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BUSINESS SAFETY IN POST-TRANSFORMATION ECONOMIES

ZHYVKO Zinaida,
Doctor of Economics, Professor, Professor at the Department of Management,
Lviv State University of Internal Affairs
ORCID: *https://orcid.org/0000-0002-4045-669X*

AS'AD Muhammad Uhaib,
Dr., lecturer at Faculty of Social and Political Sciences,
Islamic University of Kalimantan, Banjarmsin Indonesia
ORCID: *https://orcid.org/0000 - 3645 - 2706*

HOLOVACH Tetiana,
Department of Foreign Languages and Culture of Professional Speech ,
Lviv State University of Internal Affairs
ORCID: *https://orcid.org/0000-0002-6665-4416*

MARTYN Olga,
Lviv State University of Vital Activity Safety
ORCID: *https://orcid.org/0000-0002-1947-8982*

Abstract*. The article examines the historical aspects of the business security formation in the post-transformation economies of Europe. The general features and ways of adaptation of Central and Eastern European countries to the European Union, the directions of the activities of state authorities in strengthening economic security at the post-transformation stage of development, and countering the criminalization of the economy have been determined.*

Keywords*: business, CEE countries, post-transformation economy, security, socio-economic and political transformation, legal and social support.*

JEL Classification: O10, O20, K20, L26
UDC: 334.7:330.101:346.1(4)

Introduction. Problem Statement

The formation of the entrepreneurial environment in most of the post-transformational economies of Europe took place at the end of the 1980s. The countries of Central-Eastern Europe, leaving the socialist camp, along with political and social changes, introduced economic ones – transforming command-administrative relations into market ones. Countries that previously belonged to the same camp have re-selected various development models that meet their historical, mental, socio-cultural, and economic needs. A common feature that united most CEE countries was their desire to Europeanize: first, to enter spiritually into the community of European states, associate themselves with successful Western states and their development vectors, and then – to become full members of the European Union, adapt to its economic conditions, conduct business and develop according to his model. To determine the features of ensuring the security of business in today's conditions, it is first of all necessary to know all the disadvantages and advantages of forming a security system for enterprises in CEE countries.

Scientific Sources Review

The conceptual foundations of the problems of the formation of an entrepreneurial environment are studied in the works of such domestic and foreign scientists as E. Boyko, Z.

Varnaliy, L. Vorotina, V. Geyets, M. Zhyvko, V. Kravtsov, N. Mikul, M. Nyzhnyi. However, the current conditions of the post-transformation stage of economic development and complications of financial relations as a result of the global financial and economic crisis actualize the need to substantiate the most effective research priorities for the entrepreneurial sector of the domestic economy. According to a large number of researchers today we are "on the threshold of a new era of synthesis." In all intellectual spheres of activity, from the exact sciences to sociology, psychology, and economics, especially economics, we are likely to see a return to large-scale thinking, to a general theory, to putting parts together" [1, p. 190].

Purpose of the Article

Explore the historical aspects of the formation of business security in the post-transformation economies of Europe. To determine the general features and ways of adaptation of Central and Eastern European countries to the European Union, the directions of the activities of state authorities in strengthening economic security at the post-transformation stage of development and countering the criminalization of the economy.

Presentation of the Main Material

In the early 1990s, for the CEE countries, the adaptation of the European development model meant passing through four stages: 1) restoration of European institutions, 2) establishment of structural compatibility at the institutional and legal level, 3) formation of regional associations and regional cooperation, 4) transformation of civil society, culture, behavior patterns and the implementation of democratic values.

Table 1. Institutional Support for the Transformation and Development of Economic Security Systems in CEE Countries

Organization, association	Year of foundation	Purpose of creation, the direction of action	Number of participants
Central European Initiative	1992 (based on the "Quadrogonale" association, created in 1989)	Establishment of multilateral cooperation in the political, socio- economic, scientific, and cultural spheres and assistance on this basis to the strengthening of stability and security in the region: - Assistance in the adaptation of state mechanisms of the participating countries to European standards; - Enhancing the participation of enterprises in the implementation of projects singing cooperation within the framework of the Initiative; - Strengthening the security of the region.	18 countries: Albania, Austria, Belarus, Bulgaria, Bosnia and Herzegovyna, Italy, Macedonia, Moldova, Poland, Romania, Serbia, Slovakia, Slovenia, Croatia, Czech Republic, Montenegro, Hungary, Ukraine (the year of Ukraine's representation in CEI is 2012)
BSEC (Organization of the Black Sea Economic Cooperation)	1992	Development of cooperation in the Black Sea region: - Promotion of joint integration projects (regional free trade zone, transport corridor, energy projects). One of the 4 key areas is entrepreneurial: there is the BSEC Business Council – a body for coordinating entrepreneurial initiatives	12 countries of the Black Sea region: Azerbaijan, Albania, Bulgaria, Armenia, Greece, Georgia, Moldova, Russia, Romania, Serbia, Turkey, Ukraine
Cooperation of the Carpathian Regions (Carpathian Euro Region)	1993	- implementation of infrastructure projects on the state border, in the field of transport, tourism, environmental protection, - assistance in the implementation of an innovative model of regional development, - strengthening of economic ties and entrepreneurial activity	19 border administrative-territorial units from 5 countries of Ukraine, Poland, Slovakia, Hungary, Romania:

Socio-political and economic transformations required the simultaneous formation of an effective theme of protection and security. The security of Central and Eastern European countries gradually became an integral part of general European security and entered the key interests of the politics of great states, which in turn could not but affect the state of security in the region.

After the collapse of the socialist system, various sub-regional organizations arose and bilateral interaction between individual states deepened. The CEE countries have become participants in the Central European Initiative, BSEC, and the Carpathian Euroregion. For example, Romania developed a specific policy of subregional cooperation back in the 90s of the twentieth century – the System of "triangles" – mutually complementary trilateral cooperation pacts (with Poland and Ukraine, Bulgaria and Turkey, Moldova and Ukraine, Hungary and Austria), which allows it to be as effective as possible and take full advantage of such narrow cooperation. Each of the associations that was formed in those years focused on issues of security, protection, activation of entrepreneurship as the basis of the economy of individual member countries (Table 1).

The subregional interaction (initially covering the spheres of the economy, foreign policy and security policy) of the Visegrad Group countries was ineffective, but quite intensive, on the basis of which the Central European Free Trade Zone was created in 1993 (Slovenia entered it in 1995). Ultimately, it did not contribute to a significant revival of regional trade, so the countries began to focus on broad economic cooperation – within the EU.

Entry into various systems of social, economic, political, and cultural development allowed the CEE countries to gradually merge into the common European space, carrying out structural integration, and, consequently, systemic integration into the EU. The process of transformation of the economy and society of the CEE countries can be viewed in several dimensions (Fig. 1).

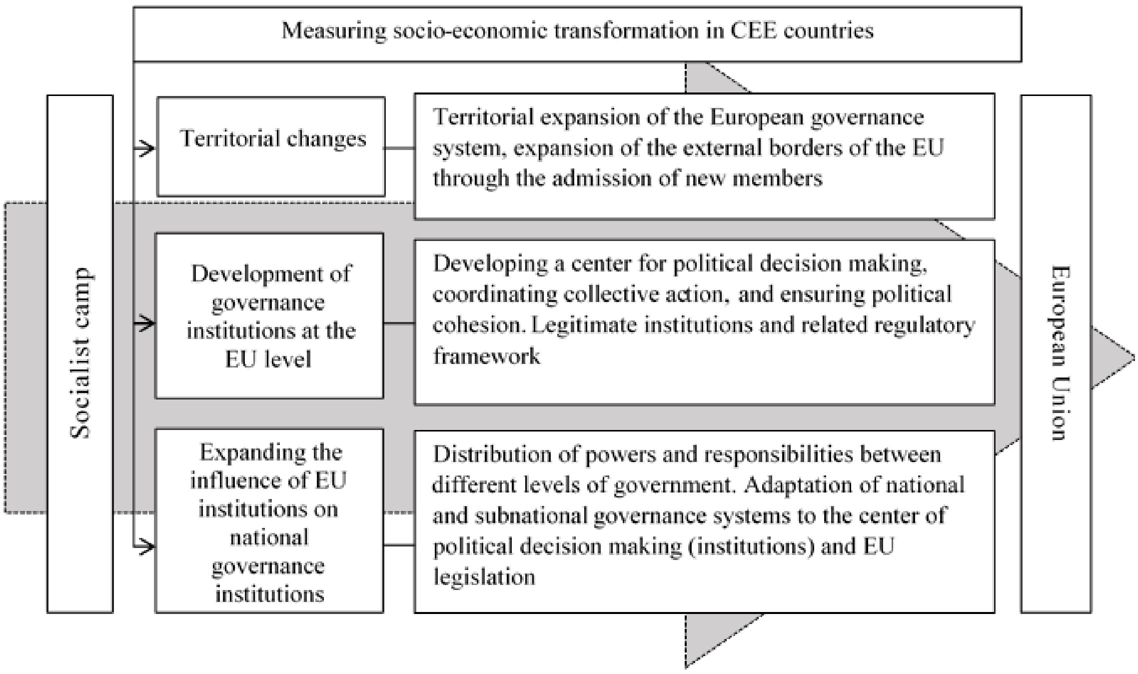

Fig. 1. Directions of transformation of the socio-economic system of CEE countries

Going through the listed stages of transformation in order to develop and form a new system of economic development and security, the states simultaneously entered a certain political project, according to which their future in Europe was built, and Europe itself strengthened its political power and weight in the world economic order.

Such a common strategy and policy was important for the European continent to unify common rules and approaches to the formation of security systems since emerging threats in one of the countries of the Union spread and affect others, and usually go beyond the union.

At the stage of institutional and legal entry into the EU, the CEE countries brought their national standards in line with the requirements of the EU single market, created appropriate agencies and institutions for supervision, and joined the rules and procedures in the field of competition. The Ministry of Economic Competition was established in the Czech Republic in 1990, and the Competition Department was established in Estonia in 1993, subordinated to the Ministry of Finance [2].

The countries of Eastern Europe in the period of socio-economic and political transformation felt the need for a model of economic policy with an emphasis on the encouragement and development of entrepreneurship, which was absent during the communist regime, and when a market economy was emerging, demanded priority attention. In a state that creates favorable conditions for the development of entrepreneurship, initiatives appear to form a powerful middle class based on small and medium-sized businesses, and then the entire civil society moves on to creating a common democratic and socially fair governance system.

Trying to promote the development of private initiatives and entrepreneurship, the countries of Eastern Europe introduced such strategic approaches to economic management, which were promoted at the level of political programs: (1) legitimizing the inalienable right of personal economic initiative, access to legal incorporation for people who worked in informal or illegal sectors; providing legal and social support for economic activities to citizens who worked in the informal sector, and creating conditions for them to receive such support; creation of accessible lending institutions, which could also provide recommendations for organizing a successful enterprise; promoting the establishment of private house and land tenure with property rights (including the right to buy and sell real estate) through an appropriate legal and tax framework; allocation of shares of enterprises for employees of state-owned enterprises in accordance with previously drawn up plans; privatization of most state-owned enterprises through the creation of a broad system of public ownership; emphasis in educational programs on the advantages of initiative, entrepreneurship, invention and social cooperation, including the corresponding items of social spending in budgets of various levels, strengthening the non-state sector by laws and a tax system, contributing to the creation and development of funds and other forms of private support as an additional source of innovation and satisfaction of social needs; introduction of clear rules for compliance with copyright protection legislation to maintain innovative activity in society and to emphasize the contribution of inventors to scientific and technological progress [3].

Such priority program measures allowed citizens to engage in private entrepreneurship and form a powerful system of entrepreneurial activity, which formed the basis for the formation of a developed market economy.

During the transition from communist to capitalist economic management and the entry of the CEE states into the European and world economic space, it was necessary to take into account the global trends of economic development, which extended the processes of globalization to regions, individual countries, and business entities. The interaction of enterprises, governments, social groups, and movements in the system of forming a strategy for the development of the global economy is disclosed in Fig. 2.

New forms of global economic relations have prompted the countries of Eastern Europe to adopt adequate strategies for the development and strengthening of entrepreneurship. Although during the existence of the socialist camp in the CEE countries, entrepreneurship developed (in trade, agriculture, services), it was based on the principles of self-development and was perceived as a "relic" of the capitalist past. With the change in the global environment, there is a need to intensify entrepreneurial activity, modifying it and using Western business models. Thus, in the early 1980s, small cooperatives began to appear in Hungary (employing about 40 people). To support the development of small businesses in Hungary, a legislative limitation was introduced on the number of people working in small businesses – up to 100 people. Such restrictive measures were necessary due to the defectiveness of the existence of cooperatives in this country in communist times, when under the influence of "giant mania" they grew to the scale of large firms. Due to the support of small business, the use of the advantages of small forms of management was ensured – through the simplification of the management of production processes, the combination of management and production functions, and the fairness of income distribution.

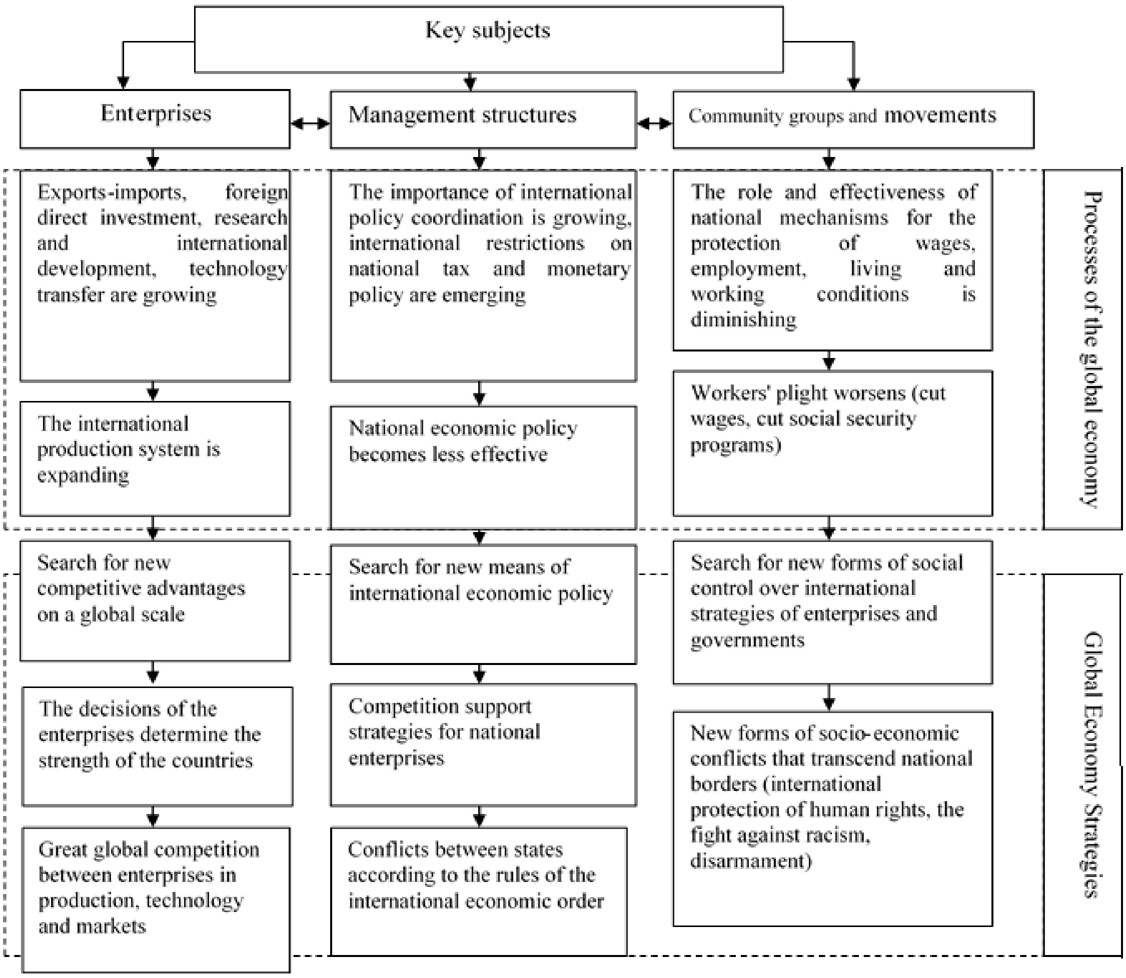

Fig. 2. Entrepreneurship and the economic management structure of the CEE countries in the system of forming the global economy (*compiled according to [4])*

In parallel with the creation of new small cooperatives (more than 2 thousand of them were created before 1987), the already existing large cooperatives were fragmented.

Specific associations of large and small businesses – the "symbiosis" of a large enterprise with several small specialized cooperatives (SC), have significantly applied to the formation of business security systems in Hungary. Concerning small cooperatives, large firms played the role of "protector and controller", and, if necessary, could liquidate them. In fact, as a separate legal entity, such SCs were not provided with a sufficient level of protection and were dependent on the activities of large partner firms. Despite the "legal instability" of the existence of such forms of management, specialized cooperatives in the post-transformation period of the Hungarian economy gained great popularity and until 1986 there were more than 2 million of them.

The system of entrepreneurial activity in Bulgaria was formed similarly – there the emphasis was on the development of small enterprises (but not cooperatives, as in Hungary), which were created according to clear rules and requirements. To open such a business, an entrepreneur had to first pass a competitive selection – applications were assessed according to 20 criteria, which concerned both the possibility of export, the production of import-substituting products, and the possibility of rational use of local raw materials and labor resources. Most of these enterprises in the country were established based on state ownership, which significantly distinguished them from the entrepreneurial structures of developed Western countries. This form of entrepreneurship was one of the most widespread in Eastern Europe and became a kind of "transitional stage" from a command-administrative form of management to a market economy. This intermediate stage in the development of entrepreneurship was typical for most countries with economies in transition.

Small business has also spread in Poland, where, although it was earlier, it received a high rate of development in the 80s. In the mid-1980s, small entrepreneurs here provided about 66% of household services to the population. With the beginning of the market transformation of the command and administrative system of management, private enterprises began to expand their scope of activity, entering the market of high technology products. Polish private enterprises started producing high-quality chemical products, certain types of medical equipment, and computer technology. In turn, the state provided guarantees for the existence of such enterprises: a law on business societies was adopted and tax benefits were provided (Table 2).

Table 2. Forms of organizing entrepreneurship in Eastern Europe during the period of socio-economic and political transformations

№	The country	Forms of organization of entrepreneurship	Types of government support	Requirements and Limitations
1.	Poland	Cooperatives, small and joint ventures, individual entrepreneurship	Tax incentives	Business Companies Law
2.	Hungary	Small cooperatives, specialized cooperative groups, small businesses, labor societies, individual entrepreneurs	Tax incentives	The Law on Business Companies, the creation of a small business on a competitive basis, the presence of a feasibility study
3.	Bulgaria	Small businesses, joint stock companies, individual entrepreneurship	Centralized capital investment fund (15% of the total volume of investment in the sphere of material production), bank of economic initiatives, funds of ministries, tax incentives	Law on business companies, founding a small enterprise and joint-stock company on a competitive basis, a feasibility study

** Compiled according to [5]*

The key approaches to the formation of the entrepreneurship system in the countries of Eastern Europe were: 1) denationalization, 2) privatization, 3) restructuring of the economy with an increase in the share of the private sector (for example, in Hungary, the share of private property in the industry was planned to increase 20 times). In general, the results of the functioning of entrepreneurial structures in the context of transformational shifts have confirmed their ability to quickly solve key socio-economic problems associated with ensuring employment of the population during the period of the state sector reduction and privatization of state-owned enterprises.

However, the period of transformations in the CEE countries, along with positive ones, had negative consequences. The sudden transition from one type of management to another and, in general, a different perception of the world does not provide the same rapid restructuring of the economic thinking of the majority of citizens of the former socialist camp. In addition to the difference in economic approaches to economic management, such a feature as the lack of basic economic knowledge and work experience as independent entrepreneurs or leaders of independent business entities has a negative impact on the entire business sector: along with the growth of entrepreneurial activity, fraud also developed actively. Entrepreneurs with different approaches and unconventional thinking turned out to be ready for such changes, but the commercial structures they created were previously focused on illegal activities and the rapid (often illegal) enrichment of their owners.

In the period preceding the formation of the economic activity protection system, both entrepreneurs and ordinary citizens suffered from illegal actions. In particular, the beginning of the 90s is known for (1) financial "pyramids" built on funds received from the population, which subsequently disappeared without a trace, (2) fictitious agreements that often caused the financial collapse of the enterprise, (3) opaque privatization of enterprises, which entailed significant losses for the former CIS countries.

In Russia, examples of such losses (lost funds to the budget) from privatization include the following key powerful business entities: Uralmash (34,000 employees – was privatized for $ 3.7 million); Chelyabinsk Metallurgical Plant (135,000 employees – 3,700,000 each); Ostankino Meat Processing Plant (privatized for 3.1 million rubles, and in 1990-1992 purchased equipment for more than 35 million US dollars). The results of the privatization process for January 1992 – July 1994 indicate that during this period in Russia, on average, 109 enterprises were privatized every day and most of them with significant violations. For one and a half years in Russia in the field of privatization, approximately 77 crimes were registered every day), while in the Czech Republic, over three years of privatization, 104 court cases were initiated.

Transformational processes in entrepreneurship not only in Russia but also in most post-socialist countries were characterized by criminality. In Ukraine, in particular, economic crime began to gain momentum in 1993 and reached a peak in 1996. The impediment to the development of entrepreneurship was the imperfection of the legal framework and illiterate actions of businessmen themselves, which did not contribute to business security: among the surveyed entrepreneurs at that time were well prepared for work in market conditions only about 9%, satisfactory – 43%, poor – 48%. A survey of managers of large and medium-sized enterprises in Ukraine confirmed that only 19% of respondents believe their business is protected from criminal encroachment and more than 70% of respondents are unable to fully trust partners and staff because they are not confident in their safety [6]. The consequences of such economic behavior and thinking are short-sightedness in planning their own business and lack of desire to improve production.

World practice shows that the economic security of entrepreneurship, along with state bodies, is also ensured by a wide network of non-state structures. The share of non-governmental organizations of economic security in Western countries is from 50 to 80% of the total number of organizations to combat crime. In Ukraine, the formation of a system for ensuring the security of entrepreneurship at the state level began with the creation of the Security Service of Ukraine (based (on the replacement of the State Security Committee of the Ukrainian USSR) by a parliamentary decree "On the establishment of the National Security Service of Ukraine" on September 20, 1991), the priorities of which include: (1) joining efforts to expand the civilized provision of economic security; (2) assisting the authorities in implementing programs to combat crime and strengthen the rule of law; (3) protection and representation of the legitimate interests of its members in state bodies and public organizations, etc.

During the period of socio-economic transformations, the complexity and inconsistency of the processes of political, economic, and social shifts, the strengthening of criminal encroachments in the field of entrepreneurship hampered the implementation of reforms in the country, restrained the inflow of investments into the economy, scaring off foreign investors and partners. This situation has created the preconditions for the development of criminal structures that have undertaken to control the processes in the economy, solving problems by force. Such a spread of criminal influence occurred not only in the sphere of small business, but it was also introduced into the most profitable areas of legal business: financial, banking, export-import operations, fuel, and energy complex. Along with the development of the economy and market structures, the development of criminal gangs took place, with the use of all the achievements of world progress through professionalization, improvement of the organizational structure, internationalization, and the introduction of criminal lobbying.

Since such actions caused serious economic damage to the country's economy and individual business entities, an objective need arose for the formation of a system: (1) detection of illegal economic actions and their further prevention (concluding unfair transactions, identifying fraudulent companies), (2) promoting legal solutions to problematic issues, (3) the establishment of an information base for monitoring accounts receivable and payable and (4) providing access to information (for example, to form a joint creditor in bankruptcy cases).

The next period of economic transformations was 2009-2010, where reforms were required by the economy, which suffered from the global financial crisis. Among the priority issues that required an immediate solution were: a high level of non-payments, the existence of a significant number of non-viable enterprises, and excess production capacity, support, and development of small and medium-sized businesses. Large and medium-sized enterprises began to pay more and more attention to issues of economic security: they created their security services, equipped with expensive tools, and were provided with a large staff. However, this creation of local security systems at enterprises turned out to be insufficiently effective, the reasons for which were the following factors: insufficient economic training of former law enforcement officers, since they became the basis of the security services; complications in the organization of activities due to the lack of legislative regulation of the activities of security services and non-state structures, the lack of established ties between organizations working in the field of ensuring the economic security of entrepreneurship.

The choice of a model of geoeconomic development was crucial for the CEE countries at the stage of post-transformational development, as it determined the further directions of the formation of their system of the national economy and ensuring national security and, in particular, its component such as economic security. In the CEE countries – members of the former socialist camp in the period after the collapse of the communist system, Model 1 was never taken as the basis for large-scale socio-economic reforms. However, there were attempts to apply this model locally in the field of payment relations: primarily through projects to create a multilateral payment system to overcome the difficulties that arose in connection with a sharp transition to settlements in freely convertible currency. In these countries, the economic, social, and political gap with the countries – former partners in the socialist camp was perceived calmly, without causing excessive difficulties, especially where systemic transformations and macroeconomic stabilization were successfully carried out (Poland, Hungary, Czech Republic). These countries have officially refused to consider any initiatives in the direction of the above model.

On the other hand, the countries of the former Soviet Union, without choosing the model of a complete geo-economic reorientation, actually remained in the same geo-economic space, retaining the approaches to economic management and business activity behind the former Soviet approaches, making an unsuccessful attempt to combine the "capitalist" and "communist" methods of forming the economic system and experiencing the negative consequences of the "criminogenic" stage of the formation of entrepreneurship in the countries. Having abandoned the model of geo-economic reorientation, these countries have lost the opportunity to take advantage of the implementation of a decisive structural maneuver in economic reforms, the attraction of modern technologies to the economy, and orientation to markets with higher demands as an incentive to accelerate competitiveness.

Conclusion

According to the analysis, practically each of the countries – republics of the former USSR, which agreed to continue the joint path of socio-economic development within the CIS, went through an identical negative period of criminalization of business, which preceded the stage of developing a civilized strategy for ensuring the economic security of both the state as a whole and entrepreneurial activity in particular.

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THE ROLE OF LOCAL PUBLIC AUTHORITIES OF LEVEL I IN RESPECTING ECONOMICE, SOCIAL AND CULTURAL RIGHTS

NEDELCU Ana,
PhD in economics, associate professor,
Cahul State University „B.P.Hasdeu", Republic of Moldova
e-mail: nedelcu.ana@usch.md
ORCID ID: 0000-0002-3980-110X

***Abstract**: On national level, the Constitution of Republic of Moldova stipulates general provisions of economic, social and cultural rights. Other laws clarifies how public authorities on different levels should protect the economic, social and cultural rights.*

This research paper aims to analyse the ensuring of the protection of economic, social and cultural rights by the local public authorities of level I through the evolution of the programs financed from the local budget of Cahul municipality.

This research paper is developed within the project "Human Rights in the Republic of Moldova: financial dimension and consolidation through the efficient public expenditures management" (code 20.80009.0807.35).

***Key words**: economic, social and cultural rights; the competences of local public authorities; local budget.*

JEL classification: K38, H72
UDC: 346.1:351.72(478-21)

Introduction

Based on the texts of the Universal Declaration of Human Rights and the International Covenant on Economic, Social and Cultural Rights, human rights can be divided in few main categories:

- Civil rights, such as right to life, human treatement etc.
- Political rights, such as freedom of association, right to petition etc.
- And economic, social and cultural rights, that include right to work, right to equal remuneration, the right of everyone to education, the right of everyone to take part in cultural life etc.

On national level, economic, social and cultural rights are mainly reflected in the Constitution of Republic of Moldova, which provides stipulations on following rights:

➢ ***Freedom of creation*** (Article 33), which refers to the right of citizens to intellectual property, their material and moral interests arising in connection with various kinds of intellectual creation are protected by law.

➢ ***The right to education*** (Article 35) provides that high school, vocational and state higher education are equally accessible to all, on the basis of merit, and the priority right to choose the sphere of education of children belongs to parents.

➢ ***The right to health care*** (Article 36) is guaranteed by the state, and the minimum health insurance provided by the state is free.

