. The use of expert assessments is necessary in terms of information opacity of the target market data. The method of evaluation of the digital marketing system in the management of economic objects is built and used, which is based on the use of rating estimates obtained on the basis of ranking expert opinion with several scales of order. Experts can be both consumers and the company. The use of expert assessments is necessary in the conditions of information opacity of the target market data.

КОНЦЕПТУАЛЬНА МОДЕЛЬ ЦИФРОВОЇ МАРКЕТИНГОВОЇ СИСТЕМИ В УПРАВЛІННІ ЕКОНОМІЧНИМИ ОБ'ЄКТАМИ

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Ключові слова:
Великі Дані, маркетингова система, модель, метод, експертні оцінки

У статті розглянуто цифрові маркетингові системи, які засновані на застосуванні мережі Інтернет із хмарними технологіями і Великими Даними. Розглянуто нові види моделей бізнесу, основою яких став безпосередньо сам Інтернет і для яких він відіграє основну роль у взаєминах B2B. Досліджено ряд вимог цифрового маркетингу до цільового ринку, які були проаналізовані з позиції можливості їх виконання на підприємстві. Побудована концептуальна модель цифрової маркетингової системи управління економічними об'єктами яка включає дослідження ринку товарів і ресурсів з можливостями аналізу і прогнозування. У даній концептуальній моделі застосований метод оцінки споживчої ефективності, в основу якого покладено використання рейтингових оцінок, отриманих на основі ранжирування експертної думки з кількох шкалами порядку. Експертами можуть бути як споживачі, так і підприємство. Застосування експертних оцінок є необхідним в умовах інформаційної непрозорості даних цільового ринку. Побудовано та використано метод оцінки цифрової маркетингової системи в управлінні економічними об'єктами, який заснований на використанні рейтингових оцінок, отриманих на основі ранжирування експертної думки з кількох шкалами порядку. Експертами можуть бути як споживачі, так і підприємство. Застосування експертних оцінок є необхідним в умовах інформаційної непрозорості даних цільового ринку.

ISSN Print 2414-0287
ISSN Online 2707-8426

Statement of the problem

Depending on the level of development of production and demand for the proposed products, the concept of marketing has undergone evolutionary development. Their changes were mainly determined and continue to be determined by the state and interaction in the market space of such entities as the producer (seller), consumer (buyer) and the state (government). Another important factor, the influence of which has grown especially recently, has been the development of technical means, the improvement of which is closely related to the development of society as a whole.

As a rule, depending on the level of development of market relations, the evolution of marketing in each country has certain specifics and features. However, the world experience of its formation and development of market relations shows the general trend of marketing – shifting attention from the production of goods to the consumer, his needs, and can be used as a guide in the formation of market relations and business in a particular country.

The traditional marketing concept [5] took shape around the mid-50s, while marketing itself emerged much earlier. The marketing concept is customer-oriented and supported by a set of measures aimed at meeting market needs. In this case, marketing activities begin with identifying real and potential buyers and their needs. According to this concept, the goals of the economic object, especially long-term, can be achieved only by studying the needs and desires of consumer groups to which the company directs and offers products and services that satisfy them in quality and content.

The marketing concept obliges the economic object [2] to produce what can be sold, instead of trying to sell what can be done, not to sell goods, but to meet needs, to study not production capacity but market needs and develop plans to meet them, link the goals, requirements of consumers and resource capabilities of the firm, adapt to changes in the structure and characteristics of consumers, assess the effects of competition, government regulation and other external influences on the firm and focus on the long term and consider consumer needs in general.

According to the traditional marketing concept, sales are a means of communication, communication and study of consumers, and if they remain dissatisfied, then it is necessary to change the general policy, not the sales process.

The economic entity plans and coordinates the development of marketing programs aimed at meeting the identified needs. The enterprise (industrial complexes, firms and others) makes a profit by meeting the needs of customers. In this situation, the decision of what to do is not made by the economic entity, but by consumers.

A new concept of marketing management in the markets of goods and services was proposed in the 80's and was called marketing interaction [3]. Factors that stimulate the development of a new system of views have been the constant growth of the service sector and the comprehensive development of information technology.

The reflection of the first factor is the development of the service business. Abroad, the future society is called service, as it is estimated that more than half of the national product in the world will be produced in the service sector. The transition to a service society means that, as in the era of the industrial revolution, will require new management and organizational solutions in marketing, new methods of managing relationships between people: employees and customers, customers.

In the conditions of development of service competition there is a necessity of new organizational logic of business in comparison with an industrial society. Services become a source of competitive advantage, regardless of where they are found: in industry (maintenance and repair, staff training, consulting, materials) or in the traditional service sector (banks, tourism, hotels, restaurants and others).

In this situation, there is a need for a new approach to the management of the economic object. Therefore, marketing cannot remain a separate function, unique to specialists in this field. Its role and importance is expanding, that is, along with research, planning, sales promotion and distribution, there is a function of interaction with the buyer. Such interaction, long-term relationship with the customer is much cheaper than the marketing costs required to increase interest in the product or service of the company to a new customer.

A reflection of the growing importance of the second factor is the selection of the stage of evolution of the subject, called information marketing. In the era of information marketing, the success of an economic object depends not only on its capabilities in production and marketing, but also on innovation, knowledge, information resources, the ability to use these resources to increase the competitive advantages of the economic object.

Analysis of recent studies and publications

Digital marketing systems are a new direction in marketing. In many sources [2; 3; 4] this area is also called digital marketing, which solves the main functions of marketing [5], namely: analytical – the study of the market, consumers, product structure, competitors; production – the organization of production and logistics, the introduction of new technologies, ensuring high quality and competitiveness of products; distribution – sales – organization of sales channels, transportation and storage systems, product and price policy, advertising; managerial – planning at the tactical and strategic levels, information support of marketing, control in the Internet environment. All these features are united by the fact that they are implemented on the Internet using cloud and Big Data technologies. These technologies provide ample opportunities for interaction between consumers and producers, from the simple exchange of information to the implementation of financial transactions, transactions and delivery of goods.

The second direction is related to the emergence of new types of business models, which are based directly on the Internet itself and for which it plays a major role in B2B relationships. For these areas, the Internet plays not only the role of a new tool for service systems [7], which aims to increase the efficiency of business processes and reduce costs, its task – to make a profit.

ISSN Print 2414-0287
ISSN Online 2707-8426

But the modeling of the digital marketing system as a system of solutions and management of marketing functions, through which organize and manage a set of actions related to assessing the purchasing power of consumers, with its transformation into real demand for goods or services, and bringing these goods and services closer to Insufficient attention is paid to consumers to make the maximum possible profit through the Internet.

Objectives of the article

Formulation of the goals of the article: to build a conceptual model of the digital marketing system in the management of economic objects.

The main material of the research

The emergence of a new function of marketing – the function of interaction management allowed from other, communicative, positions to look at marketing technology. Therefore, marketing technology should be seen as a process of profitably establishing, maintaining and improving relationships with customers and other entities to meet the goals of all parties involved in the transaction.