➢ ***The right to a healthy environment*** (Article 37) provides that everyone has the right to an environmentally sound environmentally friendly environment for life and health, as well as for harmless food and household items.

➢ ***The right to work and to protection at work*** (Article 43) presupposes that everyone has the right to work, to free choice of employment, to just and favorable conditions of work and to protection against unemployment. The Constitution also stipulates that employees have the right to labor protection.

➢ ***Prohibition of forced labor*** (Article 44) stipulates that forced labor is prohibited.

➢ ***The right to private property and its protection*** (Article 46) guarantee the right to private property, as well as claims on the state. The Constitution also guarantees the right to inherit private property.

➢ ***The right to social assistance and protection*** (Article 47) refers to the right of everyone to a decent standard of living, as well as to insurance in case of: unemployment, illness, disability, widowhood, old age or in other cases of loss of livelihood, due to circumstances beyond their control.

➢ ***The family*** (Article 48) is the natural and fundamental group unit of society and is entitled to protection by society and the State.

➢ ***The protection of the family and orphans*** (Article 49) includes economic and other measures, through which the State facilitates the formation of the family, the protection of maternity, children and young people, stimulating the development of the necessary institutions. The Constitution also guarantees the maintenance, training and education of orphans and those without parental care, which belong to the state and society.

➢ ***The protection of the mother, children and young people*** (Article 50) provides for the right to special assistance and protection. Children and young people also enjoy a special assistance system in the realization of their rights. Public authorities provide conditions for the free participation of young people in the social, economic, cultural and sporting life of the country.

➢ ***The protection of persons with disabilities*** (Article 51) provides that persons with disabilities enjoy special protection from society as a whole, and the State provides them with normal conditions of treatment, rehabilitation, education, training and social integration.

The Constitution guarantees that the state will respect the rights of citizens, and various organic laws specify what levels of public authorities are involved in promoting human rights, especially economic, social and cultural rights.

Thus, researching the provisions of Law No. 35 of December 28, 2006 on administrative decentralization, we find that the competences of public authorities of level I refer to the respecting of the following economic, social and cultural rights:

- ***The right to a healthy environment***, manifested by the attributions of the local public authorities in the management of the green spaces of local interest; the collection, staged provision of conditions for separate collection and transportation of waste, including sanitation and maintenance of land for storage; distribution of drinking water, construction and maintenance of sewage and wastewater treatment systems.
- ***Protecting children and young people by building, managing, maintaining and equipping pre-school and extracurricular institutions*** (nurseries, kindergartens, art and music schools), by organizing cultural, sports and youth activities, and by planning, developing and managing the necessary infrastructures for these types of activities.
- ***The economic rights*** of the local citizens by arranging the agricultural markets, commercial spaces, carrying out any other measures necessary for the economic development of the administrative-territorial unit, as well as establishing and managing municipal enterprises and organizing any other activity necessary for the economic development of the administrative-territorial unit. .
- ***Protecting the family as a basic unit of society, as well as vulnerable people*** through the construction of housing and providing other types of facilities for the socially vulnerable, as well as for other categories of the population;

Also, the local public authorities of level I contribute, in accordance with the law, to ***the protection of the cultural heritage and public monuments*** on the administered territory, at the same time ensuring the access of the population to the library services on the administered territory.

Based on these general competencies, the law on local public administration no. 436 of December 28, 2006 delimits the attributions of the local councils (deliberative authority) and the attributions of the mayors (executive authority).

Thus, the local council makes essential decisions, which contribute to the protection of the economic rights of local citizens, such as the design, construction, maintenance and modernization of the entire economic infrastructure, the establishment of municipal enterprises and companies, approval of studies, forecasts and economic and social development program, the approval of the regulation for the development of trade activities in the locality, the establishment and organization of fairs and markets, ensuring their proper functioning. The local council is also concerned with ensuring the social and cultural rights of citizens through the following: design, construction, maintenance and modernization of local social, medical and leisure infrastructure; the establishment and organization of parks and places of entertainment and recreation, sports facilities, ensuring their proper functioning; approval of social services development programs; organizing cultural, artistic, sports and leisure activities of local interest; protection of the immovable cultural heritage; providing, supporting and developing library services.

The local council is the guarantor of the realization of the right to a healthy environment, so the council decides on cutting, deforestation of trees and shrubs in public green spaces, on rules to ensure cleanliness in the locality, and approves the permissible limits on the use of natural resources of local interest. Moreover, we highlight the role of the local council in ensuring the social protection of local citizens, achieved through measures of protection and social assistance, protection of children's rights; by identifying the socially vulnerable people who need to improve their living conditions; establishing and ensuring the functioning of charitable institutions of local interest; the establishment of the function of community mediator in the compact or mixed localities populated by Roma; establishing the position of specialist for the protection of children's rights;

Finally, we note that the local council ensures the public consultation, in accordance with the law, of draft decisions on issues of local interest that may have an economic, environmental and social impact (on lifestyle and human rights, on culture, health and social protection, on public services).

Along with the local council, an important role in ensuring respect for human rights is played by the mayor of the locality, who carries out operational actions, as follows:

- supervises the activities in fairs, markets, fields, parks, green spaces, places of entertainment and leisure and takes operative measures for their good functioning;
- contributes to the protection of the immovable cultural heritage;
- organizes studies on the types of social services needed by the community, elaborates and proposes for approval to the local council, according to the established needs, programs for the development of social services;
- leads, coordinates and controls the activity of local public services;
- presents to the local council, annually and whenever necessary, reports on the socio-economic situation of the village (commune), the city (municipality);
- exercises the attributions of local tutelary authority in accordance with the law;
- coordinates the activity of social assistance regarding children, the elderly, people with disabilities, families with many children, families affected by domestic violence, other categories of socially vulnerable people, supports the activity of public utility associations in the village (commune), city municipality).

Research methodology

Following the above, we conclude that the legislation in force, in an effort to ensure respect for economic, social and cultural rights, clearly delimits the areas of competence between the levels of public authorities, but the effectiveness of the delimitation of tasks can be assessed only in terms of financing the protection of economic, social and cultural on the local level.

The elaboration of the public budget in the Republic of Moldova is done by using the budget classification, which allows us to analyze the planning and execution of the public budget from several perspectives:

- the organizational classification reflects the structure of public revenues and expenditures by institutions financed from a public budget;
- the functional classification refers to the distribution of both public financial resources and public expenditures on the functions of public authorities;
- the economic classification provides us with the most detailed structure of public revenues, expenditures and obligations, as well as of the public patrimony, being used in the accounting of the collection of revenues, execution of expenditures and patrimonial movements.
- The classification of sources indicates the sources of financing public transactions;
- Program classification is the tool for measuring the performance of public finance management, providing a more complex picture of public funding, by indicating the purpose and objectives, as well as performance indicators to be achieved. This classification is the most appropriate tool for budget monitoring from human rights perspective.

In this context, the present research aims to analyze the ensuring of the protection of economic, social and cultural rights by the local public authorities of level I through the evolution of the programs financed from the local budget of Cahul municipality.

Research results

The analysis of data on the budget of Cahul municipality according to the classification by programs for the period 2017-2021 reveals the following structure of the budget by financing programs: exercise of government, management of reserve and intervention funds, development of roads, development of housing and communal services, supply water and sewerage, street lighting, cultural development, protection and enhancement of cultural heritage (Cahul Museum), sports, youth, early education and extracurricular institutions.

The largest share belongs to the program "Early Education" - 35.58%, however the following programs also enjoy significant funding: the program "Road Development" - 16.53%, the program "Management of intervention funds and reserve "- 10.68%, as well as the program" Development of housing and communal services "- 9.51%. The lowest share in local public funding belongs to the "Youth" program - 0.15% (figure 1).

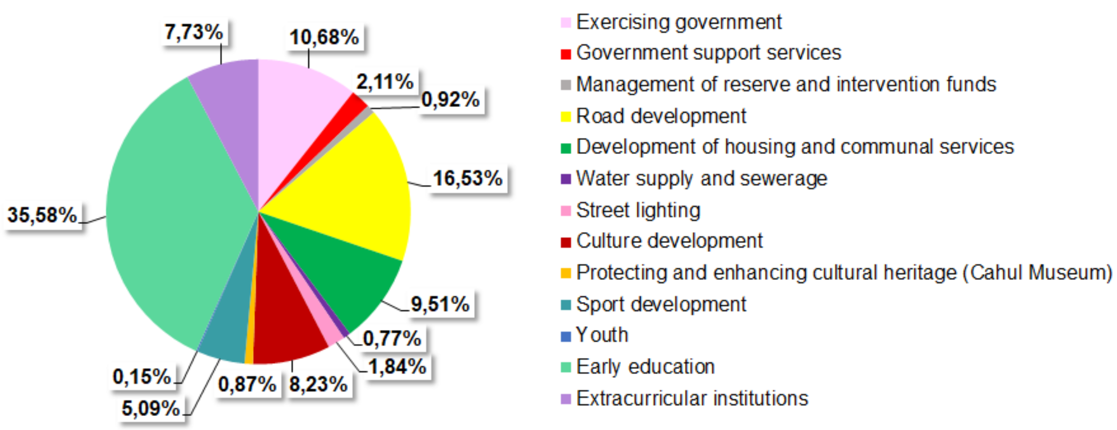

Figure 1. The structure of public expenditures of Cahul municipality according to the classification by programs for 2021,%
Source: developed by the author based on data provided by the City Hall of Cahul

Some of these programs offer the opportunity of the evaluation of public policies in terms of respect for economic, social and cultural rights. Thus, the "Early Education" program refers to the financing of kindergartens, and the "Extracurricular Institutions" program refers to the financing of the activity of extracurricular institutions, such as art and music schools, creative center within the Palace of Culture. The program "Development of housing and communal services" refers to the arrangement of green spaces, the development of public infrastructure (playgrounds) and paving sidewalks, etc. The "Development of Culture" and "Protection of Cultural Heritage" programs cover the financing of cultural institutions and their activities. The "Sports" program contains funding for sports institutions, sports events organized by the City Hall in partnership with sports clubs and schools. Finally, the "Youth" program refers to the funding of activities organized for young people.

The purpose of the program "Development of housing and communal services" is to ensure a clean and tidy city for the citizens of Cahul. In an effort to achieve this goal, several objectives have been formulated, namely: the installation of 150 waste collection bins to ensure cleaner public areas, the development of more green spaces for recreation (for men, women, boys and girls) and the arrangement of 15 playgrounds to increase the facilities of recreation for children and young people in the city. Budgeting according to the classification by programs implies the establishment of some performance indicators, which will allow to determine the achievement of the predetermined objectives. In the context of this program, annually, Cahul City Hall plans the following performance indicators: the share of landscaped green spaces out of the total spaces - 5%, population involvement in local sanitation - 4% (men - 2%, women - 2%) the number of installed ballot boxes - 50, the surface of the arranged sidewalks, including easily accessible for people with disabilities - 2000 m^2, playgrounds arranged including for children with disabilities - 5.

From the data in Figure 2, we see that the evolution of funding for this program is uneven, and in recent years has been increasing, which allows planning and carrying out various development activities throughout the city, improving the quality of life of all citizens, protecting their right to a clean environment, but also providing special protection for children.

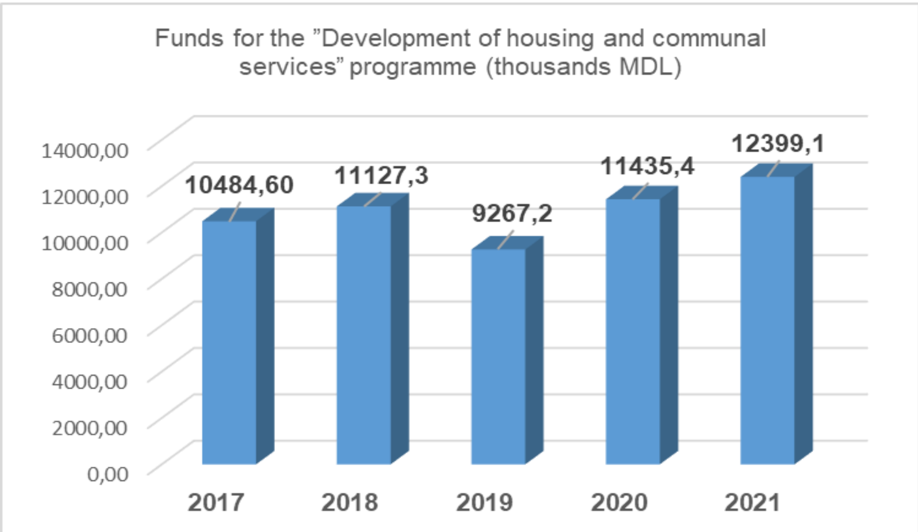

Figure 2. The evolution of funding of the "Development of housing and communal services" programme of Cahul municipality for 2017-2021, thousands of MDL (moldovan lei)
Source: developed by the author based on data provided by the City Hall of Cahul

The programs "Development of culture" and "Protection and enhancement of cultural heritage (Cahul Museum)" ensure the cultural rights of citizens of Cahul. Funding for these programs is constantly increasing, so funding in 2021 is practically twice as high as in 2017 (Figure 3).

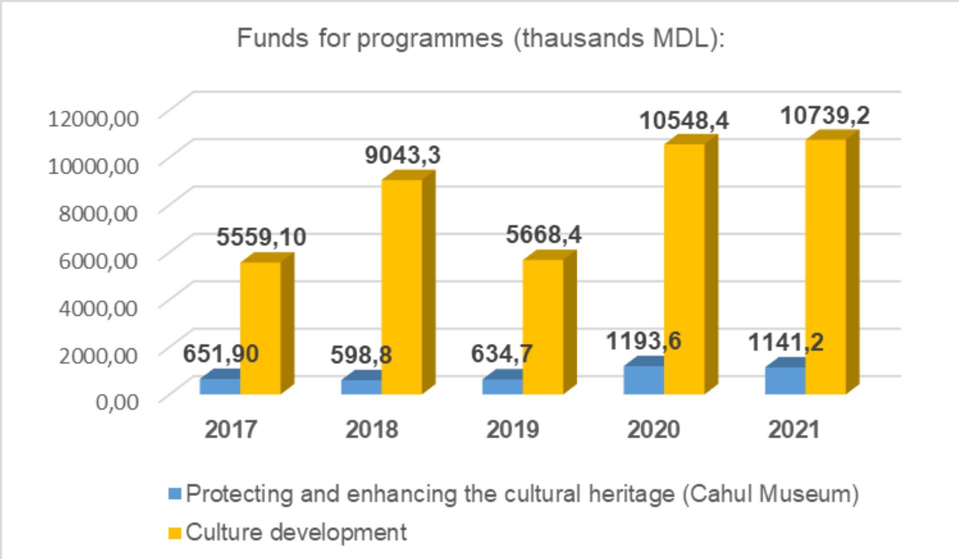

Figure 3. The evolution of funding of the "Culture development" and " Protecting and enhancing the cultural heritage (Cahul Museum)" programmes of Cahul municipality for 2017-2021, thousands of MDL (moldovan lei)

Source: developed by the author based on data provided by the City Hall of Cahul

The aims of these programs refer to the capitalization, the promotion among the population of the culture, traditions and customs, as well as the promotion of the cultural values of the locality. In the context of these goals, the following objectives are expected: organizing and carrying out 12 activities per year, increasing the number of inhabitants involved in carrying out cultural activities by 15% by 2023 (compared to 2020), and raising the cultural level of the population by cultivating the community's interests in history, culture, customs, traditions and folk costumes.

The "Development of Culture" program provides for two categories of performance indicators:

- result indicators: increase the share of green spaces arranged in the total number of spaces - annually by 5% (women - 3%, men - 2%), so that the level of the share in 2023 is 15% higher than in 2020 ;
- product indicators: the degree of increase in the number of beneficiaries of color services compared to 2021 - 4% (women - 2%, men - 2%).

Within the program "Protection and enhancement of the national cultural heritage", performance indicators from all 3 categories are specified: increase in the number of visitors - 5% (men - 2.5%, women - 2.5%) - indicator the result; number of organized museum activities - 5 - product indicator; average expenses for carrying out activities - 64.8 thousand lei - efficiency indicator.

The evolution of sports financing in Cahul municipality shows a stable growth trend, registering a level 50% higher in 2021 compared to 2017. This budget of about 6.6 million lei or about 300 thousand euros is expected for the maintenance of the sports school infrastructure financed from the municipal budget, as well as for the remuneration of the staff of this institution. Also, the "Sport development" program finances local, regional, national or even international sport events held in Cahul in cooperation with local sports clubs. Finally, the budget information shows that this program also includes the support of athletes to participate in international championships (world, European), as well as the awarding of those who have won prizes (figure 4).

Figure 4. The evolution of funding or the "Sport develpoment" programme of Cahul municipality for 2017-2021, thousands of MDL (modovan lei)
Source: developed by the author based on data provided by the City Hall of Cahul

The purpose of this program is to promote a healthy lifestyle among the local population and to encourage active involvement in various activities in the community. In order to achieve this goal, the following objectives have been formulated:

- Promoting a healthy lifestyle by organizing and carrying out 25 sports measures and activities;
- Increase by 10% the number of young people involved in sports activities by 2023, including young people;
- Improving the performance of sports competitions annually, obtaining one of the three winning places.

The program also clearly specifies performance indicators, which allow us to determine whether the stated objectives have been met:

- *Result indicators:* the share of the population involved in activities compared to 2021 - 10% (young women 5%, young men 5%);
- *Product indicators*: number of sports activities carried out in the locality - 18; the number of participations in competitions outside the locality - 20; the number of students trained in sports schools - 692 (girls - 165, boys - 527);
- *Efficiency indicators:* average organization expenses - 3 thousand lei.

The "Youth" financing program has the lowest share in the programs implemented by Cahul municipality, its evolution being uneven, the lowest value being registered in 2017 - 30.6 thousand lei, and the highest value being registered in 2020 - 500 thousand lei.

In 2021, the financing of the youth sector was reduced to 200 thousand lei, and by 2022 this program registered an increase of 50% (figure 5).

The purpose of this program is to promote and carry out youth activities, social integration of young people. In this regard, the following objectives are formulated: organizing 8 activities among young people and increasing by 15% the degree of involvement of young people in community life, including young people. This program is run by the local authority through the youth and sports specialist to ensure effective work on promoting and implementing youth policy at the local level and focuses on developing community initiatives to increase the interest of young people.

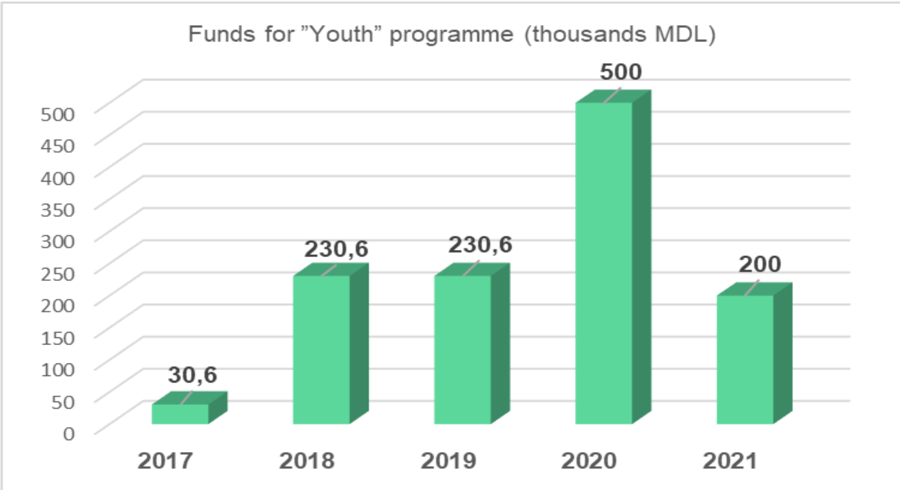

Figure 5. The evolution of „Youth" programme of Cahul municipality for 2017-2021, thousands MDL (moldovan lei)

Source: developed by the author based on data provided by the City Hall of Cahul

The Youth Program aims to achieve the following performance indicators:

- *Result indicators:* Increase in the number of young people involved in activities - 10% (young women- 5%, young men - 5%); number of organized activities, including activities promoting gender equality - 8;
- *Product indicators:* The participation rate of young people in organized measures - 5%.

The program with the highest funding, practically, in all the localities in the country is "Early Education", through which the local kindergartens are financed (Figure 6).

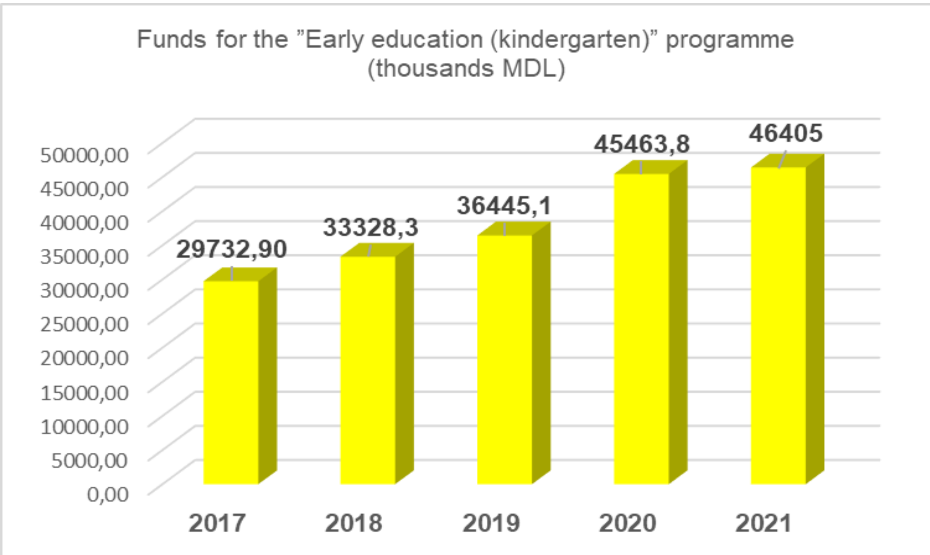

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Figure 6. The evolution of funding of the "Early education (kindergarten)" programme of Cahul municipality for 2017-2021, thousands of lei

Source: developed by the author based on data provided by the City Hall of Cahul

The eight preschool institutions are financed from the budget of Cahul municipality, and the funding rate is constantly increasing, registering a level of 46 million lei in 2021, which is about 27 million Moldovan lei more than in 2017. For 2022 the volume of funding expected for kindergartens is 8 million higher than the previous period (Figure 6).

The purpose of this program is to improve the educational process by creating optimal training conditions in the institution. Thus, in the context of this purpose, the following objectives were formulated: the provision of early education services for an average of 1800 children per year, including girls / boys; enrolling 5-6 year olds in kindergartens at a level of 100% by 2023; increase the frequency level by 10%.

In order to achieve high performance in managing financial resources under this program, the following levels for performance indicators have been proposed:

- *Result indicators:* the degree of enrollment of children aged 5-6 in preschool institutions - 100%; increasing the frequency of children in kindergartens - 2% annually; the share of expenditure on energy resources in total maintenance expenditure - 18%;

- *Product indicators:* average number of children in all kindergartens - 1850; capital repair of pre-school institutions, including for people with disabilities - 3.

The financing of extracurricular institutions increased about twice in the analyzed period, registering the level of about 10 million lei in 2021, which represents 4.3 million more than in 2017 (figure 7). This funding is directed to the maintenance of the art school and the art school, as well as the creative center within the Palace of Culture.

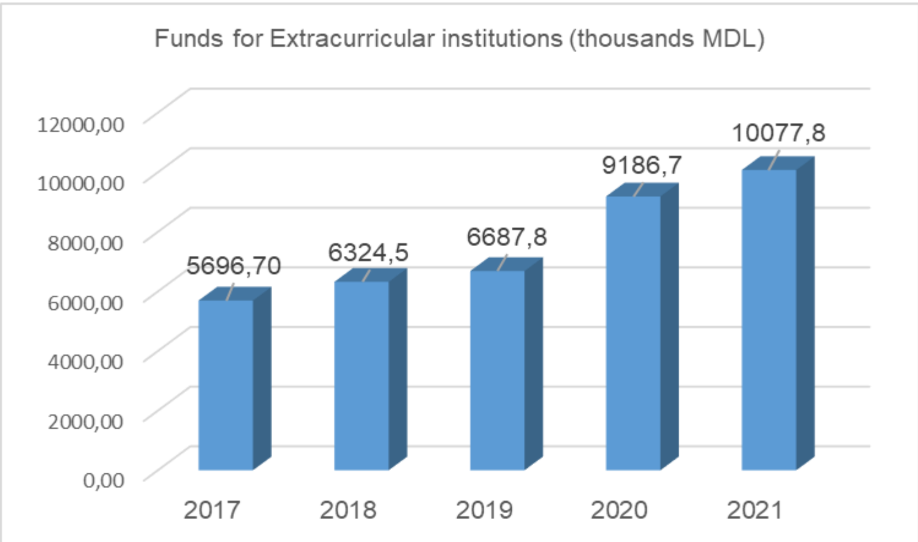

Figure 7. The evolution of „ Extracurricular institutions" programme of Cahul municipality for 2017-2021, thousands of lei

Source: developed by the author based on data provided by the City Hall of Cahul

The purpose of this program is to develop students' ability by offering different options and conditions for spending free time. The achievement of the goal was achieved by achieving the following objectives: organizing and conducting an extracurricular competition and increasing the participation of children in the city in regional, national and international competitions, including girls, boys. Under this program, the performance of public funding is assessed by the following indicators:

- *Result indicators*: increase in the number of competitions outside the locality, including participants: girls, boys - 5%;

- *Product indicators:* increase in the number of rewarded places - 2 (girls -1, boys -1);

- *Efficiency indicator*: increase in the average maintenance costs of a child - 5%.-

Discussions

Performance indicators are concrete values for sizing the performance of budget programs/ subprograms. The performance indicators used in program budgeting are as follows:

• the result indicators show the degree of achievement of the aims and objectives of the budgetary programs/ subprograms and evaluate the impact obtained;

• product indicators show the quantity of public goods produced or public services provided;

• efficiency indicators indicate the efficiency of budgetary programs/ subprogrammes by measuring the costs of goods/ services produced or time used.

Twelve programs/ subprograms are financed from the budget of Cahul municipality, of which four programs (development of housing and communal services, development of culture, early education, youth) do not contain any indicators of efficiency. At the same time, we notice that in some programs in the category of product indicators there are relevant indicators for the category of result indicators.

We also consider it appropriate to use the following indicators to measure performance:

- The program "Development of housing and communal services". Within the budget on programs developed in Cahul, this program is measured by indicators that refer to green public spaces, playgrounds and sidewalks, while an extremely important aspect is the management of municipal waste. In this regard, we consider it appropriate to add as an objective and as performance indicators aspects related to municipal waste disposal.
- "Development of culture" sub-program. Within the budget for programs developed in Cahul, this program does not provide any efficiency indicator, so we recommend including at least one of the indicators: average expenses for organizing a cultural activity, average expenses for a participant in cultural activities.
- "Early Education" sub-program. No efficiency indicators are specified in this program, so we recommend the following: moving the result indicator "share of energy resources in total maintenance costs" to the efficiency indicator, as well as adding the indicator "average maintenance costs of a child in kindergarten ".
- "Youth" sub-program. In this program we recommend the following: moving the result indicator "Number of organized activities, including activities that promote gender equality" to product indicators, as well as transferring the product indicator "Youth participation rate in organized measures" to result indicators. We also recommend the introduction of the efficiency indicator "Average costs for services provided to young people".

Conclusions

Program-based budgeting is an efficient tool for measuring the performance of public finance management, while monitoring compliance with economic, social and cultural rights. However, the effectiveness of the use of these instruments to measure public financial performance as well as to monitor the degree of protection of economic, social and cultural rights depends to a large extent on the objectives set out in the programs/ sub-programs, as well as on the relevance of the performance indicators derived from these objectives. Each public authority independently develops the content of the sub-program, so the quality of the objectives and indicators also depends on the subjective perception of civil servants regarding performance-based budgeting.

Finally, we believe that the performance and human rights approach should not only be used in budget planning but also in reporting on budget execution. The structure and content of the budget implementation report and activity report of the mayor's office do not reflect the degree of achievement of the objectives and performance indicators indicated in the program budget, which gives fragmented character to the budget process, diminishing its performance and diminishing the capacity of public authorities to monitor how public funding ensures respect for the economic, social and cultural rights of the people in its locality.

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NEGOTIATION STRATEGY - THE NEGOTIATOR'S ACE

TODOS Irina,
PhD, Associate professor,
Cahul State University „B.P.Hasdeu"
e-mail: todos.irina@usch.md
ORCID ID: 0000-0003-1012-7809

MÂNDRU Iulia,
Student,
"Business and Administrationa" Bachelor program,
Faculty of Economic Engineering and Applied Sciences,
Cahul State University „B.P.Hasdeu"
e-mail: mandru.iulia@usch.md

Abstract: *This research includes a brief overview of the major components of the negotiation strategy, the choice factors of the strategy, the strategic reflection, the major choices that define a strategy in action for the negotiator, the milestones and the principle of dosing a strategy.*

We have also analyzed certain cases in which strategic thinking is subordinated to global and final objectives, so a certain strategy may be valid in a concrete situation and completely inapplicable in other cases. Respectively, a strategic line aims at long-term effects. The strategy can be "played" or thwarted by premeditated tactical actions or by spontaneous reactions and impulsive manifestations with short-term effects. Objectives are difficult to achieve when the type of strategy chosen is not compatible with the actual situation or personal style of the negotiators. It's like putting someone to fight with weapons they don't know how to handle them skillfully.

Key words: *negotiation strategy, objectives of the negotiation, means of action and framework of the negotiation, essential elements of the negotiation, bargaining power.*

JEL Classification: L26
UDC: 658.1:334.7

Introduction

At present, strategy has an important role in commercial enterprises in its competitive development. The notion of strategy has evolved over the millennia, so it was first used in ancient times to define the "art of war." It was used in the same way in the stages of human evolution, until, in the middle of the twentieth century, this term was taken over and used in American companies on the grounds that in business "any market is a war" and the competitive struggle to ensure the survival and development of the company must be based on a strategy [3, p.14].

The concept of strategy prevailed in the theory and practice of management during the 1960s, when, in the conditions of economic recovery after World War II and then of spectacular economic development, the changes in business environments became more profound, and the answers companies to these increasingly important changes. These answers crystallized, progressively, in the strategic management system, which imposed the concept of strategy as the central element of this system [4, p.77-78].

In the last sixty years worldwide, the concept of strategy has entered the daily vocabulary of company managers, and its use has become an integral part of the management tool.

In Le Robert's dictionary, the word "strategy" is defined as "the art of leading an army until it comes into contact with the enemy." What follows after the armies collide is already a tactic. Another dictionary definition considers strategy to be "the part of military science that deals with the general conduct of war." In the second definition, Hassan Souni [8, p.113] proposes to replace the words "military" and "war" with others, in the field of business, in order to obtain "strategy is the part of the commercial sciences that concerns the general conduct of negotiations". so the negotiation strategy is a coherent plan for choosing and articulating tactics and techniques, which ensure the highest chances of achieving the objectives. From the above, it follows that the concept of strategy is familiar to the field of negotiations, an area so important for the longevity of the company.

This interest of modern companies in the negotiation strategy was caused by the frequent changes that took place at the negotiating table, thus, the negotiation process gradually becoming more dynamic and unpredictable, giving the company the opportunity to influence the evolution of negotiations.

In essence, the strategy establishes in advance a starting point (A - setting the goal), a point of arrival (Z - reaching the goal) and the mental path (planned, premeditated) from A to Z.

In almost every form of confrontation and interpersonal action, strategy and tactics are brought into play to a greater or lesser extent. In fact, much of the (negotiating) power of the parties comes from strategy and tactics, whether it is war, diplomacy, politics, business, sales, labor or family conflicts [5, p.290].

Research Methodology

The paper synthesizes meanings and approaches regarding the definition of negotiation strategies, how to choose the appropriate negotiation strategies, types of negotiation strategies that can be used by negotiators depending on the level of interest for the object of negotiation, the steps to be taken in developing a strategy, as well as the principle of dosing a strategy.

Findings

By negotiation strategy we mean *the way in which the negotiator projects the negotiation as a whole.* It is a means of organizing the elements that are likely to promote the achievement of objectives.

In a broader sense, the negotiation strategy can be compared to a coherent plan of choice and articulation of tactics and techniques, which ensures the highest chances of achieving the objectives[6, p. 52].

The strategy can be defined as a premeditated line of thinking, consisting of a series of tactical actions, aimed at long-term goals.

The tactic, in general, aims at concrete and immediate actions to capitalize on some conditions or opportunities, and the technique considers the ways to achieve the objectives that the company proposes during the negotiations[2, p. 166-171].

Thus, the strategy comprises three ***major components***:

- *overview of the future;*
- *negotiation objectives;*
- *the means used to fulfill them.*

The factors for choosing the strategy are:

a. the conjuncture in which the negotiation takes place;
b. the possible actions of the partner;
c. own resources;
d. the situation of domination or dependence on the market[1, p. 69-76].

In the negotiation process, strategy means first reflection (elaboration) and only then action. Reflection is an important aspect of the preparation, while the application is situated at the time of development and materializes through the execution of one or more chosen alternatives.

The strategy is based on the concept of a major choice for the future. Reflecting on these major strategic options allows the negotiator, on the one hand, to question the most effective ways to achieve his goal and, on the other hand, to consider counter-strategies that could be opposed. This duality of his point of view obliges the negotiator to ask himself, from the moment of preparation for the negotiation, a series of questions on the answer of which his strategic choices will depend.

Strategic thinking includes:

1. Setting priorities and objectives;

Negotiation takes place around one or more objectives (which can be broken down into distinct sub-objectives or points). These goals generally do not have the same value for participants in the negotiation process.

2. Guidance to be given (or endeavored to be obtained) in the negotiation;

As noted above, negotiation inevitably poses two problems:

- sharing the gain and seeking the satisfaction of personal goals, which cannot be achieved without involving a sacrifice on the part of the partner;
- the creation of a common value that benefits each party and that does not involve a sacrifice of the partner. These two issues determine the destructive and cooperative nature of the negotiation process.

3. Choosing the means of action and the framework for negotiation;

The strategy is to implement the means that will prove crucial in the negotiation process. The negotiator has an interest in outlining his battle plan (scenario). Thus, interventions in the environment, such as action through third parties, the formation of alliances, etc., will be planned and pre-organized.

The choice of negotiating framework (meeting place, procedures) is sometimes of strategic importance (especially in diplomatic negotiations). This should give rise to appropriate reflection on the part of the negotiator. The choice of means of action may go as far as establishing elements of finesse and detail, such as:

- the general tone of the argument;
- choosing the personality types that will make up the negotiation team.

4. Fixing exchange and folding solutions.

The strategy implies a minimum of flexibility. Likewise, the negotiator must ask himself about his attitude in the event of unforeseen difficulties, ie the possibility of a change of direction.

The interrogation process, which is the essence of strategic reflection, must lead to concrete actions.

The implementation of the strategies responds to the estimates made on the basis of preferential choices that have certain probabilities. These choices are never final, but situational and adaptable.

There are several ***major choices that define a strategy in action for the negotiator***. These elections do not fall exclusively into one of the following categories, but certain elections may continue or be completed.

1. To attack or defend (offensive strategy versus defensive strategy)

The attack will privilege its initiator by choosing and occupying the land, as well as by ensuring the ascendant in the conduct of the negotiation, ie in imposing his own scenario.

The appeal may be initiated even before the formal maintenance, through initiatives regarding the choice of procedures, places and times of meeting, etc. It translates into an offensive strategy.

The defensive strategy is to stay in a waiting position and dodge the action. It is often complemented by a counterattack strategy.

2. Being frontal or bypass (direct strategy versus indirect strategy)

In the case of the direct strategy, the negotiator is determined to approach the issues in a direct manner, without detours.

In the case of the indirect strategy, the negotiator will act progressively and calculatedly.

3. To cooperate or come into conflict

This distinction covers the integrative and conflicting aspects of the negotiation process. It reflects a preferential choice related to the nature of a situation (object, balance of power, stakes, context) or may result from the negotiator's style. The choice for conflict or cooperation must be made taking into account the opposing strategy.

In conflict strategies, it is essential to be aware in advance of the nature and type of conflict of will. This can be :

a) *conflict of values, beliefs and preferences,*
b) *conflict of interest and*
c) *conflict of instrumentation, of means[6, p. 74-75].*

4. "Opening" or "closing" the negotiation process (open versus closed strategy)

In the first case, the negotiator leaves open the field of objects and options. This type of strategy is characterized by a high degree of flexibility, but also by uncertainty about its possible ramifications. It allows you to connect seemingly unrelated issues and explore unexpected and creative ways.

An open strategy does not necessarily mean a cooperative strategy.

The closed strategy has opposite characteristics, the Negotiator is determined to reject any change in the initial strategy. Nor is there a necessary symmetry between closed strategy and distributive negotiations.

5. Responding or not responding systematically to adverse strategies

A strategic choice is to respond systematically and symmetrically to adverse strategies. It is known as "forced shooting" and has been shown to be effective.

6. Seeking full or partial agreement

One particular strategic choice is the decision to negotiate an agreement not globally but in part.

The strategy provides an overview of ***the key elements of the negotiation***:

- ✓ *objectives and priorities,*
- ✓ *alternatives in case of lack of agreement;*
- ✓ *general orientation and climate to be promoted;*
- ✓ *folding positions;*
- ✓ *major means of intervention.*

The strategy also includes ***the main means of action***:

- *cooperative or distributive initiatives and modalities;*
- *emphasis on creating common value or competitively dividing profits;*
- *degree of openness;*
- *the degree of risk-taking;*
- *ways of using time;*
- *ways to respond to partner strategies*[5, p. 269-274].

CHOOSING THE NEGOTIATION STRATEGY

The negotiation strategy resulting from the internal negotiation process will be applied by all team members in a uniform manner. At the negotiating table, the team members will present themselves with a single point of view, with a common approach, in order to achieve their proposed objectives.

The negotiation process can be compared to a dance, in which the rhythm is imposed by the teams of negotiators, which leads us to the conclusion that the negotiation process has a pronounced personal character, being influenced by the personality and character of the negotiators.

Therefore, the choice of the negotiation strategy is not and cannot be a purely theoretical action, which can be solved in perfectly rational terms, it is dependent on the character, temperament and personal style of the parties at the negotiating table. The choice of strategy is influenced by the way of approaching the problem and the partner and implicitly by the personal style of the negotiator. Thus, there are people with a competitive, dominant style, who perceive the relationship as a race to be won at any cost, more concessive people, willing to give up to keep the relationship, or flexible and cooperative people, inflexible and stubborn. In other words, it is advisable to choose for each strategy the right person or, in other words, the right person for the right strategy and vice versa, in the negotiation process, the negotiators are concerned with getting the most out of it, without trying to ignore the interests of both parties. Based on this principle, a strategy model has been developed in the literature, which takes into account the interests of the two partners, arranged in a system with two coordinate axes in the space between the two axes, five areas can be identified, each representing a specific fundamental strategy for resolving conflicts of interest (*Figure 1*).

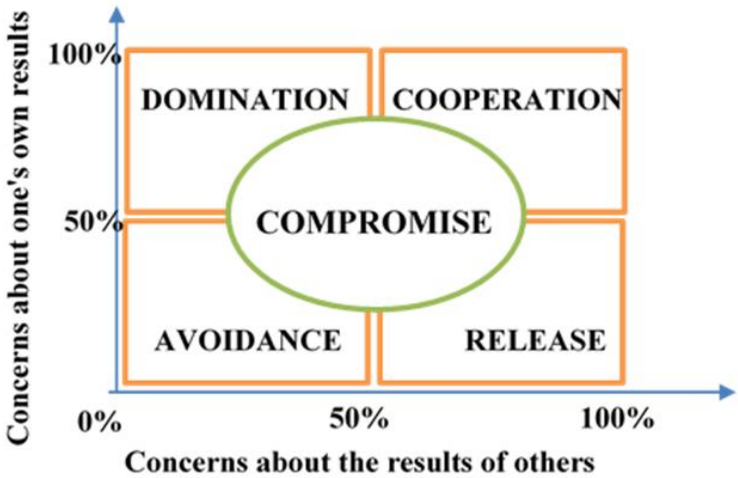

Figure 1. Conflict resolution strategy

The choice of one of the strategies depends on the negotiator's thinking, on the level of his interest in achieving his own objectives and those obtained by the partner.

The competitive strategy (domination) is specific to the negotiator who intensely pursues his own interests, without being concerned with the interests of the partner, in this sense, the negotiator uses all means and means that lead to the defeat of the opponent, such as: money, charm, alliances, manipulation, intelligence, etc.

Negotiation is seen as a competition with a single winner, using harsh, even violent attacks aimed at intimidating the opponent, causing him to give up. *The domination strategy is recommended when*:

- *opponents are aggressive;*
- *rapid and decisive action is required;*
- *the accumulated tensions do not allow a consensus to be reached;*
- *justice is on your side and you can prove it.*

This type of negotiation approach, in which domination behaviors predominate, is also called a distribution strategy or a win-loss strategy. In a process of distributive negotiation, the partners are faced with a zero-sum game, in which it is not possible for one party to win without the other losing. This view leads us to a situation in which any concession can be speculated on the other side as a weakness and any successful attack as a sign of power. Agreements reached in these situations are often not respected by the disadvantaged parties, who are trying in one way or another to recover their loss or find a way to get revenge.

The transfer strategy is specific to the negotiators concerned with the satisfaction of the partner's interests and less with their own interests. The negotiator is too easily convinced, being impressed by the opponent's fame, by his nervous and authoritarian outbursts. This behavior is typical of people who do not have the courage to say NO and are easily persuaded.

The avoidance strategy is characteristic of negotiators who have a low interest in both their own goals and the interests of their partners. People with this style of negotiation avoid commitment, do not get involved, do not accept the fight, but do not admit defeat, dodge and run away, leaving the negotiation process. The avoidance strategy may be necessary, timely and recommended if: the subject of the negotiation is not of particular importance; there is a much more advantageous option, with another partner; the costs of negotiation would be higher than the results; it is necessary to take a break, necessary for consultations and analyzes; the intention to leave the negotiation process due to the impasse is invoked, thus forcing the partner's hand, etc.

Cooperation strategy or integrative strategy, which aims to solve the problem. The people involved in the negotiation process, who seek to solve problems through cooperation, show a special interest both for their own results and for those of the partner, aiming at maximization; the common result, if the style of cooperation is adopted, the aim is both to solve problems and to maintain interpersonal and business relationships. The negotiation process in which cooperative behaviors are manifested is called integrative negotiation and is based on mutual respect and tolerance for differences in aspirations and opinions.

The advantages of this negotiation system are that the results lead to win-win solutions, which strengthen long-term interpersonal and business relationships. Although cooperative negotiations are characterized by a climate of confidence and optimism, some conflict situations may arise during the negotiations, but they are calmly overcome.

Table 1. The nuances of the cooperation strategy, domination in reflection with rational negotiation

Negotiation strategy / **Characteristic**	***COOPERATION (integrative)***	***DOMINATION / ASSIGNMENT (distributive)***	***Negotiation rational***
The objective	agreement and lasting relationship	to win now, to win	to solve the problem
Participants	friendship	enemy	people resolving a dispute
Aambiance	trust	suspicion, defiance	neutrality
Behavior	Concessive, understanding	aggressive, tough	neutral, rational
Pressure / yield ratio	yields to pressure	exerts pressure, retaliates	yields to principles, not pressures
Attitude towards the will	avoid the confrontation of wills	it is based on the conflict of wills	independent of will
Rrequirement	meets the minimum requirements	false minimum requirements	the highest demands
Attitude towards agreement	accept unilateral losses in order to obtain agreement	unilateral benefits are required in exchange for the agreement	mutually beneficial solutions are sought
Attitude towards solutions	they are good if they get the agreement, it is important to reach an agreement	one's position is the only acceptable one	imagine solutions; the decision is made after evaluating the possible solutions
Attitude towards people	concessions in exchange for relationships, attentive to people	concessions are required as a condition of maintaining relations, harsh with people	people and the problem are distinct things

Source: Based on [6, p. 72]

The compromise strategy is the most used negotiation strategy, being placed on the chart in figure & l, at the intersection of the four strategies. It is characterized by a lower commitment of the negotiators to maximize the results, they are more willing to reach a reasonable agreement. The solution found by the negotiators in this case is not necessarily the best, but not the worst, being considered satisfactory, for both partners, in the approach of this style of negotiation, an important role is played by the compromise, the negotiators agreeing, being willing to accept even more modest solutions, as a win-win solution would require too much effort on their part. In such cases, the negotiations shall be concluded with a realistic and reasonable compromise, obtained in accordance with the principle of consensus [2, p. 166-171].

DEVELOPING A STRATEGY

Choosing a partner approach strategy is the key moment in preparing for negotiations. It depends on the personal style of the negotiator, but also on that of the partner, on the stake at stake, as well as on the conjuncture. If the strategic plan is drawn up too thoroughly and rigidly, and the negotiations take an unexpected turn, which is difficult to anticipate, it will not yield positive results. In such cases, negotiations must be suspended in order to reconsider an alternative strategy. Most often, it is useful to choose from the beginning a flexible strategic plan, with several options that can be adapted or abandoned along the way.

Stages of the journey.

Even if all the above questions are relevant, the strategy is not yet ready. A certain timing and a minimum of discipline in content are necessary in the construction of the strategy. Having only an indicative and consultative character, such a discipline of the strategic elaboration process could take into account the following *several steps*:

1. Setting goals (stakes) is the starting point (and, paradoxically, the point of arrival) absolutely mandatory in developing a strategy. In parallel with the formulation of the objectives, there is an extensive campaign to gather information on the market, partners, business environment, competition, etc.

Based on the information obtained, the objectives are formulated concretely and precisely. Sometimes a margin of maneuver is allowed to take into account the objectives of the partner. For example, if someone negotiates a salary increase with the employer and formulates the goal: "I will get as much growth as possible", he will not really know what to fight for. Basically, it will not have a clearly defined goal. On the other hand, if he says, "I will get a 15% increase," he will know exactly what he wants to achieve.

2. The breakdown of the negotiation process into phases with intermediate objectives, which is gradually approaching the final objective, could be the second stage. For example, if the ultimate goal is to increase the salary, the intermediate stages could be:

a) *provoking a seemingly "accidental" meeting, for mutual knowledge and personalization of the relationship with the employer;*
b) *an official meeting, with the presentation of ideas or projects useful to the company, in order to obtain some professional recognition;*
c) *the provocation of an informal meeting, in order to test the relationship and to bring into discussion the preoccupation for a better paid job, without explicitly requesting the salary increase;*
d) *waiting period for a possible offer to increase the salary from the employer;*
e) *obtaining an official meeting in which the salary increase will be explicitly requested, etc.*

3. Identifying the tactical actions that could materialize the strategy is the next phase. At this stage, without any scruples and prejudices, for each phase of the strategy, as many techniques, tactics, tricks or tricks are listed that can support the achievement of the intermediate objectives. The content of this stage concerns the identification of any ways and means that can ensure the achievement of the objectives. This is where the sources of bargaining power, place, time, team, context, alliance system, etc. come into play. For example, a 19%

increase may be required to maintain a margin of maneuver up to the target (15%). In addition, the 19% increase is immediately below the psychological threshold of the round figure (20%). You can also choose the owner's birthday or favorite restaurant to address the request, etc.

4. Assessing the chances of success of tactical actions and choosing the most effective ones is the phase that is almost self-evident. At this stage, the ability of tactical actions to generate positive effects is estimated. Tactical actions are ranked in order of effectiveness. The weakest are eliminated and the strongest are kept. For cases where some tactics fail or become inappropriate, alternative tactics, alternative solutions are provided. For example, if the appeal to feelings and the relationship with the employer does not work, the threat of resignation and the invocation of another job offer, real or imaginary, can be advanced.

5. Simulating or testing the negotiation strategy may be another necessary step before taking effective action. Simulation and testing can be done with the help of a friend or colleague, with the involvement of teams, with the help of a computer or even with a pencil on paper. The smallest details of the planned course of negotiations can be reviewed to detect errors and correct them. If it withstands tests and doubts, the strategy can be considered definitive and becomes a plan, a project ready to be implemented.

Theoretically, starting with the first contact of the negotiating parties, "the armies collide". As a result, the strategist retires and replaces the tactician.

Practically, however, in the negotiations, the strategist is still in the game, along with the tactician. The strategy as such is progressively materialized by the chaining of tactical actions. Gradually, the success or failure of the strategy is outlined. When a strategy fails, more and more strategies are built until the goal is achieved or abandoned. Sometimes, two or more strategies are run (Plan A, Plan B, etc.) and none of them lead to mutually acceptable results.

Example:

A brief outline of the strategy for negotiating a salary increase with the employer could be outlined by the following several elements:

- *The objective: a salary increase of 15%.*
- *Argumentation: it is built after obtaining as much information as possible regarding the financial situation of the company, the salary level, the excess or deficit of staff, the biography and personality of the employer, his daily behavior, behavior in previous similar cases, current mood, etc.*
- *Phases and intermediate objectives: points a), b), c), d) and e) from the second (2) stage of the elaboration of the strategy.*
- *Tactical actions:*
    - *first meeting: at a cocktail party, after signing an advantageous contract for the company;*
    - *other meetings: requesting official meetings, alternating with surprise approaches, apparently "accidental", exactly at the end of a good meal;*
    - *launching rumors about a tempting job offer, made by a competing company;*
    - *final request: on the employer's birthday (or on his / her own birthday); a 19% increase is required to have a 4% margin of maneuver.*
- *Sources of bargaining power: professional recognition, personalization of the relationship, appeal to feelings, threat of resignation, etc.*

PRINCIPLE OF DOSING A STRATEGY

From the perspective of military theory (according to French General André Beaufre, ***Introduction à la strategie***), the global "equation" of bargaining power offered by a strategic plan involves the following formalization in principle:

Bargaining power = / (M, P, T, u),

Where:

u - situation factor or conjunctural influence,

M - material and financial forces involved in the conflict and interacting,
P - available psychological forces, and
T - time factor.

Direct strategies will be preferred when material and financial forces (M) are dominant over those of the opponent, and psychological forces are negligible or of minor importance. The time factor (T) no longer matters in such situations. We opt for a short and decisive fight.

Lateral strategies will be preferred when the specific weight of psychological factors is predominant and the material and financial forces are negligible or in any case inferior to the adverse ones. The time factor will be of overwhelming importance, because the only reasonable option is to engage in a long-term wear and tear.

In addition, the choice between a direct or an indirect strategy will also depend on the conjuncture introduced by the u element. That's about it with strategy[6, p. 63-65].

Conclusions

The analysis of the style and strategy of negotiation in which we are to engage is always important. Knowing and evaluating it in advance means already predicting the behavior that your partner will adopt and preparing your own behavior in response. In this way, the risk of a breakup, a misunderstanding or the risk of concluding a disadvantageous agreement is reduced.

There are no recipes for universal strategies to succeed in any kind of conflict situation, but strategic thinking and tactical action multiply the chances of success, most of the time, regardless of the nature of the conflict or relationship.

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GENDER INCLUSION AS A SUSTAINABLE DEVELOPMENT GOAL OF MOLDOVAN ENTREPRENURSHIP

POPA Andrei,
Doctor Habilitatus of Economic Sciences, Professor,
Cahul State University "Bogdan Petriceicu Hasdeu", Republic of Moldova
E-mail: popa.andrei@usch.md
ORCID ID: https://orcid.org/0000-0003-2006-6923

***Abstract**: Entrepreneurship is associated with economic growth and development, improving living conditions, creating new jobs, technological progress, in fact being one of the main reasons for the prosperity of society. However, both nationally and internationally, it is recognized that women are less represented in entrepreneurship than men. Women face great difficulties in accessing finance, training and maintaining a work-life balance. Equality between women and men is becoming a fundamental right and a prerequisite for equitable, sustainable and inclusive growth.*

For the Republic of Moldova, the inclusion of women in entrepreneurial activity is also important because, although they represent about 52.55% of the active population of the country, they have a lower share of employment than men. Sustainable development implies the presence of equal opportunities and gender, and the lack of an inclusive environment reduces the many opportunities that Moldova has.

The purpose of the study was to assess the role of women's involvement in entrepreneurship in the Republic of Moldova, to identify and present good practices for the development of women's entrepreneurial potential, and its political impact on economic growth.

***Keywords**: sustainable development, economic growth system, women entrepreneurship*

JEL Classification: J08, J16, J18
UDC: 330.101:334.7:331.538(478)

1. Introduction

The issue of ensuring long-term economic and social growth involves a multi-criteria analysis, planning and implementation, which exceeds the limits of the interests of a particular economic branch or social group. The interdependence of economic, social and environmental factors has conceptually promoted sustainable development which has, as a general vision, the desire to balance socio-economic pressures on the natural environment. At the same time, the sustainability of socio-economic relations is conditioned by the condition of each individual, and by the possibilities he has to meet his expectations and requirements.

Entrepreneurship is associated with economic growth and development, improving living conditions, creating new jobs, technological progress, in fact being one of the main reasons for the prosperity of society. However, both nationally and internationally, it is recognized that women are less represented in entrepreneurship than men. Women face great difficulties in accessing finance, training and maintaining a work-life balance. Equality between women and men is becoming a fundamental right and a prerequisite for equitable, sustainable and inclusive growth.

The issue of equal opportunities in achieving personal and collective goals has highlighted the aspect of gender inclusion in entrepreneurial activity. Promoting gender equality and equal opportunities have shown that women have significant potential in developing small and medium-sized businesses.

For the Republic of Moldova, the inclusion of women in entrepreneurial activity is also important because, although they represent about 52.55% of the active population of the country, they have a lower share of employment than men. Sustainable development implies the presence of equal opportunities and gender, and the lack of an inclusive environment reduces the many opportunities that Moldova has.

2. The degree of investigation of the problem currently, and purpose of research

Sustainable development involves a balance of various social, economic, technical factors in order to organize the human environment in relation to the natural environment. It can be defined as the practice of maintaining productivity by replacing used resources with resources of equal or greater value without degrading or endangering natural biotic systems [8] and binds together concern for the carrying capacity of natural systems with the social, political and economic challenges faced by humanity.

From one side, the concept of sustainability aim to find income along a sustainable development [7, 4]. At the same time it means to relate sustainable consumption to the capital asset base [5, 6]

At the same time, sustainable development is not limited only to discussions and concerns about environmental protection and rational use of resources, but also to the balance of social relations that ensures the sustainability of the community. The issue of equal opportunities and gender inclusiveness has been reflected in many studies and scientific works, the summary of which is as follows: men and women are equally responsible for personal and collective well-being, and it is natural to participate equally in creating value.

The purpose of the research was to assess the role of women's involvement in entrepreneurship in the Republic of Moldova, to identify and present good practices for the development of women's entrepreneurial potential, and its political impact on economic growth.

3. Methods and materials applied

In order to achieve the research goals, the author made a synthesis of the aspects related to sustainable development. Also, a synthesized presentation of the statistical data was made, in order to underline the importance of women inclusion in entrepreneurial development. Besides these, the conceptual framework for promoting public policies to support women in business, through support and assistance programs, was researched and presented. The UN, UNDP and World Bank documents, the acts of the Republic of Moldova, the activity reports of ODIMM and the statistical data of the National Bureau of Statistics of the Republic of Moldova were used as documentary basis for the study.

4. Obtained results and discussions

The 2030 Global Agenda for Sustainable Development offers an opportunity for governments and other partners to draw attention to national development priorities. In particular, it will provide new opportunities for resource mobilization in the face of overcoming those challenges.