Interaction marketing views communications in a broader sense – as any relationship between a company and its partners that contributes to the withdrawal of income. The basic idea of interaction marketing is that the object of management is the overall solution, and the relationship – communication with the buyer and other participants in the buying and selling process. The progressiveness of the concept of interaction marketing is confirmed by the fact that products are becoming more standardized and services are unified, which leads to the formation of repetitive marketing decisions. Therefore, the only way to retain a consumer is to individualize the relationship with him, which is possible through the development of long-term interaction of partners. In this context, the relationship becomes the most important resource that the company has, along with material, financial, informational, human and other resources. Relationships, as a result of effective interaction, become a product in which integrated intellectual and information resources – the main factors of continuity of market relations.

The concept of building digital marketing systems is developed on the theory and practice of segmentation, which takes into account the factors of distribution of goods and their substitutes. The unifying factor that forms the similarity in consumption and normative values is the microenvironment. Both economists and statisticians have noticed that such a connection exists and manifests itself in many cases. This phenomenon is sometimes called the «principle of intimacy». Proximity somehow «makes» the elements similar or «attracts» in something similar elements. This fully applies to goods and services that can be considered as a target market.

This target market in general corresponds to the classical definition, but has a number of features, in particular, it is not limited to the contingent of consumers and goods (resources).

Goods and services sold in this market have a number of specific economic and social characteristics. First, they have lower prices [4]. Secondly, the range of products is limited by the specifics of the economic object.

In known segmentation approaches and techniques, the segment size estimation step is mandatory. In this case, when using a digital marketing system, this approach is illegal.

Digital marketing puts forward a number of requirements for the target market, which were analyzed from the standpoint of the possibility of their implementation in the enterprise (Table 1).

The choice of the target market is based on the task of increasing sales. In this case, it is necessary to talk about a special type of market, which also has a geographical component. This is due to the fact that consumers, who have been united in a single target market of the global Internet, need a number of goods and services, regardless of geographical location.

The main factors of product attractiveness and its competitiveness can be represented in the form of a chain: price – quality – service – marketing environment. The «price» factor characterizes the ratio of the price level with the prices of the main competitors, the development of the system of price differentiation depending on the ratio of supply and demand, as well as the policy of competitors, the attractiveness of discounts for consumers; «Quality» – product characteristics (functionality, reliability, ease of operation and others); «Service» – the quality and delivery time of the goods, the level of service, the availability of spare materials and service centers; «Marketing environment» – the level of marketing logistics, the effectiveness of advertising activities, the level of design and content of packaging, the level of warranty service to customers before and after purchasing goods, the ability to purchase goods using modern means of communication (Internet, mobile and others).

In modern conditions, the state, along with other functions, monitors compliance with certain norms and standards.

These standards in essence set the lower limit of enterprise development. Therefore, the conceptual model of digital marketing management system of economic objects (Fig. 1) includes not only market research of goods, but also resources with the ability to analyze and forecast [7].

Table 1 – Requirements for the target market in segmentation

Requirements for the target market	Limitation
Profitability	The level of profitability is limited
Sales volume	Sales are limited
The presence of competitors	The number of competitors is limited
Availability of substitute products	The volume of substitute products present in the target market is limited
High purchasing power of consumers	The level of income of employees of the economic object is limited
Lack of "strong" position of consumers	Consumers are closely connected

ISSN Print 2414-0287
ISSN Online 2707-8426

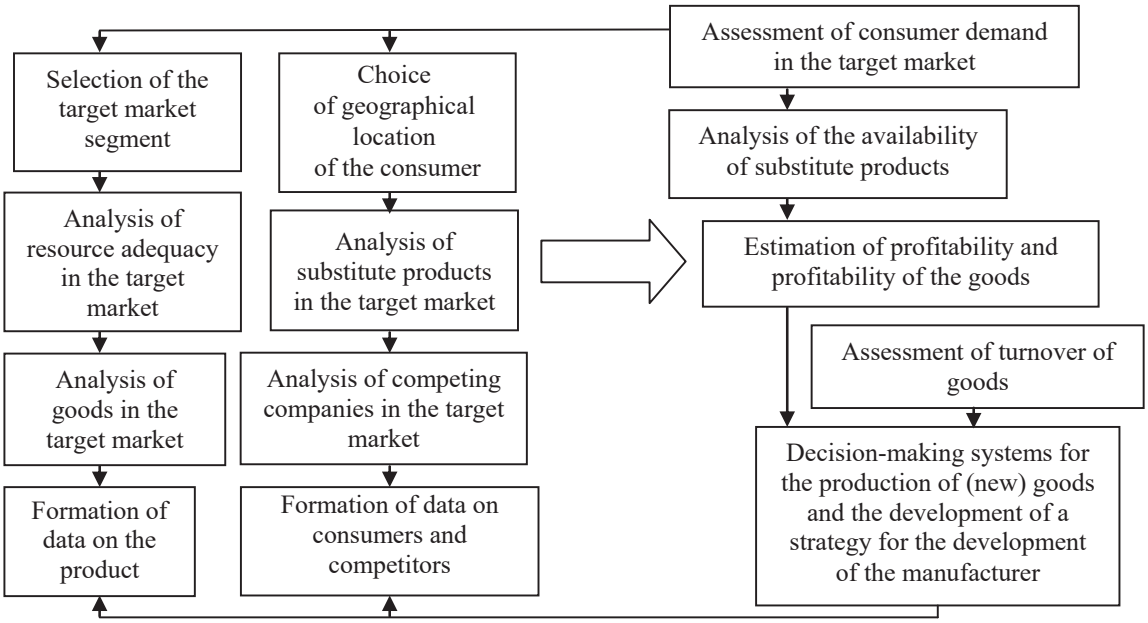

Fig. 1 – Conceptual model of digital marketing system in the management of economic objects

To describe the set of sets of source information in the economic-mathematical model of consumer efficiency assessment, defined sets $P = \left\{P_i, i = \overline{1,N}\right\}$ – expert assessments of the usefulness of the product.

Then the correction factor for the value of the usefulness of the goods can be written:

$$K = \left\{K_i = (k1, k2, k3) \in [0,1]\right\}, i = \overline{1,N}, \quad (1)$$

where *k1, k2, k3* – signs of the consumer willing to pay for the utility additionally, interest and the consumer will not pay for the utility.

The model for determining the usefulness and consumer effect of goods in the target market is as follows:

$$\begin{cases} E = E_{ji} = \left\{\prod_{i=1}^{N} X_{ji} Y_{ji} \Big/ \sum_{i=1,j=1}^{N,9} \left(\prod_{i=1}^{N} X_{ji} Y_{ji}\right) \in [0,1]\right\}, \\ i = \overline{1,N}, j = \overline{1,N}; \\ B = B_{ji} = \left\{\prod_{i=1}^{N} X_{ji} Y_{ji} \Big/ \sum_{i=1,j=1}^{N,9} \left(\prod_{i=1}^{N} X_{ji} Y_{ji}^{max}\right) \in [0,1]\right\} \end{cases}, \quad (2)$$

where X_{ji} – relative rating of the usefulness of the product; Y_{ji} – assessment of the force of influence *j* goods on *i* profit.

This conceptual model uses a method of assessing consumer efficiency, which is based on the use of ratings obtained on the basis of ranking expert opinion on several scales. Experts can be both consumers and the company. The use of expert assessments is necessary in the conditions of information opacity of the target market data.

The structure of the method of assessing consumer efficiency in the target market [10] is presented in Fig. 2.