The 2030 Agenda for Sustainable Development is a new approach that provide people and human rights at the heart of the development process, reaffirming that gender equality has a fundamental importance for achieving sustainable and inclusive economic growth. For this purpose, 17 Sustainable Development Goals (SDGs) introduce the critical issues of peace and security, democratic governance, and the rule of law and human rights for all. The SDGs cover the three key dimensions of development: economic, social and environmental. The Republic of Moldova is committed to implementing Agenda 2030 and ensuring all people have equal access to development benefits so that no-one is left behind [9, p. 20]

In 2017, the Government of the Republic of Moldova and the UN approved the UN-Moldova Partnership Framework (UNPF) 2018-2022, which sets out the national development priorities grouped in 4 strategic areas [9, p. 9]:

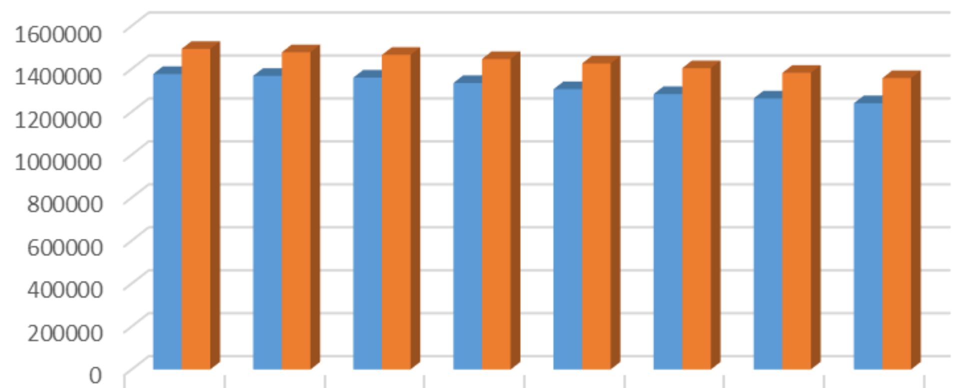
1. Governance, human rights and gender equality – that follows
2. Sustainable, inclusive and equitable economic growth;
3. Environmental sustainability and resilience;
4. Inclusive and equitable social development.

These areas include the 17 Sustainable Development Goals (SDGs) of the 2030 Global Agenda for Sustainable Development, in which the issue of gender equality is also present.

Entrepreneurship is associated with economic growth and development, improving living conditions, creating new jobs, technological progress, in fact being one of the main reasons for the prosperity of society. However, both nationally and internationally, it is recognized that women are less represented in entrepreneurship than men. Women face great difficulties in accessing finance, training and maintaining a work-life balance. Equality between women and men is becoming a fundamental right and a prerequisite for equitable, sustainable and inclusive growth.

The main population of the Republic of Moldova is 2597107 usual resident (at January 1, 2021), in which women are 52,26% and men 47,74% and the average gender ratio is 91 males to 100 females. (Figure 1). During 2014-2021 period the number of population has decreased respectively, women – from 1493481 in 2014 to 1357202 or -9,12% and men – from 1375745 to 1239905 or -9,87%.

Figure 1. Republic of Moldova. Usual resident population by ages and sex, as of January 1, 2014-2021



	2014	2015	2016	2017	2018	2019	2020	2021
Men	1375745	1367311	1359212	1333921	1305304	1282755	1262351	1239905
Women	1493481	1477362	1465175	1446031	1425060	1403309	1381532	1357202

Source:
http://statbank.statistica.md/PxWeb/pxweb/en/20%20Populatia%20si%20procesele%20demografice/20%20Populatia%20si%20procesele%20demografice__POPrec__POP010/POP010200rcl.px/table/tableViewLayout1/?rxid=b2ff27d7-0b96-43c9-934b-42e1a2a9a774

At the same time a discrepancy between the females number and the rate of their employment shows that women are less favoured in economic and entrepreneurial opportunities (Figure 2).

As a result the dinamics of activity rate by reason for not working, differs during this periiod and reflect changes realised due to public policies an support (Figure 3).

Figure 2. Republic of Moldova: Employment rate by gender, 2014-2020

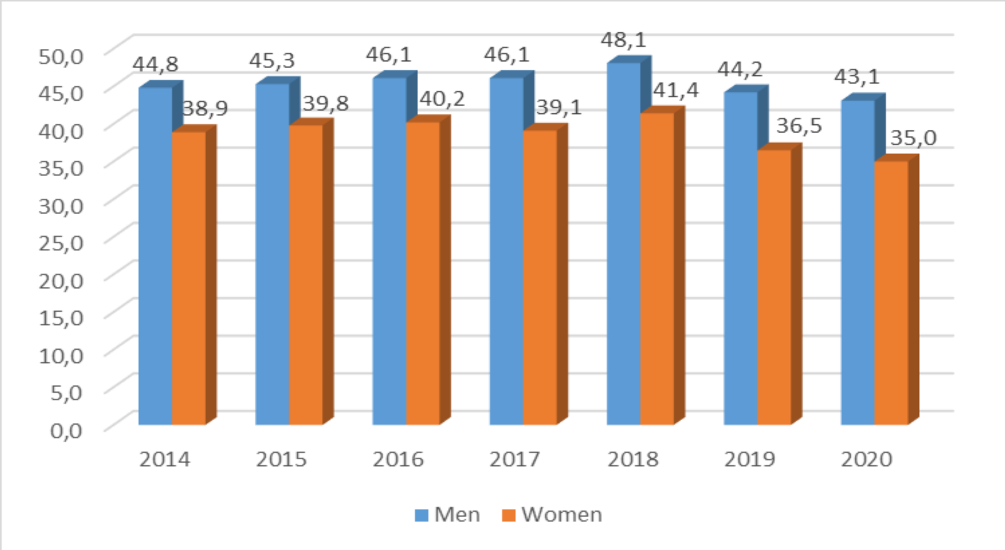
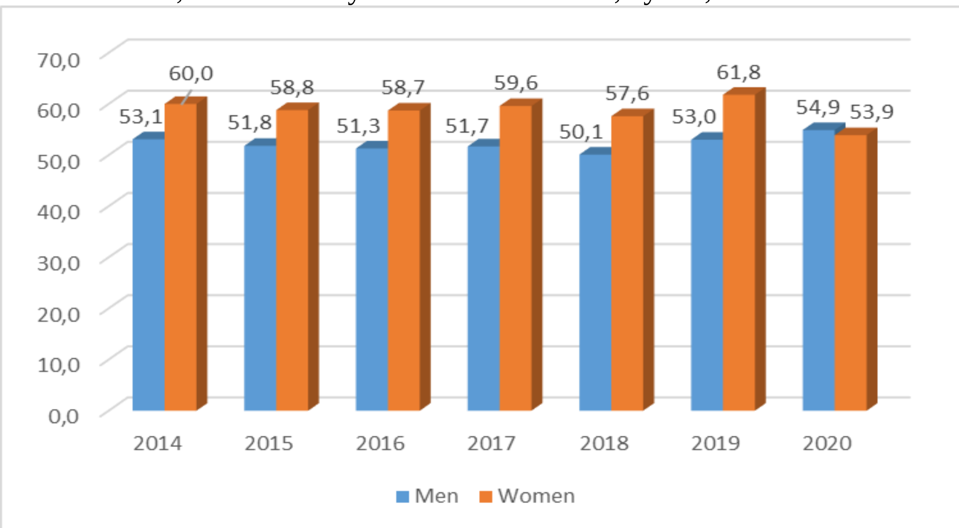


Figure 3. Republic of Moldova: Inactivity rate of persons aged 15 years and over, by the main reason, for which they did not want to work, by sex, 2014-2020



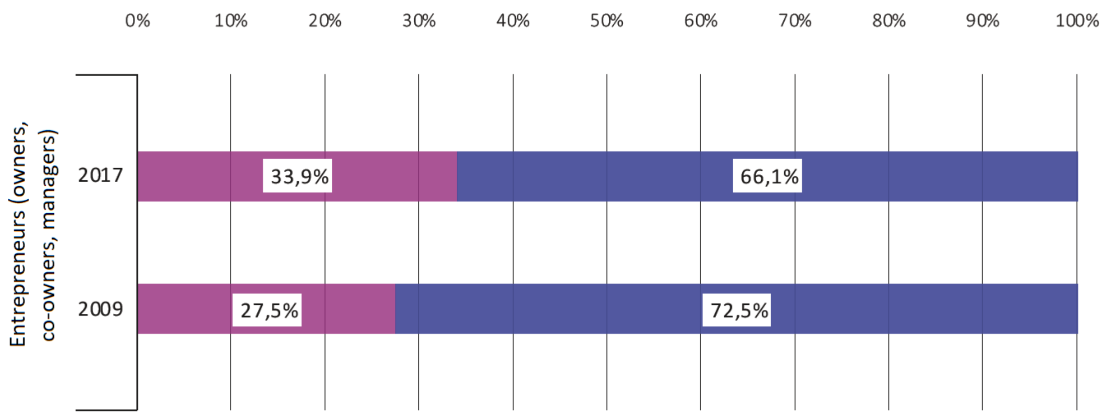
Sources for Figure 2 and Figure 3:

1) For 2014-2018: http://statbank.statistica.md/PxWeb/pxweb/en/50%20Statistica%20gender/50%20Statistica%20gender__GEN01/GEN011490mun_rcl.px/?rxid=b2ff27d7-0b96-43c9-934b-42e1a2a9a774
2) For 2019-2020: http://statbank.statistica.md/PxWeb/pxweb/en/50%20Statistica%20gender/50%20Statistica%20gender__GEN01/GEN011490mun.px/?rxid=b2ff27d7-0b96-43c9-934b-42e1a2a9a774

To understand what factors decreased the women inactivity rate in 2020, it is necessary to present the background of gender representation in entrepreneurship of Moldova.

According to the last Analytical Report on the Participation of Women and Men in Entrepreneurship [15], prepared by the National Bureau of Statistics with the support of the United Nations Development Program (UNDP), the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) and the Government of Sweden , In the Republic of Moldova, women still represent an underutilized growth potential and are a minority in the business community, owning and managing approximately 33.9% of businesses (Figure 4).

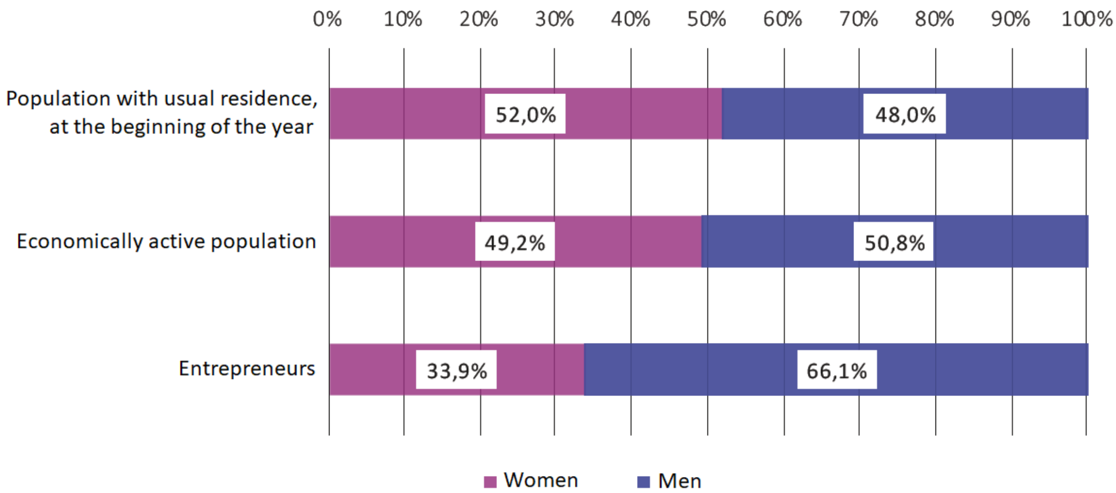
Figure 4. Distribution of entrepreneurs by gender 2009, 2017



Source: [15, p. 31]

While women make up about 52% of the total resident population of the Republic of Moldova and 49.2% of the total economically active population, the share of women entrepreneurs is only 33.9% (Figure 5).

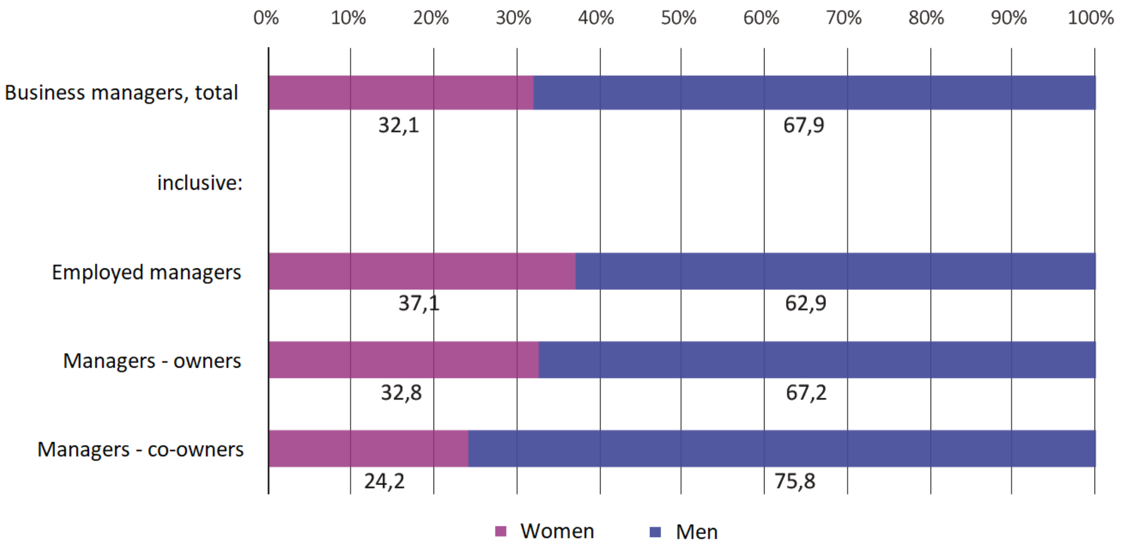
Figure 5. Distribution of resident population, economically active population and entrepreneurs by gender, 2017, %



Source: [15, p. 32]

Women hold the position of managers in almost 1/3 of the total enterprises in the Republic of Moldova. An analysis of the distribution of enterprise managers by gender, including those who are owners or co-owners, shows that, on average, about 32.1% of them are women (Figure 6).

Figure 6. Distribution of business leaders by gender, 2017, %

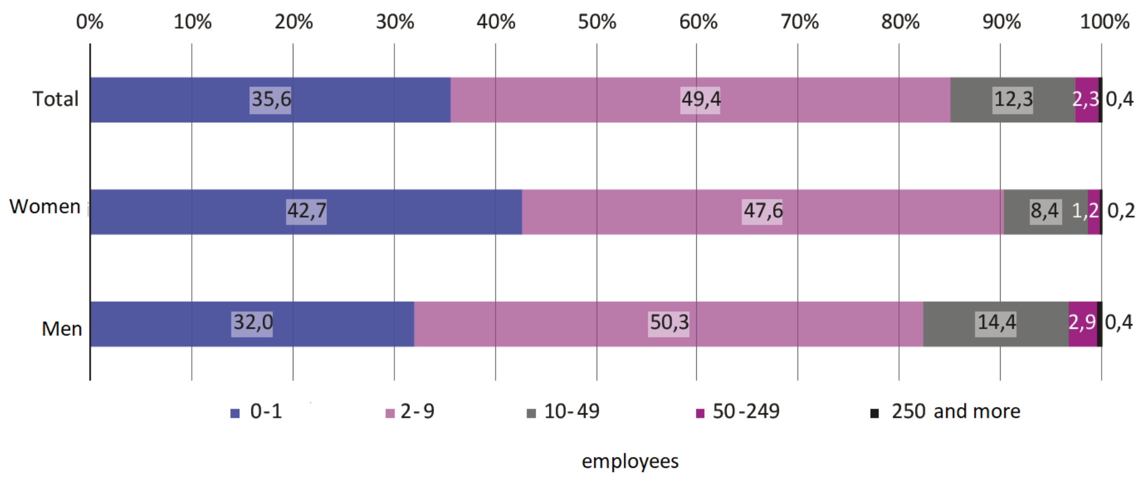


Source: [15, p. 34]

Among the managers - owners, the proportion of women is 32.8%, and among the co-owner leaders - 24.2%. In the case of hired managers, the proportion of women is higher than in any other category of entrepreneurs - 37.1%, which confirms the trend of increasing trust in women as leaders.

The entire economy of the Republic of Moldova is dominated by micro and small enterprises (97.4%), the medium ones having a share of only 2.3%, and the large ones - only 0.3% (Figure 7).

Figure 7. Distribution of enterprises by enterprise size and gender of entrepreneur, 2017, %



Source: [15, p. 45]

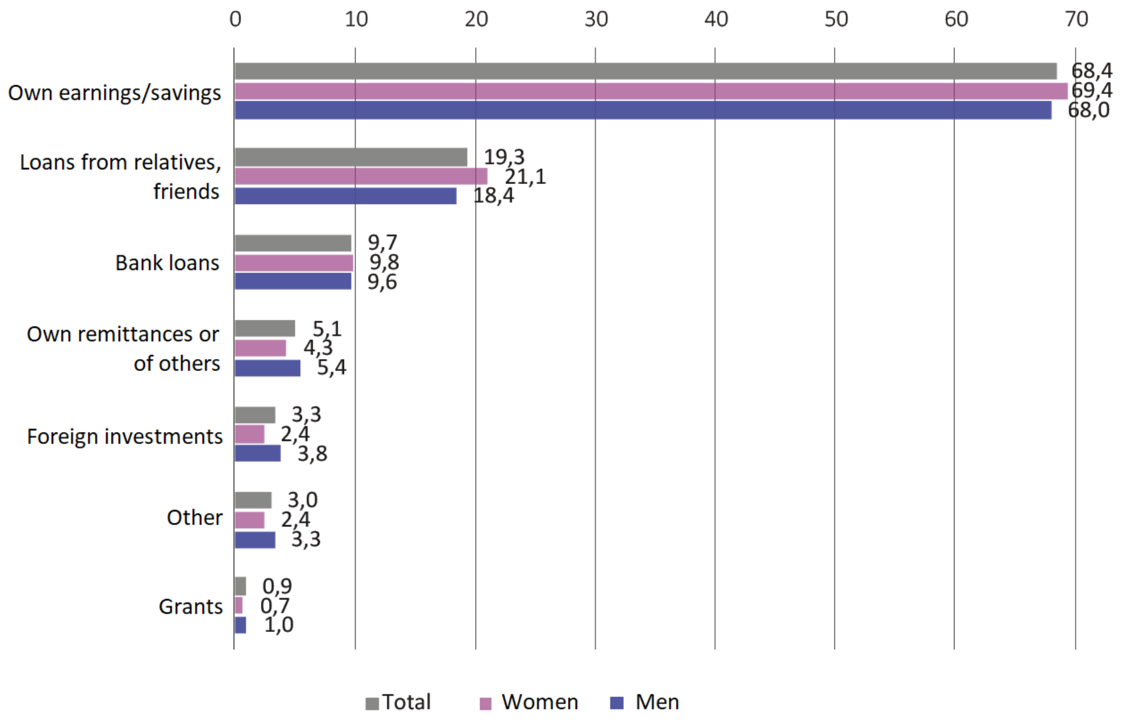
Women entrepreneurs have a larger share of micro-enterprises with up to 10 employees (90.3% of all women-owned enterprises, compared to 82.3% of male-owned enterprises), which shows that women, more often than men, hold smaller businesses.

At the same time, women entrepreneurs are less present as owners of small (up to 49 employees), medium (up to 249 employees) and large enterprises (more then 250 employees). In all these categories of enterprises, the share of enterprises owned by women is lower than that of enterprises owned by men. That is, the average size of a female-run business is about 2 times smaller than the average size of a male-run business.)

It was revealed that the lack of initial capital is one of the main reasons that encourage women to start a small business, which subsequently translates into significant gender differences in entrepreneurship.

Women-owned enterprises, compared to men-owned enterprises, used their own resources to a greater extent (69.4% vs. 68%), more often resorted to loans from relatives (21.1% vs. 18.4%) and bank loans (9.8% versus 9.6%). %), but less commonly used sources of remittances (4.3% vs. 5.4%), foreign investment (2.4% vs. 3.8%) and grants from the state or development partners (0.7% vs. 1%) (Figure 8).

Figure 8. Sources of funding for business ideas by gender, 2017, %



Source: [15, 60]

Enhancing women's participation in business requires incentives and support, encouraged by government policies and programs. The experience of many countries shows that in order to achieve this goal, the tasks of initiating and training women in entrepreneurship and business, supporting start-up entrepreneurs, co-financing start-up capital, facilitating access to bank loans for small entrepreneurs, improving knowledge in the field of finance and the entrepreneurial sphere are being addressed.

Regarding the Republic of Moldova, in 2016, the pilot program "*Women in Business*" [2] was launched, in order to provide financial and non-financial support by providing grants for investments and relevant services, which are necessary for development of business by women.

The program is aimed at achieving the following objectives:

- Increasing economic opportunities for women, by reducing barriers to starting or developing a business;
- Facilitating access to investment and assistance for the development of women-run businesses, designed to complement the financial and non-financial support currently available to women entrepreneurs in the Republic of Moldova;
- Creating an integrated national model of support for the development of female entrepreneurship, which aims at different stages of business development: from business planning (start-up) - to newly created enterprises to growing businesses;
- Strengthening the national support infrastructure for SMEs, by expanding the services offered in order to reduce the specific obstacles that women face in business;
- Contributing to the implementation of priority policies on gender equality and economic development.

The program is aimed at women planning to start or expand their businesses, especially in rural areas, and provides support for women entrepreneurs at 3 different stages of business development, which are reflected in the ***3 components of the Program*****:**

1. ***Support for starting a business*** - by *trainings and mentoring* to prepare women who are planning to start a business.

Component I of the Program is intended for the training phase of women-entrepreneurs to be able to plan and start a viable business. By participating in Component I of the Program, the beneficiaries are supported by:

a) Familiarization with the tools and methods of planning and developing a business, as well as how to use them;
b) Identifying the types of resources needed to launch the business;
c) Correlation of the business idea with the identified resources;
d) Understanding the application and negotiation processes with the financing institutions;
e) Guidance in the development of the business plan.

The activities covered by Component I include the following support:

a) Training for the development of entrepreneurial skills;
b) Individual consulting services and mentoring in launching and developing the business;

To participate in Component I of the Program, the applicant must meet the following eligibility criteria:

a) Woman, who is a citizen of the Republic of Moldova;
b) Plans to create and register its business within 12 months of applying to the Program.
c) To be directly responsible for the implementation of the business idea with which it applies to the Program.

2. ***Support for newly created businesses*** [10] – by small-scale investment and support in business development *to reduce the risk of early business failure and preparation for business growth.*

To participate in Component II of the Program, the company must meet the following eligibility criteria:

a) To be classified as a Small and Medium Enterprise under the conditions of Law no. 179 of 21.07.2016 on small and medium enterprises [1];
b) To be created and managed by the woman / women (founder (s), co-founder (s), associates, administrator), who is a citizen of the Republic of Moldova;
c) To be registered on the territory of the Republic of Moldova, in accordance with the legislation in force in less than 24 months, on the date of application to the Program;
d) To be registered in one of the following organizational-legal forms:
   - Individual enterprise / Individual entrepreneur;
   - Limited liability company;

- Production cooperative;
- Peasant household (farmer);

e) At the date of application, no debts should be registered in the national public budget.

The maximum amount of gratuitous, non-reimbursable funding under Component II does not exceed *165.000 lei MD per beneficiary,* of which:

- 110.000 lei MD - is a gratuitous financing of expenses for the acquisition of the following investment objects:
  a) New technological equipment, machines and working tools;
  b) Installations of measurement, control and regulation necessary for the development of the company's activities;
  c) Building materials for the modernization and/or expansion of space for the operation of the enterprise (no more than 10% increase in the investment subsidy);
  d) Software required for business optimization (for example, Microsoft Office, Adobe Creative Cloud, 1C, etc.);
  e) Procurement of the initial stock of raw materials (no more than 10% of the investment subsidy).
- 55.000 lei MD - gratuitous financing for the purchase of business development services. The development services package is included in the submitted Business Plan and is evaluated by the "Women in Business" Program Implementation Unit, in consultation with the Evaluation Committee in the context of the need to develop the business.

The value of the non-reimbursable financial allowance is a maximum of 90% of the total value of the investment project and cannot exceed the amount of 165,000 lei MD per beneficiary.

3. ***Support for growing companies*** [11] – by large-scale investments *to expand the market and export competitiveness*, with advisory support aimed at maximizing the impact of investments.

Component III of the Program, based on Competition of business plans, provides *non-reimbursable* financial support for investments to improve operational processes, research and development, innovation, access to external markets and additional business development services in order to maximize export potential.

The amount of gratuitous, *non-reimbursable* financing is up to 1.649.000 lei MD. The money can be used to purchase technological equipment and business development services, including certification of products/services. Financial support is 70% of the total cost of the investment project.

To participate in Component III of the Program, the company must meet the following eligibility criteria:

a) It is classified as a Small and Medium Enterprise under the conditions of Law no. 179 of 21.07.2016 on small and medium enterprises [1];
b) Created and managed by a woman / women (founder (s), co-founder (s) with another lady, associates, administrator), who are a citizen of the Republic of Moldova;
c) In case of changes in the composition of the founders, the company that has as its founder a lady who obtained this quality at least 2 years before the date of application to the Program will be eligible;
d) The company registers positive economic indicators for the last year of management according to the financial statements;
e) The field of activity of the enterprise with which it applies to the program is practiced in the last 24 months;
f) The administrator of the company has at least 12 months experience in the field with which he applies to the Program;
g) The enterprise must be registered in one of the following organizational and legal forms:

- Individual enterprise / Individual entrepreneur;
- Limited liability company;
- Production cooperative;

h) It is planned to increase the turnover and / or the number of employees in the next 18 months, by expanding the sales, export and innovation market;
i) At the date of application, no debts are registered in the national public budget.

According to the Organization for Small and Medium Enterprises Sector Development (ODIMM) report for 2018 [12, pp. 37, 39-40] in 2017, as a result of the development of Component I "Support for starting a business" of the Program "Women in Business", more than 1403 individual consultations were given for 408 women (including, individually trained and mentored - 3029 hours), 179 enterprises were registered, which generated 443 jobs, of which 83% are for women and 63% - for young people up to 35 years old.

In 2018, under Component II "Support for newly created businesses", 201 investment projects were selected for financing. The companies approved for financing contribute to the maintenance of over 300 employees and the creation of about 700 workplaces (jobs). The amount of the requested grants amounted to 28,56 million lei MD, which favored investments in the economy of 47,74 million lei MD.

From the 201 investment projects proposed for financing:

- 60% - are enterprises operating in the manufacturing sector (light industry - embroidery, tailoring, hand-painted textiles, needlework; food industry - milk processing, bakery and confectionery products, production of honey, cream, production of dried fruits, production of paper and corrugated board, production of wooden products, production of concrete and gypsum elements, production of biomass briquettes, etc.);

- 31% - are companies providing services (educational services, IT, personnel, catering, interior design, beauty salons, speech therapy and psychological counselling, etc.);

- 9% - are enterprises engaged in agriculture and animal husbandry (breeding geese for fluff and feathers, growing sea buckthorn, garlic, berries, plums, walnuts, flowers in pots, growing seedlings of vegetables, breeding rabbits, beekeeping, breeding cattle and goats , cultivation of trees, sheep breeding, beekeeping, breeding of cattle and goats).

Also, in 2019, through the "Women in Business" Program, another 1500 women received counselling [13, p. 11] and in 2020, there were offered consultations for 3816 women [14, p. 12], and trainings for 295 ones [14, p. 13]. The program offered 39 guarantees for women entrepreneurs, in the amount of 17,95 million lei MD, which allowed them to access loans in the amount of 51,62 million lei MD. Thus, the total investments made by women entrepreneurs were 70,24 million lei MD [14, p. 18].

Similarly, in 2020, was carried out the Component III "Support for growing companies "of the "Women in Business" Program. The maximum possible amount of the contract was 1.649.000 lei MD / beneficiary and was intended for operating companies with more than 2 years of activity, created and managed by women, who plan to increase their turnover and/or the number of employees, market, export and innovation. Within the framework of this component, 9 companies were financed, which demonstrated their innovative and export potential following the implementation of investment projects.

Per total, in 2020, the number of grants for business financing under the Women in Business program increased by 32% compared to 2019 (Table 1).

As a result of the training and support activities carried out through the Organization for Small and Medium Enterprises Sector Development (ODIMM), in 2020 there was, on the one hand, a decrease in the inactivity rate of females from 61.8 % in 2019 to 53.9 % in 2020, exceeding the indicators regarding males, and on the other hand, there was an increase in the number of women who founded their own businesses, creating new jobs for other women, and thus capitalizing on their managerial skills.