The implementation of the method begins with the formation of initial data. Then each product is assigned an expert assessment (P_i) on the following five-point scale:

5 – very high utility;
4 – high utility;
3 – average utility;
2 – low utility;
1 – very low utility.

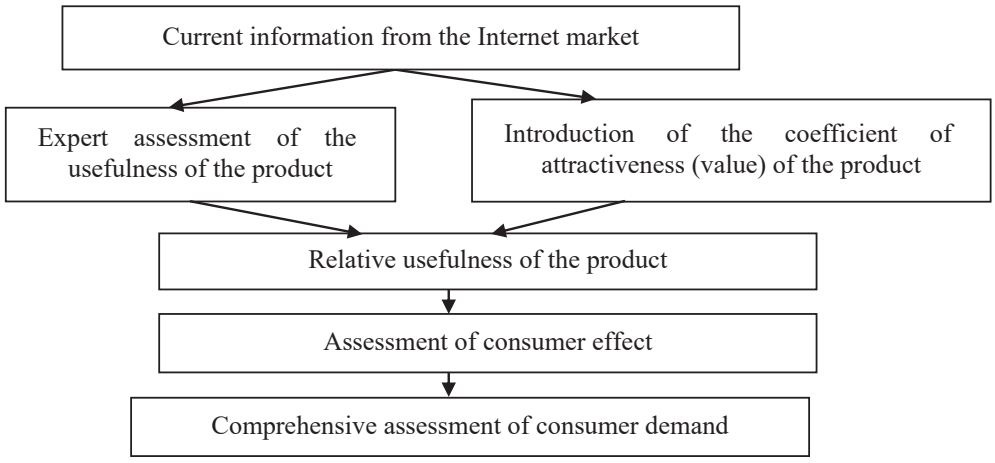

Fig. 2 – Method of assessing consumer efficiency

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ISSN Online 2707-8426

Additionally, the cost-effectiveness ratio is introduced to account for price and costs (k_i), which takes the following values:

1.5 – the consumer is willing to pay extra for utility;

1,2 – the consumer is interested in usefulness, but will be interested in the price;

1.0 – the consumer will not pay for the utility.

Absolute rating indicators of the usefulness of the product are not very informative and can be poorly compared for different products, so then use the relative indicator (usefulness index), which is calculated by the following expression:

$$x_i = \frac{P_i k_i}{\sum_{i=1}^{n} P_i k_i}, \quad (3)$$

where P_i - rating assessment of the *i*-th utility (1 … 5, goals); k_i – coefficient that takes into account the cost of utility; *n* – the number of benefits of the product; $i = \overline{1,n}$.

The formation of utility indices is the next step in measuring the consumer effect of individual market segments. The following consumer benefits have been identified for the product in question: product quality, delivery time, pricing policy, form of payment.

The proposed list of benefits can be expanded and specified.

The next stage in the implementation of the method is the formation of matrix columns, which form innovations – both available in the arsenal of the company, and expected: organizational, technical, service and others. This list may include innovations described qualitatively, and innovations expressed in terms of technical and economic indicators. In principle, this method can be used to synthesize innovations. In this case, the activity of the trading platform is based on the principle «what can be done (change, improve, supplement and others) to form a specific utility.»

The elements of the matrix with volume n x m, where m is the number of considered innovations, are filled with rating estimates of the strength of the impact of the j-th innovation on the i-th benefit of the product. The rating of influence is established on the following ten-point scale of the order: 9 – strong influence; 3 – average impact; 1 – weak influence; 0 – innovation does not affect the individual benefit of the product.

Using the notation *yji* to assess the strength of the impact of the j-th product on the i-th benefit, you can calculate the conditional and unconditional indices of the consumer effect of each product. Then the conditional index can be written as follows:

$$E_{ji} = \frac{\sum_{i=1}^{n} x_i y_{ji}}{\sum_{j=1}^{m} \sum_{i=1}^{m} x_i y_{ji}}. \quad (4)$$

Conditional index is useful for comparative evaluation of the product by the degree of its impact on its overall value.

However, the conditional index depends on the total volume of the product and shows the relative contribution of the individual product in the formation of benefits and therefore can not be used to quantify the consumer effect.

An unconditional consumer effect index is used to measure the consumer effect, which depends on the total amount.

When building it, the value of the consumer effect is used as a base, which has the maximum impact on each consumer utility. Then, according to expression (1.4), the unconditional index can be written as follows:

$$B_{ji} = \frac{\sum_{i=1}^{n} x_i y_{ji}}{\sum_{i=1}^{n} x_i y_{jimax}}. \quad (5)$$

Given that in the above dependence $y_{jimax} = 9$ (according to the accepted score scale), the expression in the denominator also takes a value equal to 9, ie $\sum_{i=1}^{n} x_i y_{ji} = 9$, and the assessment of the consumer effect of the j-th product is relative to the absolute value. The obtained data will allow the management system to support decision-making to choose a promising direction of production of goods.

For these products in table 2 the list of the basic indicators is used, the matrix is formed and on the above dependences conditional and unconditional indices of consumer effect are defined.

The results of calculations (table 2) show a stable demand (logistics system 0.82, demand 0.86) trading platform (Rozetka.com.ua).

Conclusions

In the article analyzed the concept of digital marketing systems as a new direction in marketing. Taking into account digital marketing, a number of requirements for the target market were identified, which were analyzed from the standpoint of their ability to perform in the enterprise: profitability, sales, competitors, availability of substitutes, high purchasing power of consumers, lack of «strong»

Table 2 – Formation of conditional and unconditional indices of consumer effect for the trading platform (Rozetka.com.ua)

Consumer	xi	Volume of goods	Demand	Range of trading platform	Logistics system	Dealer connections
quality	0,36	8	9	9	7	5
1. Product quality	0,19	7	6	9	8	7
2. Delivery time	0,25	7	8	–	7	4
3. Pricing policy	0,2	5	7	–	8	9
	1,0	6,96	7,78	4,95	7,39	5,93
		0,21	0,24	0,15	0,22	0,18
		0,77	0,86	0,55	0,82	0,66

ISSN Print 2414-0287
ISSN Online 2707-8426

position of consumers. The following restrictions were identified for these requirements: the level of profitability is limited, sales are limited, the number of competitors is limited, the volume of substitutes present in the target market is limited, the level of income of employees of the economic object is limited, consumers are closely related.

The conceptual model of the digital marketing system in the management of economic objects was built in the work, which includes not only the research of the goods market, but also the resources with the possibilities of analysis and forecasting.

On the basis of the developed model the method of estimation of consumer efficiency which consists of 5 stages is constructed. The method was used to calculate the indices of consumer effect for the trading platform (Rozetka.com.ua). The obtained data will allow the decision support management system to choose a promising direction of sale and production of goods.