Table 1. Key indicators in the Support Programs

Programs	number of investment projects approved for financing		approved amount of grants (million lei)		the volume of expected investments in the economy (million lei)		number of workplaces (jobs)	
year	*2019*	*2020*	*2019*	*2020*	*2019*	*2020*	*2019*	*2020*
"Start for young people"	-	269	-	38,99	-	66,36	-	551
"PHARE 1+1"	210	187	51,87	45,37	127,8	115,54	570	620
"Women in Business"	***178***	***235***	***23,37***	***37,54***	***33,04***	***54,74***	***590***	***593***
SME digitization tool	-	180	-	11,36	-	23,06	-	1953
TOTAL	**388**	**871**	**75,24**	**133,26**	**160,87**	**259,70**	**1160**	**3717**

Sourse: [14, p. 20].

The "Women in Business" program was extended until 2022 by Government Decision no. 478 from 18.10.19 [3]. Thanks to the support provided to women entrepreneurs, this Program enjoys a growing interest that leads to the growth and development of a new generation of SMEs.

Conclusions

The study shows that in a society that wish a sustainable development, the inclusion of women is considered essential, due to the fact that about half of the population are women. In the situation when unemployment and labour migration are increasing, the need for economic activities for a sustainable development can be achieved through the inclusion of women in business. Statistical data show that the share and activism of women is increasing in the SME sector and especially in the fields of manufacturing, trade and services, agriculture and animal husbandry.

The support provided by public programs allows to increase the female interest for launching in business. The experience of the ”Women in Business” program has shown that the allocated amounts have a multiplier effect and double the initial investment. Thus, based on the experience of this program, it is necessary to create a network of regional entities (organizations) for women's support in order to facilitate the process started by the "Women in Business" program, by placing the policies of women's inclusion as at the level of central government policies, as within the responsibilities of local public administrations and their budgets.

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DIGITAL INTERACTION OF BUSINESS AND CITIZENS WITH PUBLIC AUTHORITIES IN UKRAINE: A PRACTICAL DIMENSION

MATVEJCIUK Liudmyla,
Doctor of Sciences in Public Administration,
PhD of Economic Sciences, docent,
Ivan Ohienko Kamianets-Podilsky National University, Ukraine
e-mail: sla.kpnu@gmail.com
ORCID ID: 0000-0002-2989-6002

POLOVYI Pavlo,
graduate student of the Department of Public Administration,
Leonid Yuzkov Khmelnytskyi University of Management and Law, Ukraine
Head of the personnel management and awards department
Chernivtsi Chernivtsi Regional State Administration
e-mail: pvpolovyi@gmail.com
ORCID ID 0000-0002-1250-0366

***Abstract**: The article analyzes the processes of digitalization in Ukraine. Mandatory components for the development of digital format of interaction between public authorities, business, and citizens with detailed legislation are specified, newly adopted laws are highlighted: "On electronic trust services" which regulates the online format not only of relations between state, citizens, and business, but also interstate interaction; "On stimulating the development of the digital economy in Ukraine", which defines the organizational, legal, and financial principles of the IT industry with a selective reduction of government intervention in economic processes. The organizational component of digitalization processes is determined by the Ministry of Digital Transformation of Ukraine and its tasks and strategic goals. The state of development of the sphere of electronic trust services for 2019-2020 is assessed and the positive dynamics of characteristic indicators is revealed. Conceptual bases of development of Ukraine's digital economy, society, and digital competences are identified. The importance of digital qualification as a prerequisite for building a digital space between business entities, citizens, and government institutions is argued. The national online platform on digital literacy "Action. Digital Education " is a modern tool for the formation and improvement of digital literacy of the population of Ukraine. It is noted that the general digitalization of relations within the country is faster than the world average, as evidenced by the improvement of Ukraine's position in the global rating indices of digitalization.*

***Key words:** digitalization, digital interaction, business, public authorities.*

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Introduction

In the conditions of development of digital society and economy in Ukraine the construction of digital space between public authorities, business, and citizens acquires special importance. The importance of developing this area, creating appropriate national policies and strategies for its implementation is one of the key tasks identified in the Sustainable Development Strategy "Ukraine - 2020", the State Strategy for Regional Development for 2021-2027, the Concept of Digital Economy and Society of Ukraine for 2018 -2020, and Concepts of digital competencies development. The effective development of the digital format is an important factor that contributes to the harmonization of the interaction of public authorities with society and business, which allows to increase the transparency, openness, and efficiency of their activities. Lack of scientific developments of the practical nature of digital interaction between business, citizens, and government institutions makes it imperative to study the development of this area thus determining the relevance of the chosen research topic, setting its goals and objectives.

Methodological basis of the study

The methodological basis of this study are general and special methods of understanding the processes of digitalization of the interaction of business, citizens, and government in Ukraine; legal and organizational component of online relationships at the present stage of their development. The research results were obtained using such methods as: methods of analysis and synthesis - in the disclosure of the conceptual foundations of the digital economy and digital society, the formation of digital competencies; systematization and generalization when determining the features of regulatory and legal support for the formation of digital relations; comparative analysis was used to assess the state of development of electronic trust services. The systemic approach made it possible to reveal the applied plane of the current state of development of digital interaction of business and citizens with public authorities in Ukraine.

Results

The fundamental idea of development and strategic vision of building a digital Ukraine was laid down in the Concept of Development of the Digital Economy and Society of Ukraine for 2018-2020. This concept provided for the implementation of measures to implement appropriate incentives for the digitalization of the economy, social and public spheres, awareness of existing challenges and tools for digital infrastructure development, the acquisition of digital competencies by citizens [3]. Important for understanding the country's course on its digitalization are strategic documents approved by the Ukrainian government in recent years: Sustainable Development Strategy "Ukraine - 2020", National Strategy for Regional Development up to 2020, where one of the priorities of the country's development is the implementation of information-communication technologies in all spheres of life and formation of digital space in society.

The key factor for the successful development of digital relations is the legislative regulation of this form. In Ukraine, the main conditions for the successful development of digital relations are the availability of regulations on the online format of activity. Today, the processes of digital interaction of business, citizens, and public authorities are regulated by: the Constitution of Ukraine, the Civil Code of Ukraine, the Tax Code of Ukraine, and laws of Ukraine: "On Information", "On Electronic Document and Electronic Document Management", "On Information Protection of Automated Systems" , "On the Protection of Information in Information and Communication Systems", "On State Secrets", "On Access to Public Information", "On the Protection of Personal Data", "On Administrative Services". "On E-Commerce", "On E-Trust Services". The Law of Ukraine (hereinafter - LU) "On Electronic Trust Services" [4], which entered into force on November 7, 2018, deserves special attention, and its predecessor, the Law "On Electronic Digital Signature", has expired. This Law defines the legal and organizational principles of providing electronic trust services, including cross-border, the rights and obligations of legal entities in the field of electronic trust services, the procedure for state supervision (control) over compliance with legislation in the field of electronic trust services, as well as legal and organizational principles of electronic identification. The law defines the concepts of "electronic signature", "electronic service", "electronic identification", "electronic seal", etc. The purpose of this law is to regulate relations in the areas of electronic trust services and electronic identification. It should be noted that this law translates into online format not only the relationship between the state, citizens, and business, but also interstate communication.

Today an electronic signature can be issued in special certification centers at various state structures: the National Bank of Ukraine, the State Fiscal Service; Ministry of Justice; Ministry of Internal Affairs and banks of Ukraine - PrivatBank, UkrSibbank and Oschadbank. The presence of an electronic signature makes it possible to perform the following actions online: to register a business entity, submit reports, sign agreements between participants in economic relations, and order and receive extracts from state registers. The analysis of the materials of the Ministry of Digital Transformation of Ukraine to assess the state of development of electronic trust services for 2019-2020 [7], the national online platform for digital literacy "Action. Digital Education» revealed the following:

1) the number of generated qualified electronic signature certificates for natural persons and individuals - entrepreneurs in 2020 increased by 12% and is 80% of the total, and in 2019 this figure was 68%;
2) the total number of electronic signatures issued to natural persons / individual entrepreneurs has doubled;
3) the number of issued qualified certificates of electronic signatures for legal entities in 2020 remained at the 2019 level, while in 2019 it accounted for a third of signatures in total, and in 2020 for only 19%;
4) in general, the number of qualified certificates of electronic signatures increased by 69% in 2020 compared to 2019, while the number of qualified certificates of electronic seals decreased by 52%
5) Given the positive dynamics of the above indicators, the use of international algorithms is quite insignificant, namely less than 1%. However, in 2020 there was a doubling of the use of international algorithms compared to 2019, where 97% of signatures and seals using international algorithms were issued by the state enterprise "DIIA (ACTION)".

A significant event for Ukrainian society was the adoption by the government in July 2021 of the law "On Stimulating the Digital Economy in Ukraine", which provides favorable conditions for innovative business, digital infrastructure, investment, and talented professionals. The law defines the organizational, legal and financial principles of the operation of the Action City legal regime. Action City is a virtual free economic zone with a special tax, financial and legal regime, where selective reduction of state intervention in economic processes is carried out.

Action City is a special legal regime for the IT industry, which will create the most powerful IT hub in Ukraine in Central and Eastern Europe. There will be no limits to investment, job creation or the development of new technologies. The general principles of the legal regime of Action City are: freedom of activity, non-interference, presumption of legality of action for Action City residents, stability, formal nature of the procedure for obtaining resident status of Action City, voluntary residence in Action City [6]. Regarding the organizational component of digitalization processes, it should be noted that in September 2019 Ukraine established the Ministry of Digital Transformation of Ukraine, which is the main body in the system of central executive bodies that ensures the formation and implementation of public policy, digital innovations and technologies, e-government and e-democracy, information society development, and informatization; in the field of electronic document management; in the field of digital skills development and digital rights of citizens; in the areas of open data, development of national electronic information resources and interoperability, development of broadband Internet and telecommunications infrastructure, e-commerce and business; in the field of electronic and administrative services; in the areas of electronic trust services and electronic identification; in the field of IT industry development; and in the field of development and functioning of the legal regime Action City. The main tasks of the Ministry of Finance are the formation and implementation of public policy in the areas of:

- digitalization, digital development, digital economy, digital innovations and technologies, e-government and e-democracy, information society development;

- introduction of electronic document management;
- development of digital skills and digital rights of citizens;
- open data, development of national electronic information resources and interoperability, development of broadband Internet and telecommunications infrastructure, e-commerce and business;
- provision of electronic and administrative services;
- electronic trust services and electronic identification and investment in the IT industry;
- development of the IT industry;
- development and functioning of the Action City legal regime [5].

The main strategic goals of the Ministry until 2024 are: 1) high-speed Internet coverage of 95% of the population, social facilities and major highways; 2) involvement of 6 million Ukrainians in the digital skills development program; 3) 100% availability of public services to citizens and businesses online; 4) increase the share of IT in the gross domestic product to 10%.

A prerequisite for building a digital space between business entities and government institutions is the appropriate qualifications of the participants in this relationship, namely the possession of digital competencies and digital skills.

A significant event to increase the digital literacy of the population of Ukraine was the government's approval in March 2021 of the Concept of Digital Competences, whose main purpose is to identify priorities and main tasks for digital skills and digital competences of the elderly, low-income families, people with disabilities, other vulnerable groups, in the development of the digital economy and digital society. Implementation of the Concept is planned for the period until 2025. The main objectives of this Concept are:

- formation and development of digital skills and digital competencies in society that will contribute to the development of the digital economy and society, as well as the development of e-democracy and human capital;
- ensuring legal regulation on the formation of state policy in the field of digital skills and digital competencies of the public;
- development of comprehensive changes to the legislation that will ensure the definition of digital education, digital skills and digital competencies in the spheres of public life;
- definition of the system and description of the components of digital competence (digital competence framework), as well as requirements for the level of digital skills and digital competences of different categories of workers, in particular in professional standards;
- ensuring coordination of actions at the level of executive bodies on the development of digital skills and digital competencies;
- creation of indicators for monitoring the state of development of digital skills and digital competencies;
- raising public awareness of the dangers of the Internet [2].

Today in Ukraine, the Ministry of Digital Transformation has launched a national online platform for digital literacy "Action. Digital Education "[1], which is currently available on the Internet. On the online platform, every citizen and member of the business community can learn digital skills for free on the topics: "Electronic signature", "Starting a Business, Creative Industry", "Financial Literacy for Entrepreneurs", "All About Blockchain, Bitcoin and Cryptocurrency", "Access to Public Information", "Online Public Consultations", "Open Data for Business", "Digital Money", "Digital Literacy Employees 1.0 based on Google tools", "Basic Digital Skills" (https://osvita.diia.gov.ua/courses). In addition, the Ministry of Digital Transformation of Ukraine launched an updated national test for digital literacy - Digital Figure 2.0, based on the adapted Digital Competence Framework for Citizens of Ukraine, created by Ukrainian experts on the basis of the European Conceptual Reference Framework for Digital Literacy. competencies for EU citizens (DigComp 2.1.).

The Diia portal implemented a state business registration service, which was presented by the Ministry of Digital Transformation on May 17, 2021 during the Diia Summit 2.0. Registration of a natural person as an entrepreneur and selection of a general or simplified taxation system is possible automatically on the portal within 10-15 minutes. Also, a section under the heading of "Analytics of the state of Ukrainian business" was created on the portal in order to collect open data on the state of Ukrainian business and present them in a convenient form (https://business.diia.gov.ua/analytics). The information provided is useful for entrepreneurs; investors; public authorities that shape policy in the field of small and medium business development; international technical assistance projects; and analytical centers to analyze the state of business development at the appropriate level in various fields.

Conclusion

As a result of the study of the current state of development of digital interaction between public authorities, business, and citizens in Ukraine, the availability of appropriate legal support has been established; the Ministry of Digital Transformation of Ukraine was established, which is the main body to ensure the formation and implementation of state policy in the fields of digitalization, digital development, digital economy, digital innovations, and technologies; there is a positive dynamics of indicators for assessing the state of development of electronic trust services for 2019-2020. The analysis of the practical side of digitalization processes showed the positive aspects of digital space development in Ukrainian society. The general digitalization of relations within the country is faster than the world average, as evidenced by the improvement of Ukraine's position in the global rating indices of digitalization.

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IMPROVEMENT OF ENTERPRISE ACTIVITY MANAGEMENT ON THE BASIS OF INFORMATIZATION OF ITS BUSINESS PROCESSES

GLUSHCHEVSKY Vyacheslav,
Doctor of Sciences (Economics), Associate Professor
Zaporizhzhia National University, Ukraine
e-mail: gluschevsky@ukr.net
ORCID: 0000-0002-2124-5985

KOMAZOV Pavlo,
Candidate of Sciences (Economics), Associate Professor
Zaporizhzhia National University, Ukraine
e-mail: komazov@ukr.net
ORCID ID: 0000-0001-7565-2538

VOLOVYCH Oksana,
Master's Degree (Information Economics)
Zaporizhzhia National University, Ukraine
e-mail: o12v34@gmail.com

Abstract: *The article highlights the current issues of modeling organizational and production processes of the enterprise in the field of advertising business. The map of the business process «Management of the production of advertising products on order» is developed. For this business process the structural model «AS-TO-BE» has been built and it is the theoretical basis for the comprehensive informatization of relationships between its members through the introduction of a single corporate IT. The business process was decomposed, its functional chains were identified and described, the level of information flows on the sequence of these chains was singled out. Theoretical synthesis of information and communication technologies, specialized software products to connect all elements of the organizational structure of the advertising and production company in the context of formation and transmission of relevant information content at certain parts of this business process were carried out and an appropriate information model was built. Recommendations for improvement of the system of management of the activity of advertising and production company «Avangard» were substantiated taking into account the prospects for implementing specialized programs for informatization of its production and organizational business processes.*

Keywords: *department, web-resource, information model, SMM-strategy.*

JEL classification: D80, M11
UDC: 334:004.91:519.7

Introduction

Today's leading managerial concept is the process approach to the management of the modern enterprise, which involves representation (modeling) of its activities in the form of a set of different business processes, which are interconnected and interconnected together to form the so-called network of business processes of the company. In the opinion of many experts [3], this approach to management is the most effective, because its main advantage is orientation to the result at the optimal way of its achievement due to a more effective implementation of works with the consolidation of responsible parties, the planned result on each such stage of the process individualized control of their performance in compliance with regulations, standards and other requirements.

Constructing (creating, modeling, describing, etc.) a certain business process means describing the procedure for performing a set of interconnected activities according to the «as is in reality» principle (the so-called «*AS-IS*» model). This description should take into account and reflect the specifics of the activity, which is carried out by a particular company. Such description of the enterprise business process is primary in terms of management improvement and requires its further analysis to identify «bottlenecks» in order to eliminate them. That is why it is advisable to describe this business process according to the principle «as required» (the so-called «*AS-TO-BE*» model). As a result of the combined application of these two principles we get a certain image of the real business process, which is called its model (presented, as a rule, in the form of a graph, diagrams, block diagrams, or described in formal and natural languages) - in a certain sense «ideal» in terms of effective management of the business process, which the management of the company seeks. The model of the business process «*AS-TO-BE*» will further serve as a scientific and practical basis on which a really working system of motivation for co-workers will be built, when everyone will be interested in achieving the result and there is a real opportunity to improve interaction between the company's departments and employees.

The advertising industry comprises companies (enterprises, organizations, institutions, companies, enterprises) that promote their products and / or services, agencies, which create advertising (manufacturing promotional products), mass media, which disseminate advertising, as well as indirectly the final consumers. One of the most important agents in the market of advertising production are advertising and production companies - organizations that provide services for the development, manufacture, approval and installation of advertising products aimed at a specific target audience.

The object of our study is production and management of business processes of advertising and production company (APC), which operates in a regional market of manufacturing promotional products, carries out the development, production, approval and installation of outdoor advertising. During the design and manufacturing of promotional products there is a complex intertwining of diverse business processes that require from their owners of a permanent accounting, calculations to obtain digital data, implementation of new technologies that can significantly facilitate and accelerate these processes.

In the development and production of promotional products ranking place is taken by the use of modern information and communication and computer technology, the involvement of IT resources, and that formed the subject of our study. Areas of their use is extremely varied, because the development of Internet technologies, the spread of social networks among all segments of the population open up new areas and varieties of advertising products. It is obvious that for success in this area of business, advertising and manufacturing companies must be in the trend in terms of informatization of their own activities.

Under «*informatization*» we will define the process of staffing the company and its structural units of modern technical equipment and their software for the purpose of obtaining relevant information content (the amount of information) from all parts of the business processes for making timely effective decisions on business management.

Various tools are used to informatize the business processes of enterprises producing advertising products, in particular, applied specialized software, information and communication technologies (ICT) and information systems to automate the production of advertising products. This allows you to form a single database of agents, customers, and services, as well as provide a predictable and comfortable accounting of advertising sales, planning of revenues and costs and economic efficiency of activities, systematically evaluate the quality of joint work of the entire team and advertising products and in the future to improve the image of the company and expand the client base. The highlighted issues make the selected scope of research a very relevant one while creating and improving the efficient system of business processes management of advertising and production companies on the basis of specialized information systems.

Analysis of recent research and publications

Problematics of business process informatization of manufacturing and advertising companies lies at the level of implementation of quality management system at the enterprise, which requires forming a package of internal regulatory documentation, which regulates the interactions between all participants in these business processes. In general, this subject matter has been investigated in numerous scientific works on the issues of engineering business processes of enterprises, both domestic and foreign scientists, including: Adler J.P, Andersen B., Aref'eva O.V., Batalov D.A., Vovk V.M., Yefimov V.V., Loginov K.V., Mark D.A., McGowan K., Repin V.V., Robson M. and others. However, not enough attention has been given yet to the issues connected with forming the typical model of business process «Management of the production of advertising products on order» and informatization of interactions between its participants in separate areas on the basis of modern information and communication technologies.

The objective of the article is to develop a comprehensive theoretical approach to informatization of production and organizational business processes of the enterprise on the basis of the advertising and production company «Avangard» through the systematization and improvement of information resources, technical equipment, a comprehensive analysis of the transition of these processes to make on this basis scientifically based management decisions regarding the informatization of the activities of the company.

The main body of the academic paper

The object of our research is the activity of APC «Avangard» [1], the main business processes of which are: designing of advertising products; production of advertising structures; installation and assembling of the produced advertising products.

Under the business process (BP) in general sense we understand any activity or/and a defined set and clear sequence of performance of interconnected activities and functions, which has the input product, adds the value to it, and provides the final product, which has value for the internal or external customer.

Various tools are used for modeling business processes of enterprises. However, considering the high degree of intellectualization of the procedures of modeling of business processes, which are so complicated in use that they require the development of special methods of their use in practice, quite a number of scientists and practical workers consider it more rational to use the standard language of block diagrams, which contains some additional, built-in special graphical objects and simple tools for their creation, in particular, MS Word, MS Visio editors, etc. The use of these objects allows making the process block diagrams more visual and understandable for the operators.

Actual task for APC «Avangard» is to create a business process model «Management of the production of advertising products on order» in the format of «*AS-TO-BE*». Taking into account specific features of the company's activity and the duration of this business process, the main requirements for its «*AS-TO-BE*» model were specified in the business process map, which contains its structural and functional decomposition (Table 1).

BP «MP-AP-O» is composed of a sequence of functional blocks, each of which has as its output some result of performing the set activities in the middle of this block. At the input of each of these blocks the resources necessary to perform the actions are supplied and the result of work of the previous block is indicated. Input for the first block (A_1) is a specific order for the manufacture of promotional products, and the output of the final block (A_9) is ready advertising products in accordance with the order. The list of the resources that APC «Avangard» uses in its activities is grouped according to these types:

R_1 – ІКТ – (Viber, Telegram, telephone, e-mail);
R_2 - technical documentation (ownership, lease agreement);
R_3 - terms and conditions of the contract;
R_4 - legal support;
R_5 - software for layout and calculation;
R_6 - accounting software;

R_7 - labor resources;
R_8 - equipment and materials;
R_9 - accessories, tools for manufacturing;
R_{10} - computer, telephone, tablet;
R_{11} - cars of company;
R_{12} - IT- programs.

Table 1. Map of business process
«Management of the production of advertising products on order»

Structural elements of the business process		
№	**Denomination**	**Subjective characteristics**
1.	Name of BP	Management of the production of advertising products on order
2.	Code of BP	MP-AP-O
3.	Regulation of BP	A_1 - Receiving the order (Registration of the order, development of the layout); A_2 - Approval of the layout. Making cost estimate (Estimation of the cost of advertising products); A_3 - Providing an invoice to the client from the accountant (Making settlements with the customer); A_4 – Logistics of the order; A_5 – Production of advertising product (Order production of advertising products); A_6 - Quality control of advertising products; A_7 – Installation. Installation of the structure. Gluing; A_8 – Approval of the customer order (Approval, reporting); A_9 - Advertising services in the Internet - new orders (Advertising of the completed order on the Internet resources).
3.1.	Purpose of BP	Creating advertising products taking into account the individual requirements of the customer
3.2.	Aim of BP	Management of advertising production processes at all stages, from signing agreements with the customer to reporting on the completed work
3.3.	Owner of BP	Project Manager
3.4.	Participants of BP	Director; Manager; Designer; Technologist; Accountant; Head of Production Department
3.5.	Standards of BP	Operational instructions, safety instructions, etc.
3.6.	BP inputs	Individual order (specification of the order for the production of promotional products and / or promotional services, as well as the resources necessary to ensure the business process)
3.7.	BP outputs	Order execution (advertising products, advertising services)
3.8.	BP resources	Information, finances, materials, personnel, software, office equipment, composite, equipment in the workshop
3.9.	Business processes of suppliers	External suppliers of materials for production, design software companies
3.10.	Business processes of customers	
3.11.	Indicators (parameters) of BP	List of quantitative and/or qualitative parameters that characterize BP and its result, according to which its owner evaluates its progress and decides how to manage it
4.	BP model	The methodology of business process description (at the formulation and development stage) is to be applied

Source: compiled by the authors

The model «*AS-TO-BE*» created for BP «MP-AP-O» provides full integration of all interactions between all members of this business process through the implementation of a single corporate IT (Fig. 1 depicts by red arrows: continuous ones - already existing IT-communications; punctuated ones - prospective ones that should be implemented).

We divide the BP «MP-AP-O» conditionally into two locally interconnected parts in terms of functionality of the elements that make them up, and call them *Fragment 1* and *Fragment 2*.

Fragment 1 (Fig. 2) - Development of the layout of the ordered advertising product (created by functional elements A_1, A_2, A_3, A^*_2, A^*_3); it is shown schematically in Fig. 2.

Based on the map of the business process «Management of the production of advertising products on order» (BP «MP-AP-O»), we have developed its structural model «*AS-TO-BE*», which is schematically shown in Figure 1.

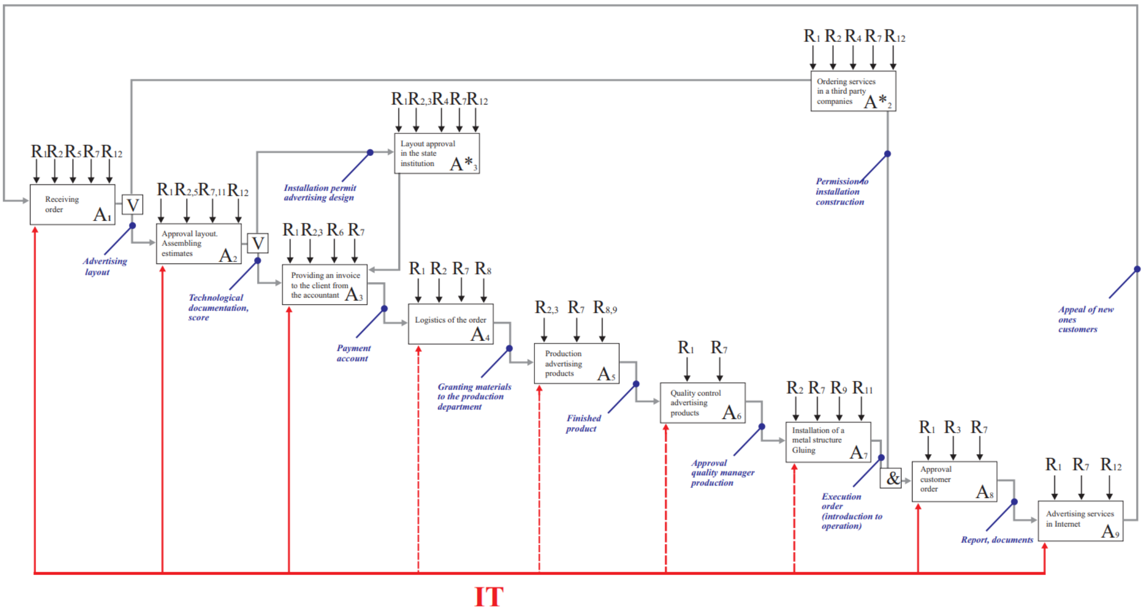

Fig. 1. Model «AS-TO-BE» of the business process «Management of the production of advertising products on order»

Source: developed by the authors

The set of structural elements of BP «MP-AP-O» in the *Fragment 1* reflects the following functional interactions between the BP participants:

– Ch_1 - chain of ordering advertising products (interaction of the client with the designer through the project manager); the result - the layout of the ordered advertising products;

– Ch_2 - chain of development of technical documentation on the basis of the layout and preparation of estimates for the manufacture of advertising products (interaction of the project manager with the technologist; consultation with the warehouse manager and director); result - technical documentation;

– Ch_3 - chain of involvement of production capacities of contracting companies (cooperation of the APC «Avangard» with business partners through the project manager); result - use of specialized equipment of business-partners for order execution;

– Ch_4 - chain of financial obligations to the customer (client interacting with accounting department through the project manager); result - payment of the account as per the agreement;

– Ch_5 - the agreement of technical documentation with state institution; it is regulated by the current legislation and normative acts [4, 6] (interrelation of the project manager with state institution; consultations with designer, technologist and director); result - a permission for installation of advertising products.

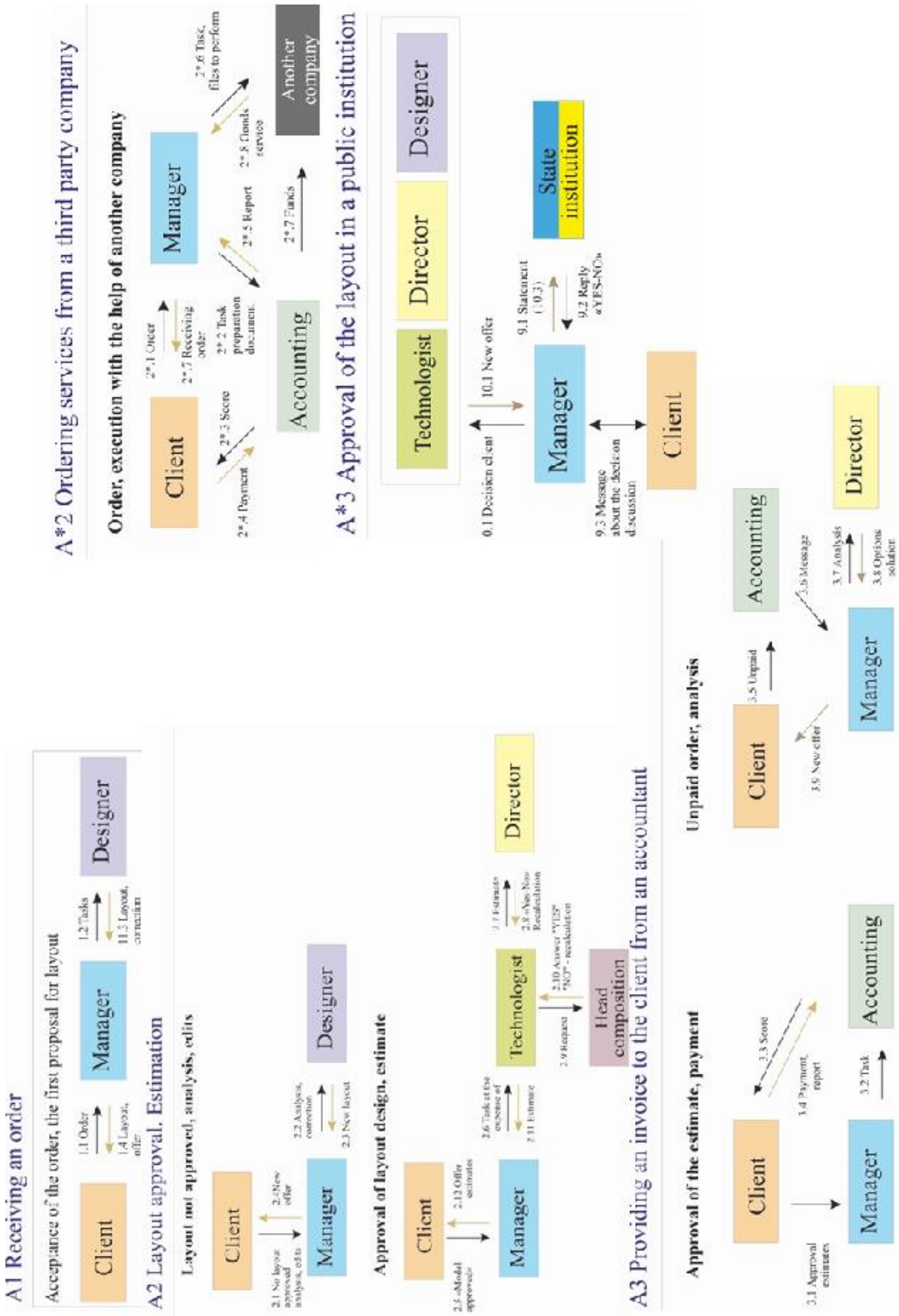

Fig. 2. Fragment 1 of the business process model «MP-AP-O» (development of advertising product on order layout)

Source: Created by the authors

Fragment 2 (Fig. 3) -Production of advertising products on order (A_4, A_5, A_6, A_7, A_8, A_9); it is shown schematically in Figure 3.

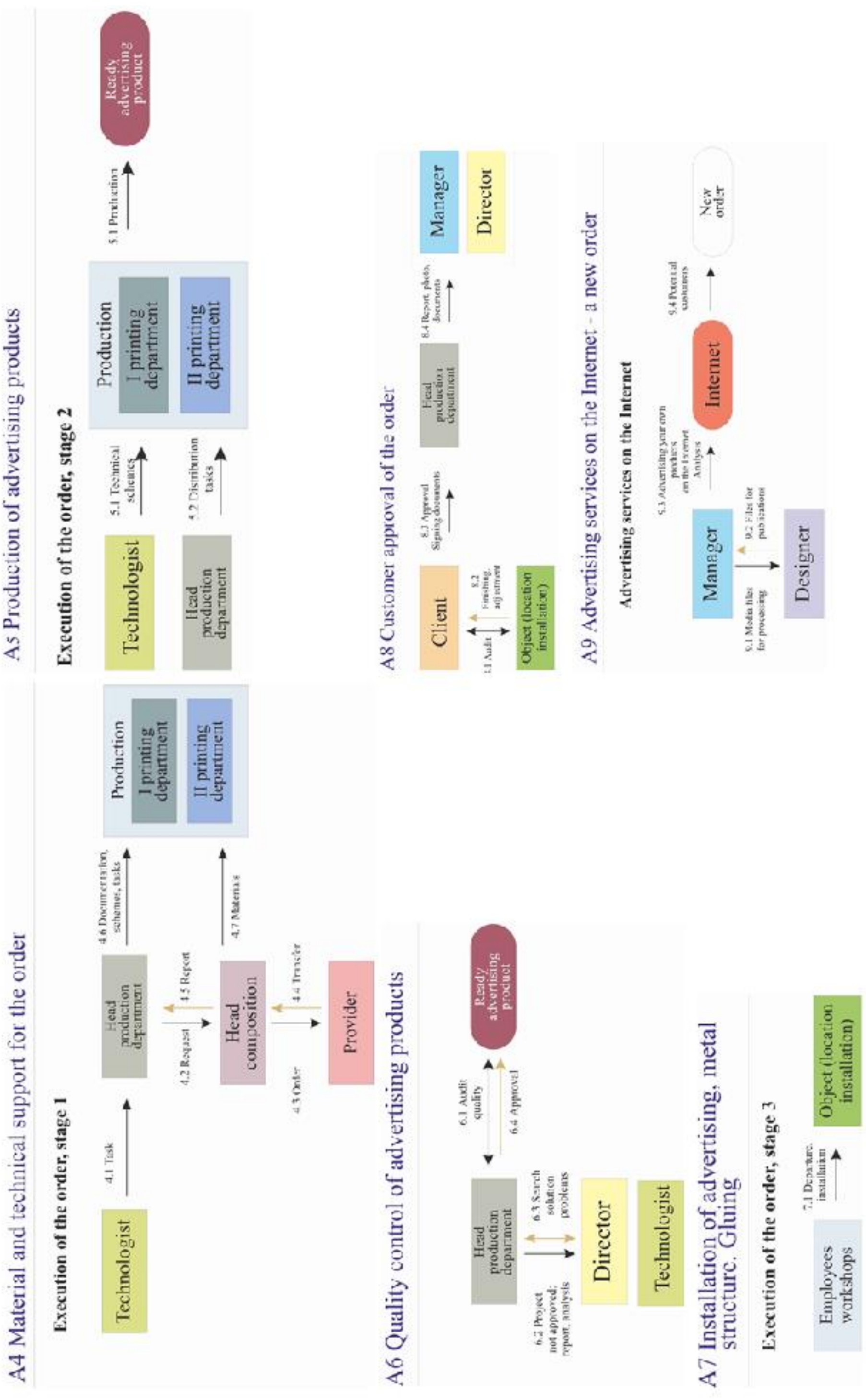

Fig. 3. Fragment 2 of the business process model «MP-AP-O» (production of advertising products on order)
Source: created by the authors

The set of structural elements of BP «MP-AP-O» in the *Fragment 2* depicts the following functional chains of interaction between the BP participants:

- Ch_6 - chain of material and technical support for the order (interaction of the technologist with the head of the production department; consultation with the head of the warehouse); the result - completing cost materials in accordance with the technical documentation;
- Ch_7 - chain of manufacturing advertising products according to the layout (interaction between the head of the production department and the technologist); the result - the final advertising products;
- Ch_8 - quality control chain of finished promotional products (interaction of the head of the production department with the technologist; consultation with the director); the result is a document of warranty on the manufactured advertising products;
- Ch_9 - chain of installation of advertising products (interaction between the project manager and the project team); result - installation of advertising products at the location according to the received permission;
- Ch_{10} - chain for putting into operation (interactions between project manager and client; consultation with head of production department); result - report of completed works;
- Ch_{11} - chain of public-relations support of the firm's brand (interaction of the project manager with the designer); result - informational content on the site of the company for the purpose of selling the produced promotional products for the fulfilled order.

Ch_1 - Ch_{11} chains depict the flow of material and documentary flows from link to link, explain the content and purpose of BP «MP-AP-O» key links as well as functional links between them. In addition to these real flows, there is a higher, «hidden» level - the level of information flows at all levels of this business process. This «hidden» level reflects the potential of systematic use of information and communication tools to connect all elements of the organizational structure of APC «Avangard» and covers the resources of this business process at all levels in the context of creating and transmitting relevant information content between them.

We have developed an information description for each group of links for all functional blocks A_1-A_9 and created appropriate information models of resource links in real conditions of APC «Avangard» activity.

The analysis of resource supply of functional blocks A_1-A_9 allowed creating schematically the existing links between all participants of BP «MP-AP-O», which we systematized in the form of an information model in Figure 4.

According to the results of the analysis done, most of the identified links are R_1 - ICT categories (Viber, Telegram, telephone, e-mail - used only between two participants of the lineup, R_{12} - IT-programs (informational/software resources (CorelDraw, Photoshop, RAR, TeamViewer, cloud storage); design layouts and technical schemes are made with the use of these very programs).

At the same time, a number of drawbacks that burden the corporate use of these very resources were revealed, such as:

- The problem of joint communication between the participants of the business process.
- Conflict of data format in transmitting information content between the participants of the business process.
- Searching for the necessary files or layouts on the work computers of different designers and technologists is time-consuming due to the lack of a common database of archive files according to the register of regular clients.
- Outdated version of the CorelDraw program, lack of Adobe Illustrator graphic program, which prevents the opening of files of this data format.

- Modern software is not used for remote cooperative work on the projects, documents, photos and other materials between the employees of the company and the client.
- Paperwork is carried out on papery notes, which leads to the risk of technical problems when performing tasks (handwriting leads to situations where you cannot read the handwriting and, as a result, a possible mistake) and the risk of not meeting the established terms and others.

The developed informational model (Fig. 4) is reasonable to use, firstly, in order to improve and modernize the system resource support of APC «Avangard» management processes by eliminating the shortcomings in existing and potential problematic situations related to the management of organization, technical and technological, economic and financial areas of the company's activities, and secondly, for the development of the company in the informatization sphere through the updating, implementation and use of specialized information systems, including:

– Development of the concept of an integrated analysis of the ongoing business processes, which are associated with the marketing of prices for products (services) of the enterprise, based on the information and analytical systems, which implement a set of technical and economic tasks of different complexity (the program «Bon Sens» for the automation of operational costing of items of external advertising, making cost estimates, etc. **[2]**);

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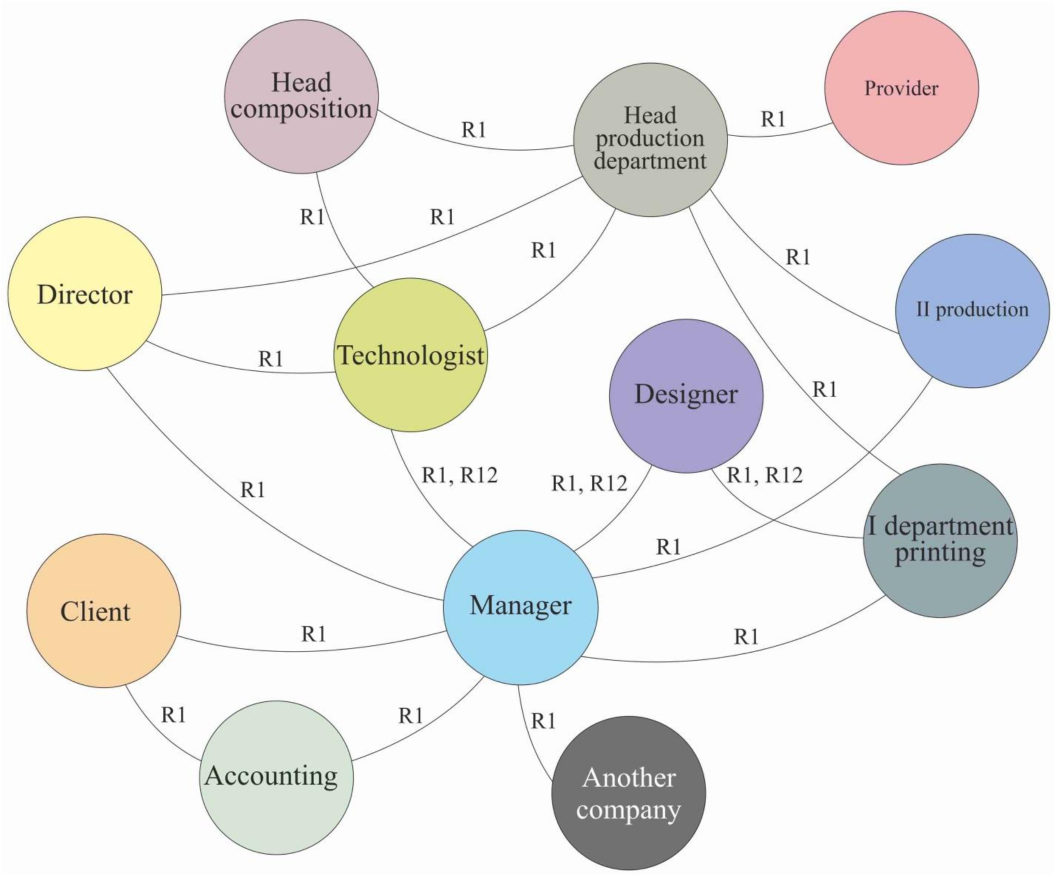

Fig. 4. Information model of system resource support of management processes of APC «Avangard»

Source: developed by the authors

– Expanded use of economic and mathematical programs, new design programs (updating the Corel Draw version, using Adobe Illustrator, SketchUp Pro design software), storage and accounting software modules (Bon Sens software), Programs and ICT for the company's management (implementation of the MicrosoftTeams corporate platform, use of electronic signature programs, data verification, electronic conferences, Zoom, Teams, etc.); most of them are free of charge or have a grace test period

– Use of the USU Advertising Agency Program [5], developed exclusively for advertising agencies, will help significantly reduce paperwork and use a certain operation in relation to many participants in the process.

Thus, the information model of the system resource support of the company's management processes together with the identified prospective areas of their further informatization in a generalized form is the road map for the development of APC «Avangard» in the direction of management informatization processes, which determines its future prospects and business preferences.

Conclusions

A road map for the development of APC «Avangard» in terms of informatization of management processes, which determines its future prospects and business preferences through the implementation of specialized programs for the digitalization of its production and organizational business processes is proposed. Innovated in this way the control system of APC «Avangard» makes it possible to resolve problem situations in the organization of the command work of the company, to predict the time required to change the computer equipment in the design department, to achieve a new and modern level of interaction with clients, when it is convenient for everyone to be in any geographic location and sign and send the documents, make corrections and additions, etc.

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INFORMATIZATION OF THE ACTIVITY OF THE STRUCTURAL DEPARTMENT OF THE UNIVERSITY

MERZHINSKY Yevhenii,
Candidate of Sciences (Economics), Associate Professor
Zaporizhzhia National University, Ukraine
e-mail: merginskiy@gmail.com
ORCID ID: 0000-0002-4372-889X

GLUSHCHEVSKY Vyacheslav,
Doctor of Sciences (Economics), Associate Professor
Zaporizhzhia National University, Ukraine
e-mail: gluschevsky@ukr.net
ORCID: 0000-0002-2124-5985

SUMMA Anzhela,
Master's Degree (Information Economics)
Zaporizhzhia National University, Ukraine
e-mail: angela.summa1414@gmail.com

Abstract: This article reviews a topical issue of improving the efficiency of web-resource management of the structural division (department) of the university through the creation of an information model of the data. The conceptual model of the lifecycle of the web-resource of the university department was developed. This theoretical background has been used to develop an informational model of the process of web-resource creation. Theoretical and methodological principles of designing web-resources of the university department using CMS-tools are extended. The article presents SMM-strategy of the University department as a part of informational architecture of CMS development, which can be successfully used for analysis of university applicants' attitude to the choice of specialties and areas of training within the department. The arguments for the feasibility of implementing such an approach to the management of web-resources of the department are presented. As a result of the conducted informatization of the activity the fragments of some modules of the web-resource (site) of the department of the Zaporizhzhia National University, Ukraine, are presented. This shows the possibilities for creating analytical reports to give recommendations to the heads of the department and the administration of the university for improving the efficiency of the educational process and control over its progress.
Keywords: *department, web-resource, informational model, SMM-strategy.*

JEL Classification: I21, L86
UDC: 378:004.91:519.7

Introduction

The development of digital technology and modernization of education caused the transition to the use of new information technology for educational purposes. The current living conditions and the transition to distance learning, caused by the pandemic COVID-2019, have led to the need for accelerated informatization of such vital basic components of the University's activities (planning and management) as professional, educational, scientific and organizational and management processes.

«Informatization» means the process of providing the University or its structural divisions with modern technical equipment and software for them, Information and communication technology for the creation and recieving of valuable information content and its further penetration into the target information space on the Internet.

Ukrainian and European experience in informatization of university activities [1], as well as our own experience in administrative positions (Dean of the Faculty, Head of the Department, responsible for teaching and methodological, scientific, professional work of the Faculty and Department), convinces that the most often subject to automation are primarily those structural units of the university, which are directly involved in the basic processes of the formation of the student contingent and ensuring the key process of the educational process, namely: Rector's office, dean's office, departments, academic unit, admissions committee.

The Rector's Office, the Dean's Office, the academic department, and the admission committee are among the listed institutional structural divisions, and therefore their activities are subject to the first priority informatization, since they are the owners of the key parts of the educational process of the University. Often the activity of the department as a structural division is informatized together with these departments of the university, but often it is limited to the framework structure of the department website as an element of the general university website. Under these conditions, the informational profile of the department, its updating and maintenance of informational content in an up-to-date form is in fact the responsibility of the department itself. This is where certain deviations (sometimes quite substantial) within the general university format occur.

This situation, on the one hand, leads to the emergence of unique and presentable information profiles of the university departments and is certainly a positive sign in terms of the efficiency of the departmental website on the Internet, but on the other hand, the loss of a single corporate style, This in some way harms the image of individual departments and corresponding specialties and, as a result, lowers the economic indicators of the efficiency of the entire university, in particular, through the loss of a certain contingent of applicants as potential students of this very university.

Therefore, the University Department and tools for informatization of its activities were chosen as the object of our study, and the most prominent are the web-oriented management systems of the University. According to the object, the task of the research is to develop an information model of the given web-resources of the department (department website) as a structural unit of the University. The information model of the department web-resources data, which must be integrated with the relevant web-resources of the University, will allow to implement the elements of modern learning at the department level, which meets the requirements of the digital society and the implementation of an effective form of distance learning, Building a productive relationship between professors and administrators of the University, meeting modern requirements, creating conditions for the individualization of student learning, automation of activities of all participants in the educational process, comprehensive use of advanced electronic educational resources of academic, managerial and scientific purposes, etc.

Analysis of recent research and publications

Problems of digitalization of educational processes using information models and systems are discussed in many scientific papers of both domestic and foreign scientists, including Bikov V.Y., Gritsenko V.G. [1], Zgurovsky M.Z., Mora H.L. [2], Teslia I. [3] and others. However, not enough attention is paid to the standard architecture of the university department web-resource design, which automates content management processes and ensures the implementation of the market development strategy of educational services. Researchers have different ideas about the technology and ways of web-resources development. However, scientists have not yet reached the final decision on the systematic formation of the information model of content management of web-resources of the University Department.

The objective of the article is to increase the efficiency of web-resource management of the university department on the basis of the information model of data.

The main body of the academic paper

The University Chair web-resource development process starts from the analysis and further designing of its structure. Competent design of sections, subdivisions and end pages of the web-resource makes it accessible and understandable for the applicants, students and lecturers, increases the visibility of the web-resource on the Internet for Google search engines, which form the output by the requests of users.

Based on the provisions of systems theory, the analysis of the subject area of creating a web-resource of the University Department was carried out, and its main structural components as a kind of information system were identified. The considered object (department's web-resource) is presented as a system:

$$S_o = \langle A, K, R, F, G \rangle, \tag{1}$$

where A, K, F - accordingly architecture, components and functions of the system, R - links between components, G - goals of information system creation.

On the basis of practical experience and scientific understanding of the systems, a model of a web-resource was developed (Fig. 1)

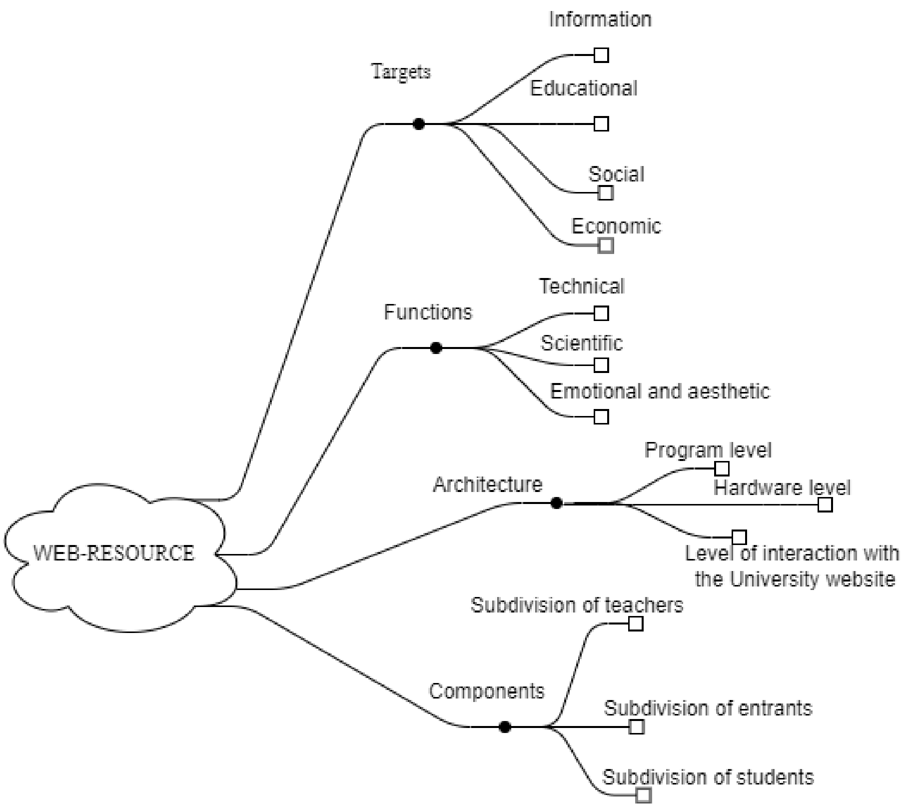

Fig. 1. The simplified model of the University Department's web-resource
(*Prepared by the authors*)

This system is open, i.e. it interacts with the environment and other systems (for example, the main website of the university, particularly for Zaporizhia National University -

https://www.znu.edu.ua/). Information model of web-resource of the department has a set of characteristics - emotional and aesthetic, scientific, technical, economic, etc. The objectives and functions of the web-resource are set, which will enable to optimize the design-technology of the content and structure of the future web-resource in the educational activities of the department.

The life cycle of typical web-resources in educational activity was investigated. The main stages of the life cycle of the web-resource are depicted in the developed conceptual model (Fig. 2).

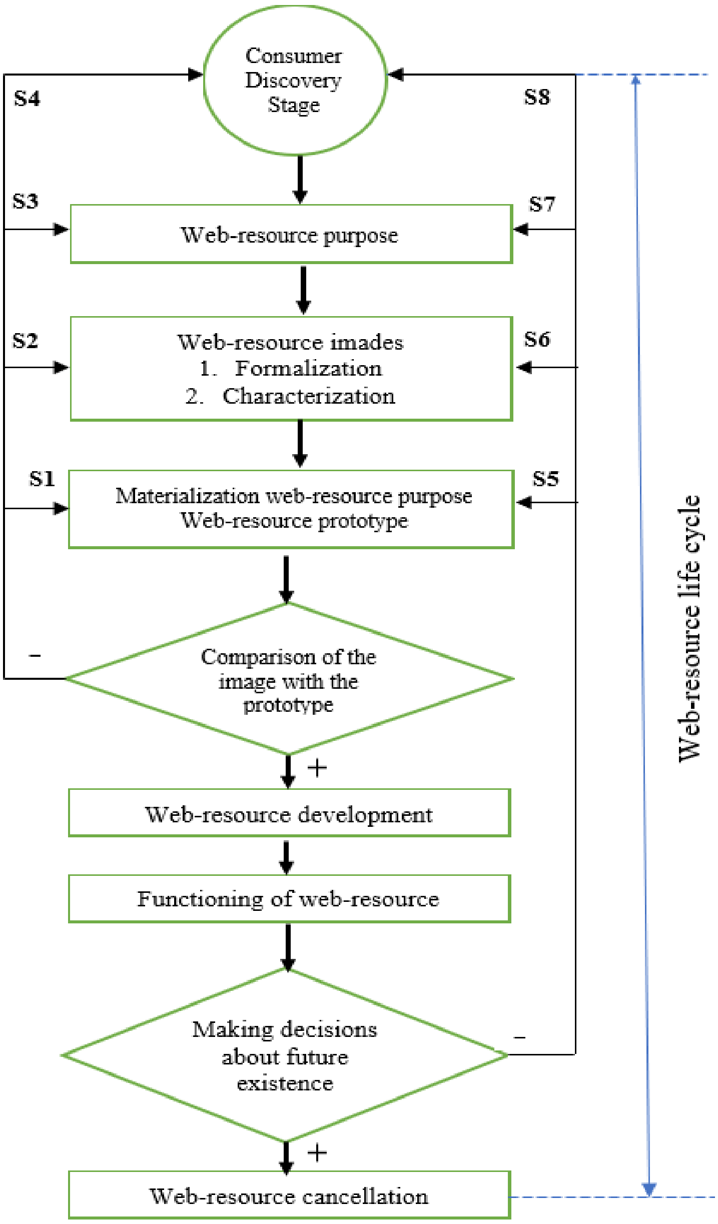

Fig.2. Conceptual model of life cycle of web-resource
(*Prepared by the authors*)

According to this model, design as a process and technology of creative and scientific web-resource creation can be modeled according to the principle of a cybernetic system with feedback path.

The process involves the following steps: identifying the needs (1), setting objectives (2), formalizing the description - creating an image of a web-resource (3), developing a prototype of the web-resource (4), comparing the prototype with the image of the web-resource (5), developing the web-resource (6), functionalizing of the web-resource (7), web-resource cancellation (8). The web-resource prototype can be corrected in steps S1 - S4 by returning to the previous steps (1 - 4), as well as by correcting the web-resource itself in steps S5 - S8.

A description of the developed information model according to systems theory is provided. The projection system is defined as SP = {KS, Rs}, where KS are components of the life cycle system, Rs are resources necessary for the implementation of the web-resource image:

$$KS = <N, G, I, C, CHi , CP, WEBl, DWEB)>, \qquad (2)$$

where N - needs in web-resource creation, G - goals of web-resource creation, I - information image of web-resource, C - development of web-resource, CHi - correction of web-resource creation, CP - creating a web-resource according to the approved prototype, WEBl - period of existence of the web-resource, DWEB - web-resource withdrawal out of service.

So, during the whole existence of the web-resource the interaction between the components of the system is performed, including the Rs resources and the flow of information about the created object in accordance with the life cycle. The model allows to algorithmize the technology of web-resource creation with the help of system approach.

Thus, the technology of web-resource development includes a sequence of operations, which is determined by the information model, as well as technical and creative tools for creating the site. Among these tools the greatest consideration is CMS (content management systems), which is now widely disseminated technology for creating and managing the content of web resources [4].