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ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 005.8:[004.738.1:378]
DOI https://doi.org/10.26661/2414-0287-2021-3-51-21

VISION OF THE PROJECT OF MODELING INFORMATIONAL TRANSPARENCY OF SITES OF HIGHER EDUCATION INSTITUTIONS

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Key words:
information transparency, higher education institutions, website, project, stakeholders, modeling

The openness of all activities of business entities, ensuring free access of stakeholders to the results of activities, complete disclosure of information online, form the basis for decisions by entities on further interaction. Therefore, one of the key today's challenge is to develop modern approaches, models and methods of studying information transparency as a phenomenon that is the source of modern reforms, digitalization, concepts of corporate governance, information society, social responsibility, quality and accessibility of education. The article is devoted to substantiation of the vision of the project of modeling of information transparency of sites of domestic institutions of higher education. In the course of the research the methods of project management, substantiation, financial analysis, synthesis, generalization, graphic were used. The authors propose the concept of modeling the information transparency of higher education institutions online in the context of digitalization of the economy. The concept is based on the principles and provisions of the strategy for the development of an open information society, social responsibility, corporate governance, modern reforms of the educational space and modern requirements for quality assurance in higher education, trends in digitalization of socio-economic processes. The scientific result represents a comprehensive vision of the project, the main idea of which is to ensure informational transparency of higher education institutions online through modeling and project management. The practical significance of the project vision is to substantiate the direction of changes in the parameters (content, structure, etc.) of higher education sites based on modeling the behavior of stakeholders, assessing information transparency of higher education institutions, their competitive advantages, site usability research, quality of educational services. actions of quarantine restrictions. The prospect of the study is the implementation of certain areas of modeling the information transparency of higher education institutions online.

БАЧЕННЯ ПРОЄКТУ МОДЕЛЮВАННЯ ІНФОРМАЦІЙНОЇ ПРОЗОРОСТІ САЙТІВ ЗАКЛАДІВ ВИЩОЇ ОСВІТИ

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Ключові слова:
інформаційна прозорість, заклади вищої освіти, сайт, проект, стейкхолдери, моделювання

Відкритість усіх напрямів діяльності суб'єктів господарювання, забезпечення вільного доступу зацікавлених осіб до результатів діяльності, повнота розкриття інформації онлайн, формують підстави для прийняття рішень суб'єктами щодо подальшої взаємодії. Тому одним з ключових завдань сьогодення є розробка сучасних підходів, моделей та методів

ISSN Print 2414-0287
ISSN Online 2707-8426

дослідження інформаційної прозорості, як феномену, що є витоком сучасних реформ, діджиталізації, концепцій корпоративного управління, інформаційного суспільства, соціальної відповідальності, вимог якості та доступності освіти. Стаття присвячена обґрунтуванню бачення проекту моделювання інформаційної прозорості сайтів вітчизняних закладів вищої освіти. У ході дослідження використано методи проектного менеджменту, обґрунтування, фінансового аналізу, синтезу, узагальнення, графічний. Авторами запропоновано концепцію моделювання інформаційної прозорості закладів вищої освіти онлайн в умовах цифровізації економіки. В основу концепції покладено принципи та положення стратегії розвитку відкритого інформаційного суспільства, соціальної відповідальності, корпоративного управління, сучасних реформ освітнього простору та сучасних вимог до забезпечення якості вищої освіти, тенденцій цифровізації соціально-економічних процесів. Науковий результат представляє комплексне бачення проекту, головна ідея якого полягає у забезпеченні інформаційної прозорості закладів вищої освіти онлайн засобами моделювання та проектного менеджменту. Практичне значення реалізації бачення проекту полягає в обґрунтуванні напрямів змін параметрів (контент, структура тощо) сайтів закладів вищої освіти на основі даних моделювання поведінки стейкхолдерів, оцінювання забезпечення інформаційної прозорості діяльності закладів вищої освіти, їх конкурентних переваг, дослідження юзабіліті сайтів, якості освітніх послуг в умовах дії карантинних обмежень. Перспективою дослідження є реалізації визначених напрямів моделювання інформаційної прозорості закладів вищої освіти онлайн.

Statement of the problem

Informational transparency is an important socio-economic criterion of informational quality, high marks of which ensure the recognition of subjects or objects in the international arena of quality standards. That is why maximizing the parameters of informational transparency is a priority at the level of all socio-economic processes and systems that operate offline and online. Currently, institution of higher education operates in conditions of fierce competition for entrants and funding in general. Modern reforms of the educational space radically change the principles and structure of the education system in Ukraine, so the institution of higher education needs time to adapt and reconfigure the functioning in order to ensure the quality of educational services also in the online environment.

Also, the functioning of institution of higher education in the online environment requires immediate review in the context of the spread of remote learning, dynamic changes in the development of informational technology, targeting the informational transparency of the world as a whole. Digital technologies and skills of using them are a necessary and priority tool for ensuring the quality of education in modern economic conditions. The problem of providing institution of higher education them with and retraining of teaching staff remains partially solved by regions.

Considering results of existing research, the informational transparency of higher educational institutions is insufficient, which negatively affects the representativeness of the competitive image of institution of higher education online and the effectiveness of interaction with their stakeholders. The criterion-based, multidimensional assessment of informational transparency used by scientists proved the need for constant revision, updating of the set of parameters, expansion of the range of applied methods of research of its aspects in the application of soft modeling methods in the context of corporate governance, informational society, social responsibility, rapid digitalization of educational space.

Ignoring the need to ensure a certain satisfactory level of informational transparency hinders the development of institution of higher education, complicates ensuring the quality of higher education under quarantine restrictions, the spread of distance learning and so on. Informational transparency cannot have standardized boundaries, as all institution of higher education are unique, and education reforms support the autonomy and uniqueness of the provision of educational services. However, the low level negatively affects the behavior of stakeholders, and the sites, as the main source and face of higher educational institutions, do not fill in and do not return their information needs.

Analysis of recent studies and publications

Ensuring informational transparency of economic entities in modern conditions, the development trends of which are characterized by global digitalization, studied in [1], is a prerequisite for the formation of an open environment with its inherent trust, coordinated and effective interaction between all stakeholders. This also applies to educational processes that actively operate online, where higher education institutions study the results of their activities, competitive advantages, interact through official websites with stakeholders, which is revealed in [2; 3; 4].

Systematic provision of informational transparency of higher education institutions is, on the one hand, a regulatory requirement of the state, on the other – the need to meet current trends and interests of stakeholders regarding a high level of competitiveness [5] in quarantine conditions, so the problem is relevant. Applied aspects of the study of informational transparency of higher

ISSN Print 2414-0287
ISSN Online 2707-8426

education institutions lie in the plane of tasks of assessing the level, state of supply, management, the results of which are presented in [6; 7; 8; 9; 10; 11], where the authors use a wide range of research methods. However, the category of informational transparency is subjective, so it is difficult to justify a universal and unambiguous way to ensure it, reliable assessment.

Objectives of the article

To substantiate the vision of the project of modeling informational transparency of higher education institutions' websites.

The main material of the research

Information transparency is the source of concepts of open informational society, social responsibility, corporate governance, modern reforms of educational space and modern requirements for quality assurance in higher education, trends in digitalization of socio-economic processes, so the study is based on relevant principles, modern views and interests of stakeholders. Analysis of existing research and publications has shown that informational transparency is considered by scientists as an economic category that ensures the openness of all activities of economic entities in relation to other economic entities, ensuring free access of all stakeholders to the results of the organization; and as a method of regulation, a component of public administration, the quality and effectiveness of which depends on the transparency of information. We propose to clarify its essence as a category that qualitatively characterizes the information in terms of its accessibility, visibility, dissemination, informativeness, security, value for the user, the level of which is determined by the interaction between entities or objects that impose their own restrictions. regarding its target value. Its target level is determined in the process of interaction between stakeholders, the state of their information and communication security system, the presence of risks associated with its disclosure, concealment, dissemination, level of corporate social responsibility, etc.

Considering the high cost of services of involved specialists to ensure informational transparency and resource constraints of institution of higher education, important factors in the ability to ensure the functioning of the online entity are liquidity, solvency, profitability, business activity (Tables 1, 2).

An analysis of the financial condition of education, professional, scientific and technical activities of Ukraine for the period 2015–2019 was confirmed the deterioration of the situation in education since 2018, and in professional, scientific and technical activities – since 2019.

There is currently no single approved methodology for assessing an entity's informational transparency. Researchers use index and rating approaches, expert, market, analytical, accounting methods, surveys, web content analysis, verbal study of protocol, main components, critical discourse and regression, cognitive modeling. The results of their application are not exhaustive, they complement each other.

We offer a conceptual approach to modeling the informational transparency of institution of higher education, which is complex, taking into account the

Table 1 – Dynamics of values of financial indicators of education of Ukraine

Characteristic	2015	2016	2017	2018	2019
Current liquidity, %	162,1	123,3	131,6	119,2	115,1
Absolute liquidity, %	30	47,7	44,7	24,9	34,9
Coefficient of autonomy, %	59,9	62,3	63,1	69,7	63,6
Profitability of assets, %	2,6	4,4	4	1,4	0,7
Profitability of working capital, %	6,4	11,2	9,3	3,4	2,8
Net margin, %	1,9	4,1	2,4	0,9	0,3
Return on total assets, %	3,5	6,3	4,8	1,7	0,7
Asset turnover	1,8	1,7	1,7	1,6	1,6
Working capital turnover	2,5	0,8	2,9	1,9	1,4
Turnover of receivables	13,7	13,5	13,7	14,2	15

Source: according to the company YouControl [12]

Table 2 – Dynamics of values of financial indicators of professional, scientific and technical activity of Ukraine

Indicator name	2015	2016	2017	2018	2019
Current liquidity, %	137,5	135,8	136	135,6	125,2
Absolute liquidity, %	17,3	22,4	19	18,8	12,5
Coefficient of autonomy, %	48,7	47,3	48,6	50,8	46,4
Profitability of assets, %	0,3	0,8	0,9	0,9	0,8
Profitability of working capital, %	0,6	1,8	2	2,1	1,7
Net margin, %	0,9	1,5	1,6	1,7	1,4
Return on total assets, %	0,6	1,4	1,4	1,6	1,2
Asset turnover	0,8	1	0,9	0,9	0,8
Working capital turnover	1,2	1,2	1,3	1,3	0,9
Turnover of receivables	3,7	4,3	4,5	5	3,9

Source: according to the company YouControl [12]

ISSN Print 2414-0287
ISSN Online 2707-8426

subjective and object relations that arise in the formation and use of informational content of institution of higher education, Fig. 1.

The presented concept of modeling the informational transparency of higher education institutions online involves the search for reserves and appropriate ways to ensure the quality of higher education through the prism of research and taking into account the interests of stakeholders, requirements for reforming the educational space, the current online profile of the institution of higher education. The tools of research were methods and models of aspects of informational transparency of subjects, behavior of stakeholders as a manifestation of their interest and interest in a particular subject, assessment of site usability as a degree of satisfaction with the ease of use of the site when making decisions about further interaction. The advantages of the conceptual vision are not a direct assessment of the informational transparency of the institution of higher education, but a study of the system's response to its specific state, the existing structure, the search for effective interaction of subjects and objects of research in the online environment.

It should be noted that each of the freehold stakeholder groups – central and local government, enterprises, institutions and organizations as employers, management and administrative staff of institution of higher education, research and teaching staff, other educational institutions, graduates, students, entrants and their parents – will have their priorities regarding the content of the institution of higher education website in accordance with their own needs and interests, but insufficient information transparency negatively affects the behavior of all groups of stakeholders online, which requires separate research.

To model the informational transparency of institution of higher education in the conditions of low level of informational transparency, it is proposed [7; 8; 11] to study the behavior of online stakeholders in terms of their interest in some methods of fractal and recurrent analysis. The frequency of queries of specific freelancers according to the Google Trends search engine is chosen as an indicator of the behavior of online freehold stakeholders. The results of R/S analysis and constructed recurrence diagrams allow to check the time series of the frequency of requests of specific institution of higher education for persistence and to characterize changes in interests and behavior of general freeholder stakeholders in the online environment at certain intervals in low informational transparency.

Since 68% of stakeholders get acquainted with institution of higher education through the site [13], it is necessary to evaluate the current interface of institution of higher education from the point of view of users. In this context, it is appropriate to use usability criteria to evaluate the public interface of institution of higher education, it is also possible to supplement the evaluation results by reviewing the interface of the information platform on which online learning is implemented. The