The conducted analysis of the internal architecture of the most popular CMS [5] allowed to formulate a general design architecture for all of them, which is shown in Fig. 3.

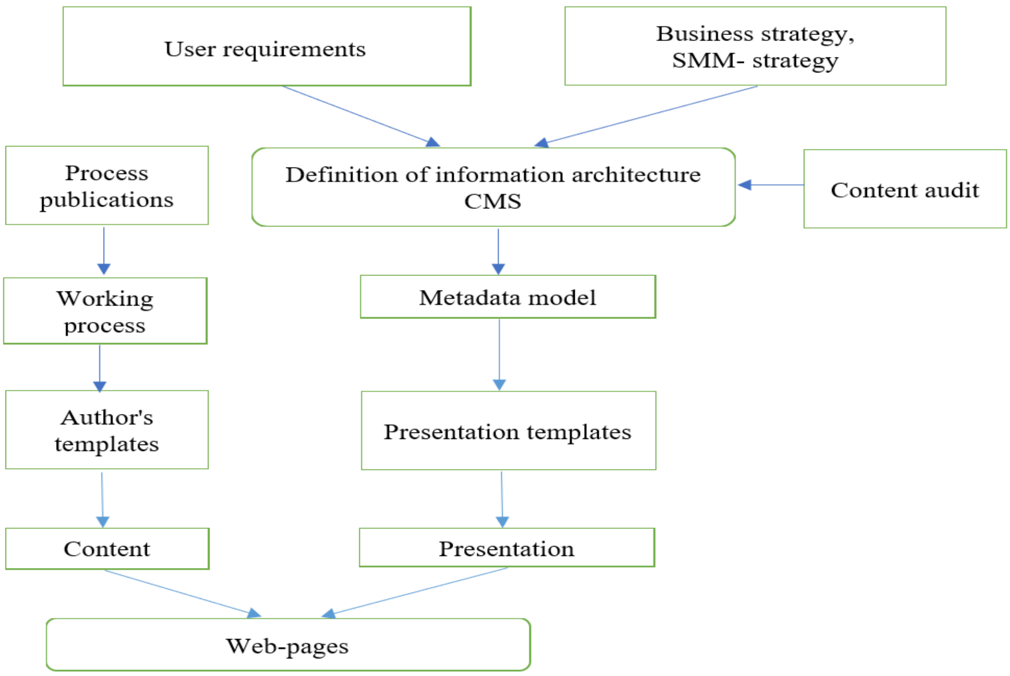

Fig. 3. Information architecture of CMS
(*Prepared by the authors*)

As it is shown in Fig. 3, the information is collected and displayed for publication on web pages in the formatted form. The first two components are the requirements of the users and the strategy of functioning of the web-resource. These stages are necessary for the collection of information and information architecture formation. Information architecture of CMS guarantees that the basis is stable and the web-resource will be long-lasting and scalable. Content audit verifies that the content is authentic and consistent with the requirements. This is followed by the process of publication.

All of the following steps are used to convert the selected content into the form required for its publication on web pages. Thus the content is combined with the form of presentation of the content in the CMS.

During the development of a web-resource, at the stages of creating a strategy and implementation of the web-resource should pay attention to the relatively promising developments in the field of Internet marketing, and especially in the marketing of social media (SMM - a process of attracting traffic or attention to the brand (specialty of the department) through social media platforms) [6]. It appeared in the market of Internet technologies less than ten years ago, and successfully showed its high efficiency. SMM - is a kind of closed and invasive advertising, which allows penetrating to a target audience, attracting attention to their own services and products, thereby increasing the number of visitors to the site.

There is a universal concept of SMM-strategy [6]. It is also suitable for universities, and in this subject area some of its steps can be formalized in advance.

We have modified the existing universal SMM-strategy concept for adaptation to the functioning of the web-resource of the university department (Fig. 4).

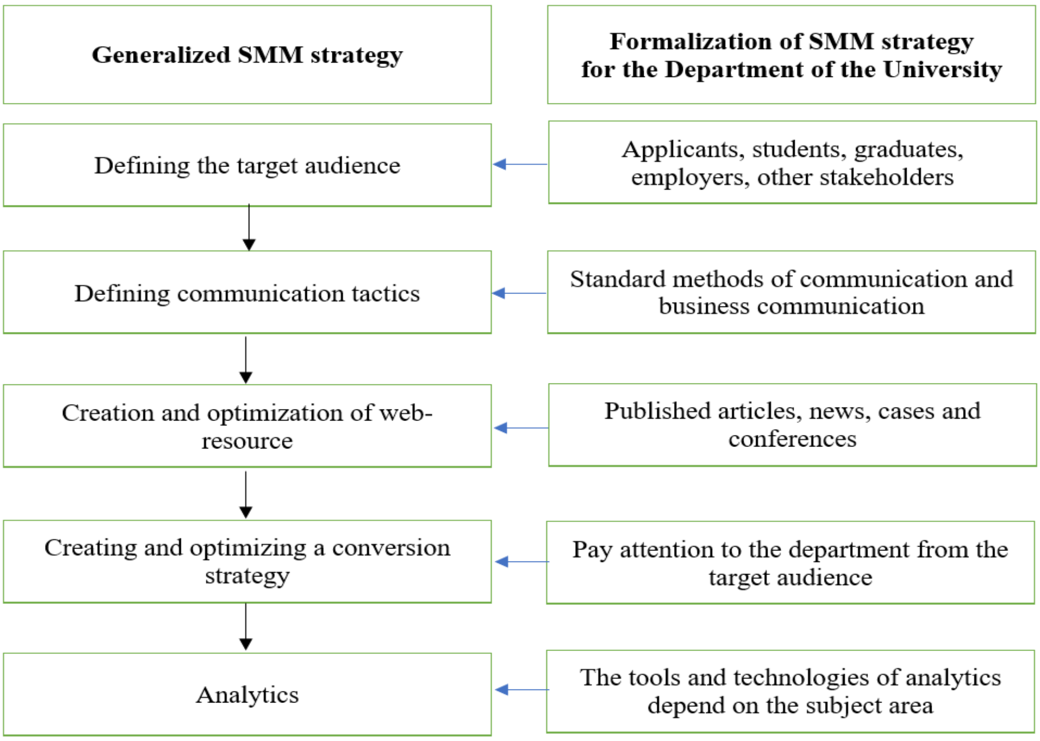

Fig. 4. SMM-strategy of the University Department
(*Modified by the authors on the basis of [7]*)

The «Analytics» phase of SMM strategy should be noted because it is one of the most important and it largely influences all the other phases. The main tasks of analytics in the management of web-resources of the University Department:

– monitoring of social sites and messengers;

– carrying out analytical tonality of calls to the resources of the department;
– searching for sources of negativity in social networks and messengers;
– conducting research in the social network and identifying the nature of negativity;
– analysis of the effectiveness of the advertising company for educational programs of the department;
– investigating the sources and quality of traffic;
– analytical changes in the information field.

In order to solve these tasks not only professional experts are needed, but also efficient instrumental tools for monitoring, collection and processing of information on social networks, as well as tools for interactive analysis of data. This monitoring system is suitable for inclusion in the web-resource as a software module.

A special place in the field of SMM analytics is given to the identification of tonal social media (positive/negative/neutral). With the help of this information the efficiency of activity of the University and its departments is evaluated in a proper way, low factors affecting the formation of the image of department specialties, etc. are revealed. We have formed the actual criteria for the analysis of tone information in the subject areas of the University department, which are shown in Fig. 5.

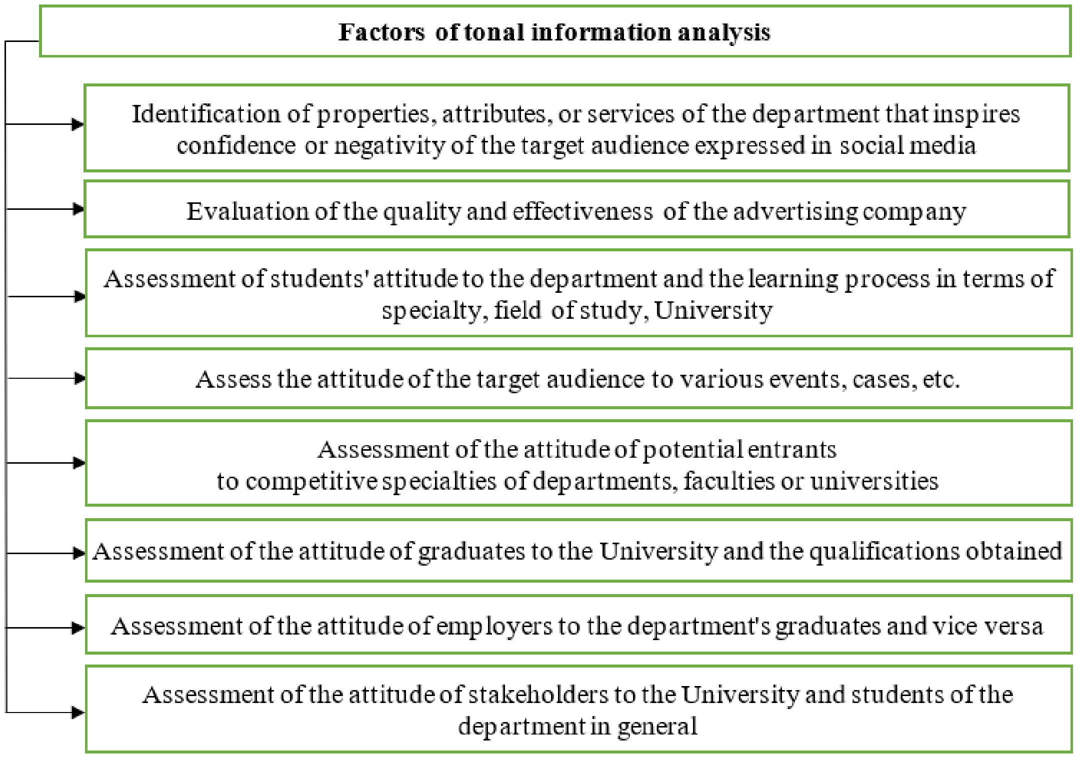

Fig. 5. Factors of tonal Information in subject areas of the University Department
(*Modified by the authors on the basis of [7]*)

Searching for the necessary data is done both manually and with the help of technologies and software for monitoring and derivation of information from social web resources. Searching and analyzing negative and positive opinions after receiving data from web resources can be done with the help of TextMining technology. Also, the problem from a mathematical point of view can be referred to the task of text tone analysis (Sentiment Analysis).

The Sentiment Analysis task is one of the frequent cases of the text classification problem in the field of computer (mathematical) linguistics. Thus, the work [8] describes the main approaches to solving the tasks of analyzing the tonality of texts, among which the aspect (interactive) approach should be mentioned. These approaches are based on machine learning methods (ML). This is due to the obvious increase in the number of textual collections in social networks, as well as, in general, the constant increase in the number of non-structured information on the Internet. To perform the tasks of analyzing the tone of the opinions of the audience and other interested parties, in social networks and messengers, it is reasonable to use the methodology of reference vector classifier or the highest Bayesian classifier, which provide very accurate indicators of quality.

On the basis of the above-mentioned, we can develop an information model of the university department activity management using SMM technologies, social networks analysis, and analysis of the tone of the audience's opinions. The model is presented in Fig. 6.

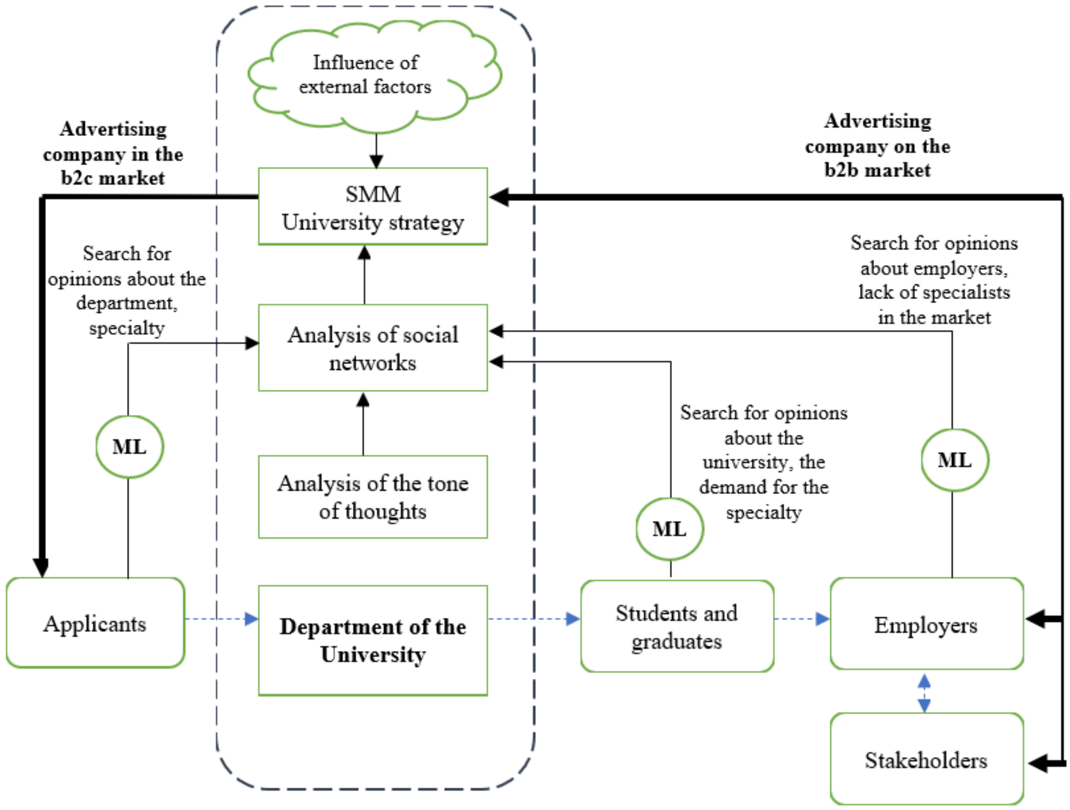

Fig. 6. Information model for managing the activities of the University Department using SMM technologies and social media analysis
(*Modified by the authors on the basis of [7]*)

This model has three basic processes:
– monitoring of public opinion generated by social media users;
– systematic analysis of the opinions;
– development and application of SMM-strategy on the basis of the call.

The presented model can be interpreted as a model of b2c and b2b commercial markets. Market b2c (from business to consumer) - commercial relations between the organization (business) and the final consumer. The market of educational services is a b2c market, and the labor market is a b2b market.

For practical implementation of the information model of the department's activity management, CMS WordPress was installed at https://znuiepf.com. ua (with the database on DBMS MySQL), which became the base page for the creation of web-resource of the department of information economics, entrepreneurship and finance Zaporizhzhia National University.

The analysis of information model data when installed CMS WordPress indicates that the available database is insufficient for the solution of problems associated with the effective management of web-resources of the department. We supplemented the existing database of CMS WordPress by a group of tables of educational orientation, a fragment of which is presented in Table 1.

Table 1. Additional tables of the web-resource data information model of the University Department

Title of the table	Description
wp_acquired_competencies	Competencies students acquire in accordance with the educational program
wp_course	Subjects taught at the University
wp_course_name	Names of subjects that have been at the University since the existence of the base
wp_current_year	Current academic year
wp_degree	Degrees of applicants (bachelor, master)
wp_department	Name of the Department
wp_faculty	Faculties, if any, within the structure of the University
fwp_field_of_knowledge	Areas of knowledge
wp_knowledge_control	Types of semester knowledge control
wp_order_reason	Reasons that may be in the orders
wp_position	Positions
wp_privilege	Existing privileges that students can have
wp_qualifications_for_specializations	Professional qualifications obtained by graduates according to educational programs
wp_professional_qualification	Professional qualifications
wp_teacher	Teachers
wp_student_group	Students' academic groups
wp_student	Students
wp_specialization	Educational programs
wp_speciality	Specialties
wp_scientific_degree	Scientific degrees
wp_two_diplom	The Program of Dual Diplomas
wp_res_smm_strategy	Results of the analysis of social networks

Prepared by the authors

The data information model includes 22 tables that provide an architecture of the main entities of the educational process - students in training, educational plans, evaluations, entities that reflect educational-operations, such as assessment, renewal, processing documents from a dual 2D diploma, referral for academic leave of absence, as well as essences that reflect the results of social media analysis and analysis of the recipients' tone of mind required for the formation of the University's strategy for working with applicants and employers. The expansion of the information base of the web-resource ensured the automation of certain educational processes, in particular, we have developed as a separate module a subsystem for obtaining data on the activities of the teaching staff and students of the University in the field of science. A fragment of the program module for obtaining information from Google Scholar is presented in Listing 1.

Listing 1. Fragment of the code for receiving information resources on Google Scholar.

```
const SerpInfo = require('google-search-results-nodejs');
const search = new SerpInfo.GoogleSearch("
bb08620bf7c6d96529fe20d980e9d19aa01568026a2b99967e58de1b344bcb9dc");
const params = {
  engine: "google_scholar_author",
  author_id: "JWzg4U0AAAAJ"
};
const callback = function(data) {
  renderData(data['author']);
};
search.json(params, callback);
```

As a result of this code operating all the information will be received in JSON format on the publications of the department collaborator in this format:


```
{
   "title": "Концептуалізація поняття фінансовий механізм",
   "link":
"https://scholar.google.com/citations?view_op=view_citation&hl=en&user=JWzg4U0AAAAJ&citation_for_view=JWzg4U0AAAAJ:3fE2CSJIrl8C",
   "citation_id": "JWzg4U0AAAAJ:3fE2CSJIrl8C",
   "authors": "НГ Метеленко, ОП Шульга",
   "publication": "Причорноморські економічні студії, 171-179, 2016",
   "cited_by": {
     "value": 15,
     "link":
"https://scholar.google.com/scholar?oi=bibs&hl=en&cites=16223780744616268298",
     "serpapi_link":
"https://serpapi.com/search.json?cites=16223780744616268298&engine=google_scholar&hl=en",
     "cites_id": "16223780744616268298"
   },
   "year": "2016"
 },
```


A feedback subsystem for prospective students wishing to enroll in a Dual Degree Program has been implemented and teacher pages have been automated to synchronize publications using Google Scholar resources. The implementation of informational model, in our opinion, will allow obtaining timely the results of analysis of the tone of ideas and displaying this information on the web-resource as a report and recommendations for the heads of department and administration of the University.

Conclusions

As a result of the research, a conceptual model of web-resource design of the University Department was developed, on the basis of which an information model of web-resources creation process was proposed and a formalized (structural-functional and object) description of stages of this model based on systems theory.

Based on the methods of system design, a unified information architecture of CMS design is presented, which guarantees the stability and scalability of the web-resource and the combination of content with the form of content presentation in the CMS. This approach ensures the integration of information components in the creation of web-resources of universities of any form of ownership.

A modified SMM-strategy of the University Department has been proposed. The use of SMM-strategy in the management of web-resources has a long term goal of increasing attention to the specialties of the department and its educational programs on the part of applicants, which in the final aspect should contribute to an increase in the number of applications for specialties of the department. Current criteria for the analysis of tonal information in the subject areas of the Department of the University are presented.

The information model of management of the University Department activities using SMM technologies and social media analysis has been suggested. This allows you to present the interaction between the markets of educational services and the market with the target audience, and solves the problem of the lack of a direct link to the needs of specialists in different fields. In this way the urgent problem of imbalancing the markets of educational services and the labor market for increasing the efficiency of human resources and raising the level of social and economic need for development at the regional level can be solved.

Since the technologies of tone analysis can be used to analyze the attitudes of applicants to the choice of specialties and training areas, The information obtained can be used not only for the purpose of advertising campaign, but also in the process of optimization and management of web-resources of the department in particular, and the University in general. For example, this information can be used by the University to solve the problem of determining the number of planned budget-financed study places.

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METHODOLOGICAL ASPECTS OF ASSESSMENT OF THE WORLD SUGAR MARKET

KOVALENKO Olha,
D-r of Sciences in Economics,
Institute of Food Resources of the National Academy of Agrarian Sciences of Ukraine
(Kyiv, Ukraine)
e-mail: okovalenko0960@gmail.com
ORCID 0000-0001-8364-3316

YASHCHENKO Lyudmila,
PhD in Economics,
Institute of Food Resources of the National Academy of Agrarian Sciences of Ukraine
(Kyiv, Ukraine),
e-mail: lud_ya@ukr.net
ORCID 0000-0002-4893-8191

VERBYTSKYI Sergii,
PhD in Engineering,
Institute of Food Resources of the National Academy of Agrarian Sciences of Ukraine
(Kyiv, Ukraine),
e-mail: chaink@ukr.net
ORCID 0000-0002-4211-3789

Abstract. *The article presents the methodological aspects of the study of the world sugar market in two directions: assessment of competitive positions in the top 10 countries of the world in terms of production and export, as well as identification of countries being the potential importers. The analysis is carried out according to economic and statistical indicators: growth rates of production, exports, consumption and imports; percentage of a country in the world production, exports, consumption and imports; ratios of export to production, consumption to production, import to consumption. Criteria for determining export-oriented and import-dependent countries on the sugar market and countries that fully fill the domestic consumption with their own production have been established.*

It was determined that export-oriented countries (in which the percentage of exports in production is more than 60%) are Brazil, Thailand, Australia, Guatemala and South Africa; import-dependent countries (the percentage of imports in consumption is more than 30%) are Indonesia, USA, Bangladesh, Algeria, Malaysia, South Korea and Nigeria; countries that can fully satisfy domestic consumption with their production (the ratio of consumption to production does not exceed 100%) are India, Brazil, Russia and Mexico. The most competitive positions in the world sugar market are held by producers from Brazil, India, Pakistan, Russia and South Africa. The most promising countries for sugar sales are China, USA, Malaysia, UAE, Algeria and Saudi Arabia.

Key words*: world sugar market, production, export, consumption, import, competitive position, export-import potential.*

JEL Classification: L52, L66,
UDC 664:338.439

1. Introduction

The structure of the world sugar market is formed on the basis of two types of raw materials – sugar cane and sugar beet. The sugar cane cultivation in the world is mainly concentrated in the countries of South America, Southeast Asia, South Asia, sugar beet – on the European continent and South-West Asia. The main sugar cane producers are Brazil, India, China, Thailand, Mexico and Pakistan, which account for more than 50% of world production.

The leading regions in the production of sugar beet are the EU, Russia and the United States, whose share in world production is about 20%.

Over the past 50 years, the share of beet sugar in world production has decreased from 39.8% to 21.2%. At the same time, the share of cane sugar increased from 60.2% to 78.8% (Fig. 1). This trend continues because the production cost of cane is much lower than that of beet. Sugar cane is a perennial crop harvested twice a year, its processing is much cheaper than that of sugar beet, with almost the same sugar yield from these types of raw materials. Therefore, beet sugar exporters, which include Ukrainian producers, are usually active on the foreign market only during periods of high product prices.

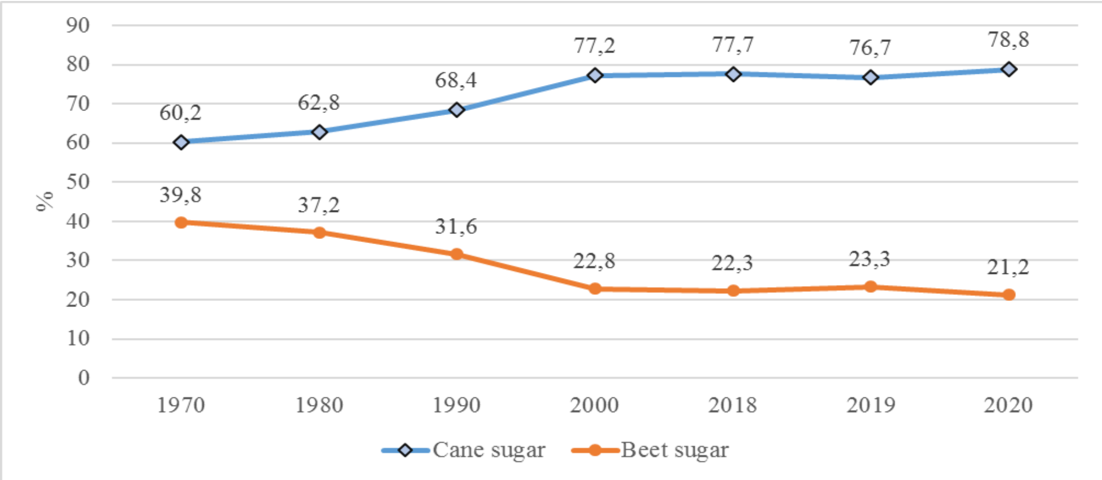

Figure 1. Shares of the world production of sugar from sugar cane and sugar beet, %
Source: chart according to the data of the United States Department of Agriculture [1]

The modern mechanism for managing the sugar industry does not let Ukraine renew its image of a sugar state, as it had before. Therefore, research on trends in the global sugar market is currently relevant and requires improvement of methodological approaches.

2. Recent research and publications analysis

A significant contribution to the study of the world sugar market was made by the Ukrainian scientists T.M. Melnik [2], V.S. Bondar, A.V. Fursa [3], S.M. Valiavskyi, Ye.A. Prudka [4], the analysis of structural adjustment and the formation of priorities for the development of the sugar market in different countries being presented in their works. However, the current state of the world sugar market requires further comprehensive study of the issues of assessing the competitive positions of manufacturers in the countries of the world and identifying potential countries for the sale of sugar.

Goal of the article – development of a methodological approach to assessing the world sugar market and, on its basis, identifying the main world producers, exporters, importers and consumers of sugar.

Materials and research methods.

The ratings and dynamics of the development of the world sugar market make it possible to determine the strengthening or decrease of the competitive positions of countries in world production and exports, as well as to substantiate conclusions about the expansion of their potential opportunities.

The assessment of the competitive positions of sugar producing countries is based on the growth rates and percentage in world production.

The production growth rate is determined by the formula:

$$Rip = \frac{Pr}{Pp} \cdot 100 - 100, \quad (1)$$

where: *Rip* is the growth rate of production volumes,%; *Pr* is the volume of production for the reporting period, thousand tons; *Pp* – production volume for the previous period, thousand tons.

If *Rip* > 0, this indicates the strengthening of the country's competitive position; if *Rip* < 0 – the decrease in competitive positions.

The percentage in world production is determined by the formula:

$$Ppr = \frac{Pr}{Pwr} \cdot 100 \text{ or } Ppp = \frac{Pp}{Pwp} \cdot 100, \quad (2)$$

where: *Ppr* and *Ppp* – percentage in world production in accordance with the reporting and previous periods,%; *Pwr* and *Pwp* – world production for the reporting and previous periods, thousand tons.

If *Ppr* – *Ppp* > 0, this indicates the strengthening of the country's competitive position; if *Ppr* – *Ppp* < 0 – the decrease in competitive positions.

The constant increase in the world's population and the decline in the competitive position of a number of countries in the world market are factors that provide certain opportunities for expanding the production and export of sugar to other countries.

The assessment of the competitive positions of sugar exporting countries is carried out on the basis of growth rates, percentage in world exports and exports in production.

The export growth rate is determined as follows:

$$Rie = \frac{Er}{Ep} \cdot 100 - 100, \quad (3)$$

where: *Rie* is the growth rate of export volumes,%; *Er* – export volumes for the reporting period, thousand tons; *Ep* – export volumes for the previous period, thousand tons.

If *Rie* > 0, this indicates the strengthening of the country's competitive position; if *Rie* < 0 – the decrease in competitive positions.

The percentage of world exports is determined by the formula:

$$Per = \frac{Er}{Ewr} \cdot 100 \text{ or } Pep = \frac{Ep}{Ewp} \cdot 100, \quad (4)$$

where: *Per* and *Pep* are the percentage of world exports in accordance with the reporting and previous periods,%; *Ewr* and *Ewp* – world exports for the reporting and previous periods.

If *Per* – *Pep* > 0, this indicates the strengthening of the country's competitive position; if *Per* – *Pep* < 0 – the decrease in competitive positions.

The percentage of exports in production is calculated as follows:

$$Pepr = \frac{Er}{Pwr} \cdot 100 \text{ or } Pepp = \frac{Ep}{Ewp} \cdot 100, \tag{5}$$

where: *Pepr* and *Pepp* are the percentage of exports in production in accordance with the reporting and previous periods,%.