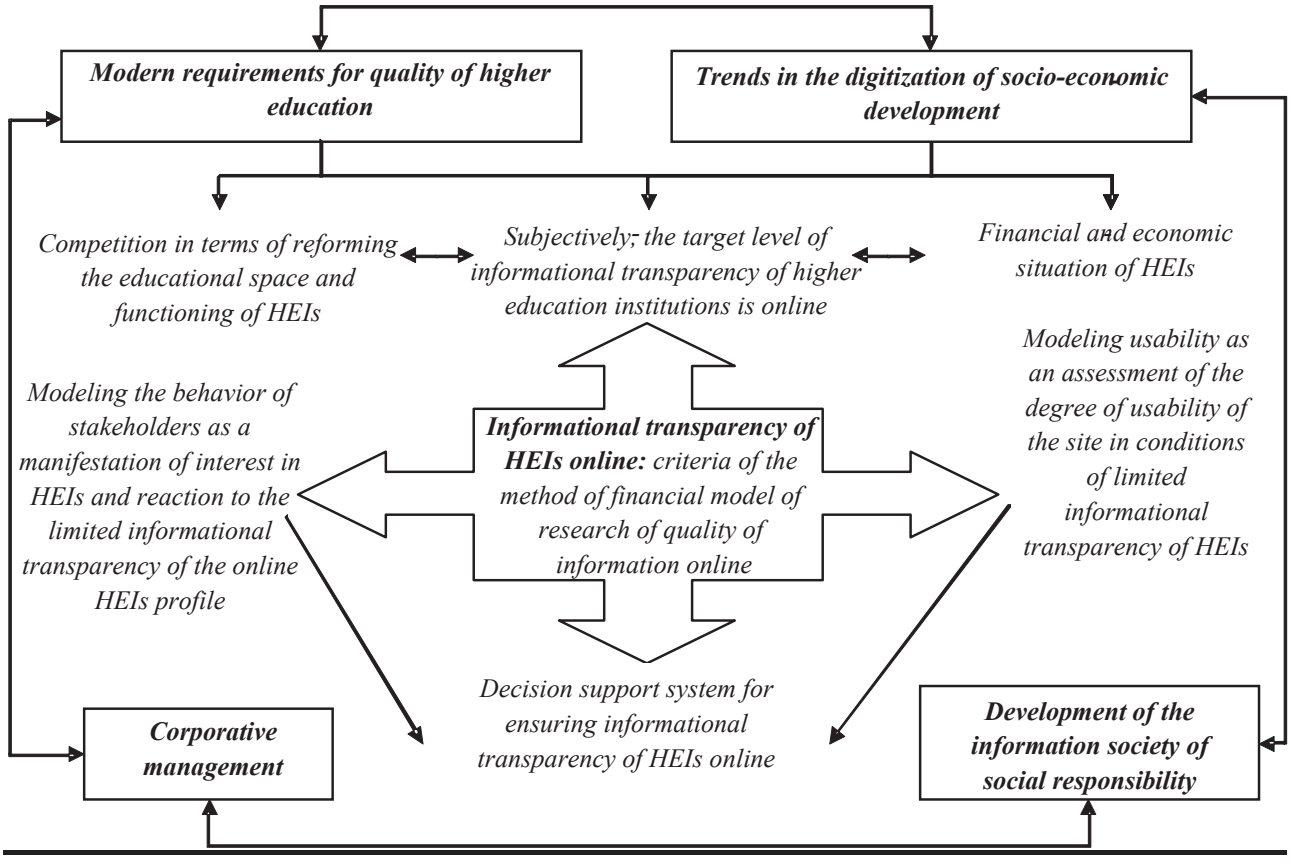

Fig. 1 – The concept of modeling informational transparency of higher education institutions (HEIs) online
Source: compiled by the author

ISSN Print 2414-0287
ISSN Online 2707-8426

general criteria of usability need to be reconsidered in terms of the peculiarities of the construction of institution of higher education and the requirements of stakeholders to their content. For example, on the institution of higher education site evaluate the page load speed, the availability of adaptive layout on mobile devices, homogeneity of the interface, ease of perception, freedom of access to Call to action buttons (i. e. the presence of feedback), optimization for the geography of the target audience, no forced content, animations, etc., adequacy of the button and its link, through the main menu, the possibility of registration through social networks and the presence of institution of higher education in them, the availability of proposals (invitations to study, participation in conferences, etc.), the cost of training, remarketing, simplicity of registration, personal account interface, quality graphic, text and color content and others.

Institution of higher education' sites will be evaluated according to usability criteria and a scale from 0 to 10, which will allow to obtain quantitative results. To substantiate the integrated or comprehensive assessment of informational transparency of institution of higher education, it is recommended to use the methodology of fuzzy inference according to Mamdani's algorithm, which will allow to obtain a quantitative indicator – the initial value of usability of institution of higher education site.

Considering the high cost of services of involved specialists to ensure informational transparency and resource constraints of institution of higher education, important factors in the ability to ensure the functioning of the online entity are liquidity, solvency, profitability, business activity. It is planned to assess the financial and economic situation of institution of higher education, opportunities to finance them, the transformation of information content, in particular, on the indicators of financial and market scoring of the information-analytical system YouControl [12]. It is advisable to take into account the limited access to data on state institution of higher education. In addition, the peculiarity of their financing and the regulation of costs significantly limits the subjects in making management decisions to make changes to the information content, the structure of the site institution of higher education. These issues are not a priority in the free forms of state ownership, but the leading free agents pay sufficient attention to the content of their sites.

The implementation of the concept makes it possible to justify ways to ensure informational transparency of the research subject, the practical implementation of which improves the interaction of higher education institutions and their stakeholders online. The tool of substantiation of ways to ensure informational transparency of individual institution of higher education online will be the methodology of scenario modeling by means of building a model of fuzzy logical conclusion about the ease of use of the institution of higher education site in the opinion of their stakeholders. In general, the conceptual approach is universal in terms of application, can be used for institution of higher education of all forms of ownership, funding structure and levels of accreditation. The approach to research of convenience of sites of institution of higher education can be used by all groups of stakeholders of institution of higher education.

Conclusions

The concept of modeling the informational transparency of online higher education institutions in the context of digitalization of the economy has been developed. It is based on the principles and provisions of the concepts of open information society, social responsibility, corporate governance, modern reforms of the educational space and modern requirements for quality assurance in higher education, trends in the digitization of socio-economic processes. The structure of the concept is formed from the subjective-objective processes of interaction of stakeholders in the educational space by means and methods of the online environment, which is determined by current trends and requirements for it in the country and the world. The main idea is to find reserves and appropriate ways to ensure the quality of higher education through the prism of research and taking into account the interests of stakeholders, the requirements of reforming the educational space, the current online profile of institution of higher education by studying aspects of informational transparency institution of higher education, behavior of stakeholders, evaluation of site usability. The conceptual vision focuses on the study of the system's response to a certain state of informational transparency, its existing structure, the search for effective interaction of subjects and objects of study in the online environment.

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ISSN Print 2414-0287
ISSN Online 2707-8426

DOI https://doi.org/10.26661/2414-0287-2021-3-51-22

REVIEW OF THE MONOGRAPH *"FORMATION OF STRATEGY IN ANTI-CRISIS MANAGEMENT OF OPERATIONAL ACTIVITY OF INDUSTRIAL ENTERPRISES",* prepared by the Candidate of Economic Sciences (Ph. D. in Economics), Associate Professor, Associate Professor of Department of Finance, Banking and Insurance Zaporizhzhia National University Shvets Yu.O., Zaporizhzhia, 2020[1]

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Monograph "Formation of strategy in anti-crisis management of operational activity of industrial enterprises" Shvets Yu.O. reveals theoretical and methodological, methodological issues related to the implementation of crisis management, the use of strategy in industrial enterprises to improve the efficiency of production and marketing activities.

In the first section the author investigates theoretical issues on defining the essence of the concepts "crisis", "crisis management", "crisis management of industrial enterprises", "crisis management of operational activities of industrial enterprises", and analyzes scientific and practical aspects of system formation identification of factors influencing the effectiveness of crisis management of operating activities of industrial enterprises.

The second section is devoted to the study and characterization of the concept of crisis management of operating activities of industrial enterprises; the mechanism of anti-crisis management of operational activity is formed; the system of anti-crisis management of operational activity is investigated; the mechanism of formation of strategy of anti-crisis management of operational activity of industrial enterprises is developed.

In the third section of the monograph the thorough analysis of efficiency of operational activity is carried out; the state of financial activity of industrial enterprises is analyzed; the probability of bankruptcy at machine-building enterprises is investigated.

In the fourth section of the monograph, the author evaluates the effectiveness of the use of the mechanism and system of crisis management of operational activities on the example of machine-building enterprises; the approach to determining the effectiveness of crisis management tools for the operational activities of enterprises has been improved; the influence of internal factors on the use of the mechanism of crisis management strategy of operating activities of enterprises is assessed.

In the fifth section of the monograph, the author proposes a scientific and methodological approach to assessing the effectiveness of anti-crisis management strategy of operating activities of industrial enterprises; forecasting of use of the mechanism of formation of strategy of anti-crisis management of operational activity of the industrial enterprises is carried out and offers to improvement of work of the enterprises are offered.

All material is presented in accessible language, full of statistical data and analysis on the study of the effectiveness of operational activities, the possibility of threats of crisis. The monograph is of interest not only to economists and financiers, but also to managers, as well as to teachers and students of advanced training and retraining programs and can be recommended for publication.

Monograph "Formation of strategy in anti-crisis management of operational activity of industrial enterprises" Shvets Yu.O. is a scientific work that reveals the theoretical, methodological, methodological and practical foundations of crisis management of the operational activities of industrial enterprises, the selection and use of effective strategies. I consider this scientific work complete and recommend it for publication.

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ISSN Print 2414-0287
ISSN Online 2707-8426

DOI https://doi.org/10.26661/2414-0287-2021-2-50-23

REVIEW OF THE MONOGRAPH *"VECTORS OF PERSONNEL RESOURCES MANAGEMENT THROUGH THE PRISM OF EFFICIENCY"*, prepared by Helman Valentyna, Zaporizhzhia, 2020[1]

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Monograph "Vectors of personnel resources management through the prism of efficiency" of Valentina Helman reveals theoretical, methodological and practical principles for ensuring the effectiveness of personnel resource management of mechanical engineering enterprises.

In the first chapter, the authors explore theoretical issues of human resource management as a specific management function, as well as personnel resource management processes.

The second chapter is devoted tothe analysis and assessment of socio-economic preconditions for ensuring the effectiveness of personnel resource management in industrial enterprises, in particular mechanical engineering. The question of economic activity of the population employed in industrial enterprises is studied, the analysis and evaluation of economic indicators of domestic industrial enterprises is carried out, the number of employees in mechanical engineering enterprises is forecast based on the method of trend extrapolation.

The third chapter considers the methodological basis of effective management of personnel resources of enterprises, in particular, the conceptual principles of ensuring the effectiveness of personnel resource management are determined, the features of human resource management at the operational and strategic levels are studied, the methods of personnel resource management are generalized.

The fourth chapter of the monograph offers an author's vision to ensure effective work with personnel resources of enterprises, in particular, emphasis is placed on targeted labor behavior in the personnel resources management system of the enterprise, the use of technology of key performance indicators in the field of personnel resources management is recommended, delegation of authority as a way to increase the efficiency of management.

In the fifth chapter the vectors of personnel resources management through the prism of efficiency are defined, in particular the conceptual model of decision-making of personnel decisions in the conditions of organizational changes of the enterprises of mechanical engineering is developed; the functional-structural approach is improved to ensuring the effectiveness of personnel resource management of the enterprise, the strategy for personnel resource management of mechanical engineering enterprises isdeveloped based on the use of the life cycle model of the employee in relations with the enterprise-employer.

All material is presented in accessible language, rich in statistics data and analysis of personnel resource management at the national and regional levels. The monograph is of interest not only to economists, managers and HR professionals, but also to teachers and students of advanced training and retraining programs and can be recommended for publication.

Monograph "Vectors of personnel resources management through the prism of efficiency" of Valentina Helman is a scientific work that solves an urgent scientific problem – the development of methodological principles of personnel resource management of mechanical engineering enterprises and recommendations for ensuring the effectiveness of its management in order to make and implement effective management decisions.

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ISSN Print 2414-0287
ISSN Online 2707-8426

DOI https://doi.org/10.26661/2414-0287-2021-3-51-24

REVIEW OF THE MONOGRAPH *"VECTORS OF PERSONNEL RESOURCES MANAGEMENT THROUGH THE PRISM OF EFFICIENCY",* prepared by Helman Valentyna, Zaporizhzhia, 2020[1]

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Monograph of Ph.D., Associate Professor of Personnel Management and Marketing Valentina Helman "Vectors of personnel resources management through the prism of efficiency" is a thorough scientific work with which everyone has the opportunity to consider the theoretical and practical basis for ensuring the effectiveness of personnel resource management in industry, including engineering.

The monograph reviews the issues of generalization of scientific approaches to defining the economic essence of the concept of "resources" and offers an author's definition; it is proposed to clarify the concept of "personnel resources"; the functional and structural approach to ensure the effectiveness of personnel resource management of the enterprise is improved; a methodological approach is developedthat reflects the relationship between personnel policy, indicators of human resource efficiency and performance of the enterprise; the personnel corps of domestic industrial enterprises is analyzed, the socio-economic preconditions of ensuring the efficiency of personnel resources management of mechanical engineeringenterprises are investigated, the problems and prospects of development are determined; the classification is developedof external and internal factors of influence on efficiency of management of personnel resources of the enterprise from positions of the complex approach; the recommendations for the use of technology "key indicators" is developed to ensure the effectiveness of personnel resource management of mechanical engineeringenterprises; the model of decision-making in the personnel resources management system based on the application of the theory of delegation of authorities is improved; the methodical approach to the provision of personnel resources of mechanical engineeringenterprises with the use of one-factor forecasting functions has been improved; the conceptual model of decision-making of personnel decisions in the conditions of organizational changes of the enterprises of mechanical engineering is offered; the technique of construction of a matrix of coordination of strategy with processes of management of a personnel resource of the enterprises is improved; the strategy of personnel resource management of mechanical engineeringenterprises on the basis of the model of an employee's life cycle in relations with the enterprise-employer is developed; the management toolkit of decision-making for increase of efficiency of management of a personnel resource of the enterprises is proposed; theproposals to improve the organizational and managerial work of the personnel department of the enterprise are developed.

For students and teachers of economic faculties of higher education institutions of III and IV levels of accreditation, specialists in personnel management, top management of enterprises, as well as scientific and technical workers, teachers and students of advanced training and retraining programs.

I recommend the monograph of the associate professor of the Department of Personnel Management and Marketing Valentina Helman "Vectors of personnel resources management through the prism of efficiency" to the publication.

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ISSN Print 2414-0287
ISSN Online 2707-8426

DOI https://doi.org/10.26661/2414-0287-2021-3-51-25

REVIEW OF THE MONOGRAPH *"VECTORS OF PERSONNEL RESOURCES MANAGEMENT THROUGH THE PRISM OF EFFICIENCY",* prepared by Helman Valentyna, Zaporizhzhia, 2020[1]

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Monograph "Vectors of management of personnel resources through the prism of efficiency" of Valentina Helman reveals theoretical and methodological issues and provides specific proposals to ensure the effectiveness of personnel resource management of mechanical engineeringenterprises.

The monograph considers the problematic questions of effective personnel resource management of enterprises, in particular, defines the conceptual framework for ensuring the effectiveness of personnel resource management, explores the features of personnel resource management at the operational and strategic levels, and summarizes personnel resource management methods. The vectors of personnel resources management through the prism of efficiency are determined, specifically the conceptual model of personnel decision-making in the conditions of organizational changes of mechanical engineering enterprises is developed, the functional-structural approach to ensuring efficiency of personnel resource management of mechanical engineering enterprises is developed, the functional and structural approaches to ensure the efficiency of personnel resources management of the enterprise has been improved, the strategy of management of personnel resources of mechanical engineering enterprises based on the use of the employee life cycle model in relations with the enterprise-employer has been developed, the proposals to improve the organizational and managerial work of the personnel department of the enterprise are presented.

The authors of the monograph analyze the personnel of domestic industrial enterprises, explore the socio-economic prerequisites for effective management of personnel resources of mechanical engineering enterprises, identify problems and prospects for development, and justify the use of personnel resources management tools and practices to improve business efficiency. The author's vision for ensuring effective work with personnel resources of enterprises is proposed; in particular, attention is focused on targeted labor behavior in the personnel resources management system of the enterprise, the use of key performance indicators in personnel resources management andin delegation of authority as a way to improve managementis recommended.

For students and teachers of economic faculties of higher education institutions of III and IV levels of accreditation, specialists in organization and personnel management, enterprise managers, as well as scientific and technical workers, teachers and students of advanced training and retraining programs.

I recommend the monograph of Candidate of Economic Sciences, Associate Professor of Zaporizhzhia National University Valentina Helman "Vectors of personnel resources management through the prism of efficiency" to the publication.

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ISSN Print 2414-0287
ISSN Online 2707-8426

ВИМОГИ ДО ОФОРМЛЕННЯ СТАТЕЙ У «ВІСНИК ЗАПОРІЗЬКОГО НАЦІОНАЛЬНОГО УНІВЕРСИТЕТУ» ЗА ФАХОМ ЕКОНОМІЧНІ НАУКИ

З № 2(42) 2019 року збірник наукових праць «Вісник Запорізького національного університету. Економічні науки» виходить лише англійською мовою. **Стаття подається до розгляду в редакцію українською або російською мовами. Після проходження внутрішнього рецензування – обов'язкове надання перекладу статті англійською мовою.** Переклад має бути професійним, у жодному разі не використовуючи інтернет-перекладач.

До друку приймаються наукові статті обсягом від 10 сторінок, що відповідають тематиці серії видання й містять нові наукові результати, не опубліковані раніше. Виклад матеріалу статті має бути послідовним, логічно завершеним, із чіткими формулюваннями, що виключають подвійне тлумачення або неправильне розуміння інформації; мова тексту має відповідати літературним нормам, бути професійною і лаконічною. Автор зобов'язаний забезпечити високий науковий рівень викладеного матеріалу, повноту і системність висвітлення питання, достовірність результатів і даних, що наводяться, правильність цитування та посилань на літературні джерела. Редакційна колегія приймає до друку статті, які характеризуються оригінальністю, високою мірою наукової новизни і практичною значущістю.

1. МАКЕТ СТОРІНКИ

Для оформлення статті автор використовує формат А4 з полями з усіх боків – 2 см. Порядок абзацу виділяється відступом 1,25.

☞ *До уваги авторів:* У разі необхідності для шрифтових виділень у таблицях і рисунках дозволяється застосовувати шрифт Courier New (наприклад, для ілюстрації текстів програм для ЕОМ). Для стилістичного виділення фрагментів тексту слід вживати начертання *курсив*, **напівжирний**, ***напівжирний курсив*** зі збереженням гарнітури, розміру шрифта та інтервалу абзаца.

2. ТИПОГРАФСЬКІ ПОГОДЖЕННЯ ТА СТИЛІ

Текст статті, яка подається до розгляду та рецензування українською або російською мовою, має бути побудований за такою схемою:

– індекс УДК у верхньому лівому кутку аркуша (Times New Roman, 14 пт., звичайний);
– назва статті великими літерами (по центру, Times New Roman, 14 пт., напівжирний);
– ПІБ авторів (по центру, Times New Roman, 14 пт., звичайний);
– назва ЗВО (по центру, Times New Roman, 14 пт., курсив);
– повна адреса ЗВО або місця роботи автора (по центру, Times New Roman, 14 пт., курсив);
– адреса електронної пошти;
– ORCID (обов'язково);
– анотація (200-250 слів), яка містить стисле формулювання змісту статті (вирівнювання – по ширині сторінки, Times New Roman, 14 пт., звичайний);
– ключові слова (до 10 слів) (вирівнювання – по ширині сторінки, Times New Roman, 14 пт., курсив);

Після цього з абзацу викладається основний текст статті (вирівнювання – по ширині сторінки, Times New Roman, 14 пт., міжрядковий інтервал 1,5).

Структура основної частини рукопису українською/ російською мовою:

І. Постановка проблеми в загальному вигляді та її зв'язок з важливими науковими чи практичними завданнями.

ІІ. Аналіз останніх досліджень і публікацій, у яких започатковано розв'язання даної проблеми і на які спирається автор (з обов'язковими посиланнями в тексті на використану наукову літературу!!!), виділення невирішених раніше частин загальної проблеми, котрим присвячується стаття.

ІІІ. Формулювання цілей статті (постановка завдання).

ІV. Виклад основного матеріалу дослідження з повним обґрунтуванням отриманих наукових результатів.

V. Висновки і перспективи подальших досліджень у даному напрямку.

VI. Література. Оформлюється відповідно до вимог Національного стандарту України ДСТУ 8302:2015.

ЛИШЕ ПІСЛЯ ПРОХОДЖЕННЯ ВНУТРІШНЬОГО РЕЦЕНЗУВАННЯ АВТОР НАДАЄ ПЕРЕКЛАД СТАТТІ АНГЛІЙСЬКОЮ МОВОЮ.

Схема побудови англомовної статті аналогічна українському/російському варіанту:
– UDC у верхньому лівому кутку аркуша (Times New Roman, 14 пт., звичайний);
– назва статті великими літерами по центру (Times New Roman, 14 пт., напівжирний);
– ПІБ авторів (по центру, Times New Roman, 14 пт., звичайний);
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– повна адреса ЗВО або місця роботи автора (по центру, Times New Roman, 14 пт., курсив);
– адреса електронної пошти (по центру, Times New Roman, 14 пт., звичайний);
– анотація англійською мовою розширена (1800 знаків) (вирівнювання – по ширині сторінки, Times New Roman, 14 пт., звичайний);
– ключові слова (key words) – до 10 слів – (вирівнювання – по ширині сторінки, Times New Roman, 14 пт., курсив).

☞ *До уваги авторів*: після ключових слів англійською мовою необхідно надати цей блок інформації (крім УДК) також українською, вимоги до оформлення зберігаються.

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I. Statement of the problem (Постановка проблеми);
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III. Objectives of the article (Формулювання цілей статті);
IV. The main material of the research (Виклад основного матеріалу дослідження);
V. Conclusions (Висновки);
VI. References (Література), оформлюється за міжнародним бібліографічним стандартом. Приклади оформлення: http://visnykznu.org/pages/1767.ukr.html

ВАЖЛИВО! Кожен рисунок включається до тексту у вигляді одного графічного об'єкта (положення об'єкта «В тексте»).

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1. Текст статті, оформлений відповідно до встановлених вимог.
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Кожній статті, починаючи з № 4 2018 року, присвоюється DOI.

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Збірник наукових праць

ФІНАНСОВІ СТРАТЕГІЇ ІННОВАЦІЙНОГО РОЗВИТКУ ЕКОНОМІКИ

Випуск 3 (51), 2021

Комп'ютерна верстка – І.І. Стратій
Коректура – В.В. Ізак

ГЕЛЬВЕТИКА
ВИДАВНИЧИЙ ДІМ

WWW.HELVETICA.UA

Підписано до друку: 30.09.2021.
Формат 60x84/8. Гарнітура Times New Roman.
Папір офсет. Цифровий друк. Ум. друк. арк. 14,88.
Замов. № 0222/052. Наклад 100 прим.

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Свідоцтво суб'єкта видавничої справи
ДК № 6424 від 04.10.2018 р.