If *Pepr* – *Pepp* > 0, this indicates the strengthening of the country's competitive position; if *Pepr* – *Pepp* < 0 – the decrease in competitive positions. If *Pepp* or *Pepp* > 60%, this indicates the export orientation of the country.

The identification of potential importing countries is carried out by constructing a rating of consumer countries based on an assessment of the growth rate, the percentage in world consumption and the percentage of consumption in production.

We calculate the growth rate of consumption as follows:

$$Ric = \frac{Cr}{Cp} \cdot 100 - 100, \tag{6}$$

where: *Ric* is the growth rate of consumption volumes,%; *Cr* – consumption volumes for the reporting period, thousand tons; *Cp* – consumption volume for the previous period, thousand tons.

If *Ric* > 0, this indicates an increase in the potential for export; if *Ric* < 0 – the decrease in the potential for export.

The percentage in world consumption is determined by the formula:

$$Pwr = \frac{Cr}{Cwr} \cdot 100 \text{ or } Pwp = \frac{Cp}{Cwp} \cdot 100, \tag{7}$$

where: *Pwr* and *Pwp* are the percentage in world consumption for the reporting and previous periods, respectively, %; *Cwr* and *Cwp* – world consumption in the reporting and previous periods, thousand tons.

If *Pwr* – *Pwp* > 0, this indicates an increase in the potential for sugar exports to the respective country; if *Pwr* – *Pwp* < 0 – the decrease in the possible export capacity.

The ratio of consumption to production is calculated by the formula:

$$Rcpr = \frac{Cr}{Pr} \cdot 100 \text{ or } Rcpp = \frac{Cp}{Pp} \cdot 100, \tag{8}$$

where: *Rcpr* and *Rcpp* are the ratios of consumption to production for the reporting and previous periods, respectively,%.

If *Rcpr* – *Rcpp* > 0, this means that the potential for sugar export to the respective country increases; if *Rcpr* – *Rcpp* < 0 – such opportunities are declining.

If *Rcpr* or *Rcpp* < 100% – this indicates the country's ability to fully provide itself with sugar. If *Rcpr* or *Rcpp* > 100%, this indicates the possibility of exporting sugar to the respective country.

Potential importing countries can be identified by calculating a rating of importing countries based on growth rates, percentage in world imports and the ratio of imports to consumption.

The growth rate of imports is determined by the formula:

$$Rii = \frac{Ir}{Ip} \cdot 100 - 100, \tag{9}$$

where: *Rii* is the growth rate of import volumes,%; *Ir* – import volumes for the reporting period, thousand tons; *Ip* – import volumes for the previous period, thousand tons.

If *Rii* > 0, this indicates an increase in the potential for export; if *Rii* < 0 – the decrease in the potential for export.

The percentage in world imports is determined by the formula:

$$Pir = \frac{Ir}{Iwr} \cdot 100 \text{ or } Pip = \frac{Ip}{Iwp} \cdot 100, \tag{10}$$

where: *Pir* and *Pip* are the percentage of world imports for the reporting and previous periods, respectively,%; *Iwr* and *Iwp* – world imports for the reporting and previous periods, thousand tons.

If *Pir – Pip* > 0, this indicates an increase in the potential for sugar exports to the respective country; if *Pir – Pip* < 0 – the decrease in the potential for export.

The ratio of imports to consumption is calculated as follows:

$$Ricr = \frac{Ir}{Cr} \cdot 100 \text{ or } Ricp = \frac{Ip}{Cp} \cdot 100, \tag{11}$$

where: *Ricr* and *Ricp* are the ratios of imports to consumption for the reporting and previous periods, respectively,%.

If *Ricr – Ricp* > 0, this indicates an increase in the potential for sugar exports to the respective country; if *Ricr – Ricp* < 0 – the decrease in the potential for export.

If *Ricr* or *Ricp* > 30%, then it indicates the country's import dependence in the sugar market, that is, this country is potential for exporting this product.

Research results and discussion

The application of the proposed methodological approach indicates that the most dynamically developing sugar production is in Brazil, Russia and Pakistan. The rates of production of other major sugar-producing countries are slowing down, while the percentages in world production are decreasing, which, given the constant increase in the world's population, provides certain opportunities for expanding production and exports (Table 1).

India, Russia and South Africa have positive export growth rates. An increase in the percentage of world exports is observed in Brazil, India, Russia and South Africa. All other countries have decreased their competitive positions. Export-oriented countries with a percentage of exports in production of over 60% are Brazil, Thailand, Australia, Guatemala and South Africa (Table 2).

Table 1. Top-10 world sugar-producing countries

Country	Production volume, thousand tons		Rates of increase, %		Share in world production, %	
	2019/18	2020/19	2019/18	2020/19	2019/18	2020/19
Brazil	29500	29925	-24.1	1.4	16.4	18.1
India	34300	28900	0.0	-15.7	19.1	17.5
EU	17982	17003	-14.1	-5.4	10.0	10.3
China	10760	10400	4.5	-3.3	6.0	6.3
Thailand	14581	8294	-0.9	-43.1	8.1	5.0
Russia	6080	7800	-7.3	28.3	3.4	4.7
USA	8164	7393	-3.2	-9.4	4.6	4.5
Mexico	6812	5596	6.9	-17.9	3.8	3.4
Pakistan	5270	5260	-27.1	-0.2	2.9	3.2
Australia	4725	4285	5.5	-9.3	2.6	2.6

Source: calculation according to the data of the United States Department of Agriculture [1]

Table 2. Top-10 world sugar-exporting countries

Country	Export volume, thousand tons		Rates of increase, %		Share in world export, %		Share of export in production, %	
	2019/18	2020/19	2019/18	2020/19	2019/18	2020/19	2019/18	2020/19
Brazil	19600	19280	-30.5	-1.6	34.3	36.2	66.4	64.4
Thailand	10612	7000	-2.7	-34.0	18.6	13.1	72.8	84.4
India	4700	5800	110.2	23.4	8.2	10.9	13.7	20.1
Australia	3735	3600	3.8	-3.6	6.5	6.8	79.0	84.0
Guatemala	2125	1947	13,0	-8.4	3.7	3.7	71.6	70.0
Russia	387	1605	-37,7	314,7	0.7	3.0	6.4	20.6
South Africa	1041	1451	35.5	39.4	1.8	2.7	46.1	63.2
Mexico	2337	1285	103.9	-45.0	4.1	2.4	34.3	23.0
EU	1949	1200	-50.3	-38.4	3.4	2.3	10.8	7.1
Colombia	801	750	9.4	-6.4	1.4	1.4	33.4	31.9

Source: calculation according to the data of the United States Department of Agriculture [1]

Only India, Brazil, Russia and Mexico can fully provide themselves with sugar. But in the EU, China, USA, Indonesia, Pakistan and Egypt, consumption significantly exceeds production, so these are potential sugar importing countries (Table 3).

Table 3. Top-10 world sugar-consuming countries

Country	Consumption volume, thousand tons		Rates of increase, %		Share in world consumption, %		Share of consumption in production, %	
	2019/18	2020/19	2019/18	2020/19	2019/18	2020/19	2019/18	2020/19
India	27500	27000	3.8	-1.8	16.0	15.9	80.2	93.4
EU	18600	18300	0.0	-1.6	10.8	10.8	103.4	107.6
China	15800	15400	0.6	-2.5	9.2	9.0	146.8	148.1
USA	10982	11100	0.5	1.1	6.4	6.5	134.5	150.1
Brazil	10600	10650	0.0	0.5	6.1	6.3	35.9	35.6
Indonesia	7055	7356	10.7	4.3	4.1	4.3	320.7	326.9
Russia	6016	6100	-1,6	1.4	3.5	3.6	98.9	78.2
Pakistan	5400	5600	1.9	3.7	3.1	3.3	102.5	106.5
Mexico	4317	4349	-4.3	0.7	2.5	2.6	63.4	77.7
Egypt	3100	3250	1.6	4.8	1.8	1.9	128.9	118.6

Source: calculation according to the data of the United States Department of Agriculture [1]

Potential sugar-importing countries are determined based on the rating (Table 4)

Table 4. Top-10 world sugar-importing countries

Country	Import volume, thousand tons		Rates of increase, %		Share in world import, %		Share of import in consumption, %	
	2019/18	2020/19	2019/18	2020/19	2019/18	2020/19	2019/18	2020/19
Indonesia	5362	4758	24.0	-11.3	10.3	9.2	76.0	64.7
China	4086	4350	-6.1	6.5	7.9	8.4	25.9	28.2
EU	1987	2100	48.2	5.7	3.8	4.1	10.7	11.5
USA	2785	3705	-6.3	33.0	5.4	7.2	25.4	33.4
Bangladesh	2429	2345	-8.5	-3.5	4.7	4.5	96.4	96.3
Algeria	2328	2470	3.0	6.1	4.5	4.8	109.8	115.0
Malaysia	2139	1966	6.8	-8.1	4.1	3.8	107.4	104.7
South Korea	1999	1926	7.2	-3.7	3.8	3.7	119.8	118.7
Nigeria	1870	1890	0.0	1.1	3.6	3.7	116.1	116.7
Saudi Arabia	1342	1420	-6.8	5.8	2.6	2.7	-	-

Source: calculation according to the data of the United States Department of Agriculture [1]

China, EU, USA, Algeria, Nigeria and Saudi Arabia demonstrate positive growth rates of imports and the share of world imports. Import dependent countries are Indonesia, USA, Bangladesh, Algeria, Malaysia, South Korea and Nigeria. All of these countries are potential sugar-importing countries.

Conclusion

The assessment of the world sugar market, carried out on the basis of the proposed methodological approach, showed that in recent years the situation has changed. World consumption of this product is gradually growing, and its structure has undergone a transformation. The main consumers of sugar are currently the markets of China, USA, Malaysia, UAE, Algeria and Saudi Arabia, at the same time significant financial resources are concentrated here, and the market is import-dependent and growing. The state and competitive positions of sugar-producing countries in the world market, where the first positions are occupied by: Brazil, India, Pakistan, Russia, South Africa, have been revealed.

It is now difficult for Ukrainian sugar producers to regain the country's image as a global sugar producer and exporter without improving the state regulatory policy in this area, including antimonopoly policy, developing a strategy for the development of the industry, attracting investments to modernize the technical and technological base of the industry, and ensuring the quality of international products to the requirements. Obviously, in order to solve these and other tasks, it is necessary to form a fundamentally new institutional system of state management of the food sector. It should be reflected in the Law of Ukraine on modern state food policy, which requires urgent adoption.

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VECTOR DESCRIPTION OF GENERAL COUPLED OSCILLATOR (GCO)

BÎCLEA Diana,
PhD, associate professor,
"Lucian Blaga" University of Sibiu, Romania
Email: biclea.d@gmail.com

Abstract: The article studies and develops a vector expression of general coupled oscillator (GCO) to have a more explicit shape of the magnetic dipole transition moment. We are looking for a $\vec{Y}^{GCO}(j)$ vector that would simplify the form of writing the magnetic dipole transition moment knowing the electric magnetic dipole transition moment. The $\vec{Y}^{GCO}(j)$ vector makes the connection between the rotational power of the coupled general oscillator (GCO) and the correction term (COC) and the initial co model. The possible positions of the vector $\vec{Y}^{GCO}(j)$ are determined and is established a dependence between this vector and the magnetic dipole transition moment of the fragments.

Keywords: *vector equations, general coupled oscillator,and magneticdipole transition moment.*

UDC: 330.4:519.86+544

1. Introduction

Over the years, several techniques have been applied in order to study the molecules, but the most popular remain: vibrational Raman optical activity (VROA) and vibrational circular dichroism (VCD).

Vibrational circular dichroism (VCD) is a spectroscopic technique and one of the most important techniques to determine the absolute configuration of molecules [4].

Behind these techniques there is a complex set of mathematical tools, tools that allow the most accurate description of physical and chemical phenomena.Vector equations can provide an elegant abstract formulation of physical laws, but, in order to solve problems, it is usually necessary to express these equations in a particular.

We consider a diatomic molecule in 3D space (fig. 1).

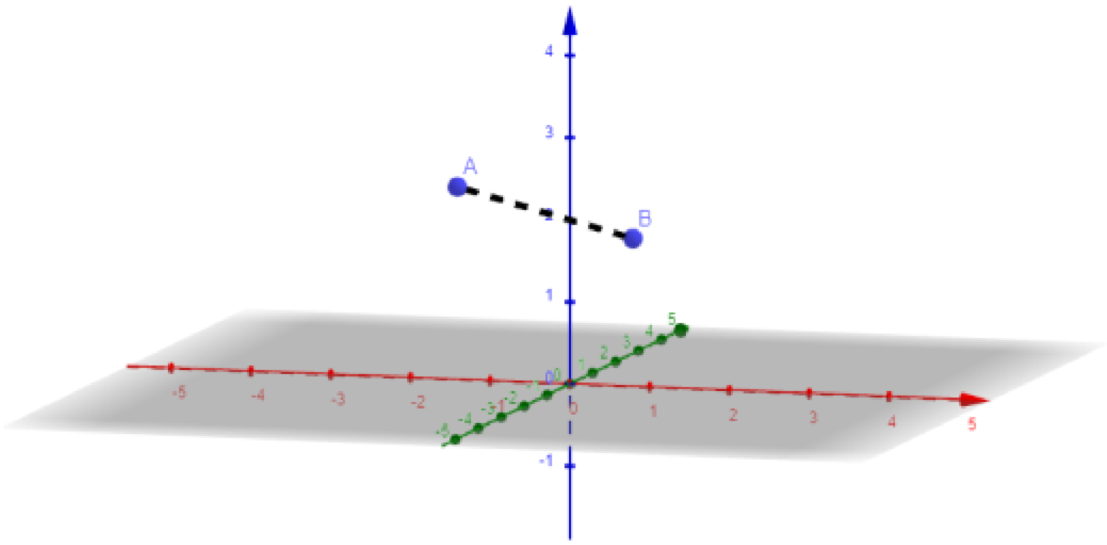

Figure 1. Diatomic Molecule

To locate the molecule, the coordinates of each atom are given. An atom has three degrees of freedom (Fig.1) with $A(x_A, y_A, z_A)$ or $\vec{r_A} = (x_A, y_A, z_A)$. Depending on how many atoms the molecule has, there will be 3N coordinates, where a molecule composed of N atoms will have 3N degrees of freedom [9].

No matter the position of the molecules, it should look the same. This property allows us to write only one vector determined by the other two (fig.2):

$$\vec{r} = \vec{r_B} - \vec{r_A} = (x, y, z).$$

The spatial orientation of the molecule is arbitrary and looks the same from any angle of visibility.In the case of diatoms, only two angles can be specified: the angle that forms it with the Oz axis and the projection angle of the Ox axis on the plane. The distance between atoms is also known [9]:

$$|\vec{r}| = \sqrt{x^2 + y^2 + z^2}.$$

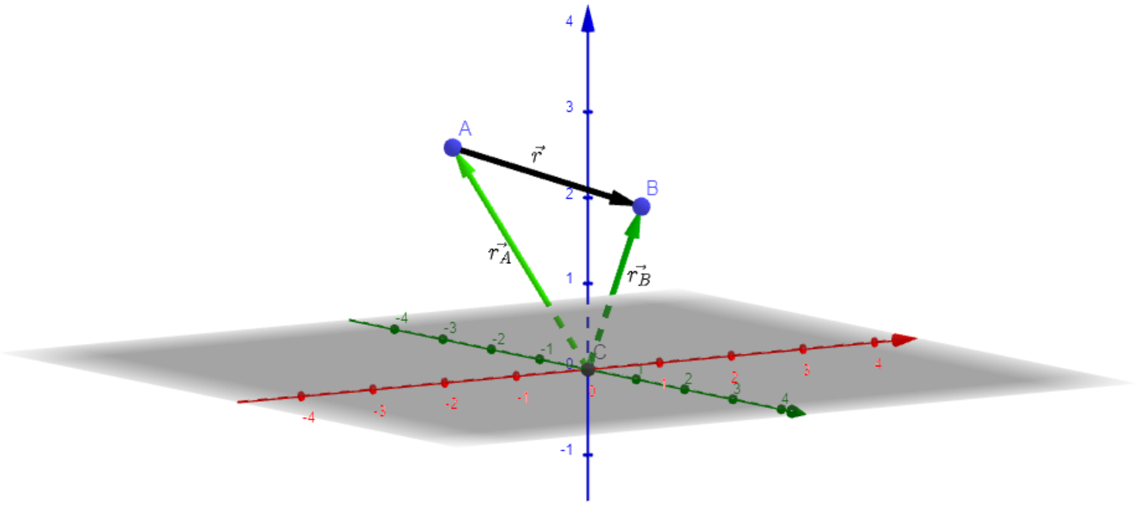

Figure 2. Atoms represented by vectors

When a molecule is exposed to electromagnetic radiation (light), the interaction between the radiation and molecule can cause light and the photons are absorbed by molecule, therefore the molecule becomes excited, from the ground vibrational state to a higher energy vibrational state [3].

The electric and magnetic fields of linearly polarized light wave each oscillate sinusoidally in a plane propagation direction, the electric and magnetic fields planes being perpendicular to each over [3]. In the case of circular polarization, the property of certain electromagnetic radiation in which the direction and magnitude of the vibration the electric field is connected in a specified manner, the light waves are transverse. That is, the vibratory electrical vector associated with each wave is perpendicular to the direction of propagation [9].

By applying the Amsterdam density functional (ADF) software package of VCDtools we can obtain a data set for each molecule and the position of each atom in space.

This paper describes the positions of atoms in the molecule with the help of vectors; the physical quantities used will be organized in vector equations that will have as solutions the position of some important vectors when studying atoms.

2. Vibrational electric dipole transition moment and vibrational magnetic dipole transition moment in the vectorial equations

A molecule exposed to circular polarization it is determined by an electromagnetic field, each atom undergoes various vibrations.

Using the Harmonic approximation method, each molecule is determined by the total moments of the transaction dipole $\vec{E}_{01}^{tot}$ and $\vec{M}_{01}^{tot}$ which are created from their atomic contributions [6]:

$$\vec{E}_{01}^{tot} = \sum_{i=1}^{N} \vec{E}_{01}(j), \vec{M}_{10}^{tot} = \sum_{i=1}^{N} \vec{M}_{10}(j), \quad (1)$$

where N is a number of atoms, the index 0 and 1 indicates a transition from the ground vibrational state to the first excited state.

The electrical transition dipole moment or Transition moment, during a transition from an initial state, i, and a final state, f ($|i\rangle \rightarrow |f\rangle$) is the electric dipole moment associated with the transition between the two states [11].

The transition dipole moment is a complex vector quantity that includes the phase factors associated with the two states. Its direction gives the polarization of the transition, which determines how the system will interact with an electromagnetic wave of a certain polarization.

Magnetic dipole transitions describe the dominant effect of the coupling to the magnetic part of the electromagnetic wave.

The direction of the dipole moment, which may be represented mathematically as a vector, is perpendicularly away from the side of the surface enclosed by the counter-clockwise path of positive charge flow. Taking the current loop as a small magnet, this vector corresponds to the direction south to the north pole. When free to rotate, the dipoles align themselves so that their moments are pointed predominantly in the direction of the external magnetic field [10].

The transition moment of the vibrational electric dipole (EDTM) is well understood and can be studied knowing the intensities (IR), while the transition moment of the vibrational magnetic dipole (MDTM) is smaller in size and has other properties than EDTM, one of them being the dependence of origin [6].

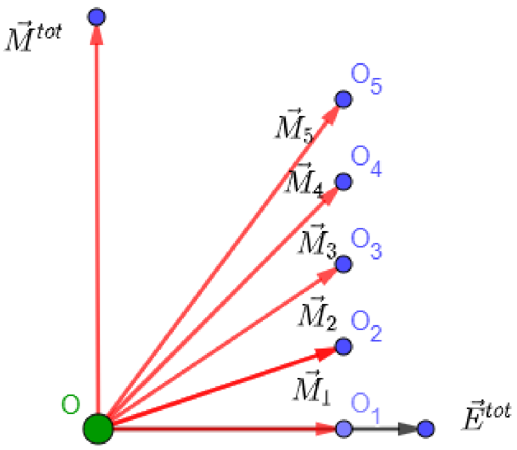

Figure 3. Vibrational electric dipole transition moment (EDTM) and vibrational magnetic dipole transition moment (MDTM)

The equation describing the origin dependence of MDTM for normal mode of vibrational j is:

$$\vec{M}_{10}(\boldsymbol{j},\boldsymbol{O_1}) = \vec{M}_{10}(\boldsymbol{j},\boldsymbol{O_2}) + \boldsymbol{i}\cdot\frac{\boldsymbol{\pi\nu_j}}{\boldsymbol{c}}\cdot\vec{\boldsymbol{Y}}^{\boldsymbol{O_1O_2}}\times\vec{\boldsymbol{E}}_{\boldsymbol{01}}(\boldsymbol{j}), \qquad \textbf{(2)}$$

where O_1 and O_2 are the vector position for this two different positions of the origin of the coordinate system (fig.3), while $\vec{Y}^{O_1O_2}$ is the vector of displacement between the two origins, ν_j is the frequency of mode j, and c the speed of light in a vacuum [4].

Equation (2) is a vector equation. We establish dependency relationships between the vectors in the relationship. It is important to find the position of the vector $\vec{Y}^{O_1O_2}$ to determine the vibrational magnetic dipole transition moment $\vec{M}_{01}$.

The rotational strength R_{01} that appears in the calculation formula of the sign VCD is equal to the scalar product between the moment of the electric dipole $\vec{E}_{01}(j)$and the moment of the magnetic dipole $\vec{M}_{01}(j)$, the rotational power is given by:

$$R_{01}(j) = -i\left[\vec{E}_{01}^{tot}(j)\cdot\vec{M}_{10}^{tot}(j)\right] \qquad (3)$$

are the total electric $\vec{\boldsymbol{E}}_{\boldsymbol{01}}^{\boldsymbol{tot}}(\boldsymbol{j})$ and magnetic $\vec{\boldsymbol{M}}_{\boldsymbol{10}}^{\boldsymbol{tot}}(\boldsymbol{j})$ dipole transition moments (DTMs) of the fundamental vibrational transition of the j −th normal mode, i is the unit imaginary number, and the indices 0 and 1 indicate a transition from the ground vibrational state to the first excited state. The total transaction moments are:

$$\vec{E}_{01}^{tot} = \sum_{i=1}^{N}\vec{E}_{01}(j), \vec{M}_{10}^{tot} = \sum_{i=1}^{N}\vec{M}_{10}(j),$$

where $i = \overline{1,N}, N$ −the number of atoms.

We will further study the possible positions of the basic vectors $\vec{M}_{10}, \vec{Y}^{O_1O_2}$ and $\vec{E}_{01}$ having eq. (2) and (3) [1] .

Case I. Determining the vector by a vector product.

We will deno te by C, $\frac{\pi\nu_j}{c} = \boldsymbol{C}$, (2) can be written:

$$C\cdot\vec{Y}^{O_1O_2}\times\vec{E}_{01}(j) = \vec{M}_{10}(j,O_1) - \vec{M}_{10}(j,O_2).$$

For simplicity of notation

$$\vec{M}_{10}(j,O_1) - \vec{M}_{10}(j,O_2) = -\vec{N}_{10}(j), \quad (4)$$

$$C\cdot\vec{Y}^{O_1O_2} = \vec{Y}_1^{O_1O_2},$$

we obtain vector equation

$$\vec{Y}_1^{O_1O_2}\times\vec{E}_{01}(j) = -\vec{N}_0(j)$$

or

$$\vec{E}_{01}(j) \times \vec{Y}_1^{O_1O_2} = \vec{N}_{10}(j). \quad (5)$$

The vector must be determined $\vec{Y}_1^{O_1O_2}$ of relation (5), where the vectors $\vec{E}_{01}(j)$ and $\vec{N}_{10}(j)$ we know each other and can be mutually perpendicular.

We take the scalar multiplication

$$\vec{Y}_1^{\hat{O}_1O_2} \cdot \vec{E}_{01}(j) = \lambda\,, \quad (6)$$

by combining equations (5) and (6) we have:

$$\vec{Y}_1^{O_1O_2} = \frac{\lambda\vec{E}_{01}(j)}{\vec{E}_{01}^2(j)} + \frac{\vec{N}_{10}(j)\times\vec{E}_{01}(j)}{\vec{E}_{01}^2(j)}. \quad (7)$$

We write $\beta \in R$ for the value of $\frac{\lambda}{\vec{E}_{01}^2(j)} = \beta,$ eq. (7) becomes:

$$\vec{Y}_1^{O_1O_2} = \beta\vec{E}_{01}(j) + \frac{\vec{N}_{10}(j)\times\vec{E}_{01}(j)}{\vec{E}_{01}^2(j)}\,, \quad (8)$$

we particularize the equation (8) when $\beta = 0,$ it is one solution for $\vec{Y}^{O_1O_2}$, the solution is a orthogonal of a vector $\vec{E}_{01}(j)$ and particular solution becomes:

$$\vec{Y}_1^{O_1O_2} = \frac{\vec{N}_{10}(j)\times\vec{E}_{01}(j)}{\vec{E}_{01}^2(j)}.$$

Returning to the initial notations with

$$\vec{M}_{10}(j, O_1) - \vec{M}_{10}(j, O_2) = -\vec{N}_{10}(j),$$

is given by

$$\vec{Y}_1^{O_1O_2} = \beta\vec{E}_{01}(j) + \frac{\vec{M}_{01}(j, O_2) - \vec{M}_{01}(j, O_1)] \times \vec{E}_{01}(j)}{\vec{E}_{01}^2(j)}$$

or particular

$$\vec{Y}_1^{O_1O_2} = \frac{\vec{M}_{10}(j,O_2)-\vec{M}_{10}(j,O_1)]\times\vec{E}_{01}(j)}{\vec{E}_{01}^2(j)}. \quad (9)$$

Case II. Determining the vector by a vector product and dot product.

It is required to determine an unknown vector from two equations with a single unknown vector [8]:

$$\begin{gathered}\vec{E}_{01}(j) \times \vec{Y}_1^{O_1O_2} = \vec{N}_{10}(j),\\ \overrightarrow{M}_{01}(j) \cdot \vec{Y}_1^{O_1O_2} = \lambda,\end{gathered} \quad (10)$$

where $\vec{Y}_1^{O_1O_2}$ and $\vec{N}_{10}(j)$ in the notation of eq. (4).

Considering the vector $\vec{E}_{01}(j)$ is orthogonal of a $\vec{N}_{10}(j)$ and is not orthogonal of a $\vec{M}_{01}(j)$, as

$$\vec{E}_{01}(j) \cdot \vec{N}_{01}(j) = 0 \text{and} \vec{E}_{01}(j) \cdot \vec{M}_{01}(j) \neq 0.$$

By multiply first equation in the system (10) with the vector $\vec{M}_{01}(j)$, we obtain:

$$(\vec{E}_{01}(j) \times \vec{Y}_1^{O_1O_2}) \times \vec{M}_{01}(j) = \vec{N}_{01}(j) \times \vec{M}_{01}(j),$$

applying the property of vector product, we have

$$-\vec{E}_{01}(j)\left(\vec{Y}_1^{O_1O_2} \cdot \vec{M}_{01}(j)\right) + \vec{Y}_1^{O_1O_2}\left(\vec{E}_{01}(j) \cdot \vec{M}_{01}(j)\right) = \vec{N}_{01}(j) \times \vec{M}_{01}(j).$$

Using the second equation of the system (10), we obtain:

$$\vec{Y}_1^{O_1O_2} = \frac{\lambda \vec{E}_{01}(j)}{\vec{E}_{01}(j)(j) \cdot \vec{M}_{01}(j)} + \frac{\vec{N}_{01}(j) \times \vec{M}_{01}(j)}{\vec{E}_{01}(j)(j) \cdot \vec{M}_{01}(j)}. \quad (11)$$

The system (10) has one solution,

$$\vec{M}_{01}(j, O_1) - \vec{M}_{01}(j)(j, O_2) = -\vec{N}_{01}(j)$$

and using notation (3) becomes:

$$\vec{Y}_1^{O_1O_2} = \frac{\lambda \vec{E}_{01}(j)}{R_{01}(j)} + \frac{(\vec{M}_{01}(j,O_2) - \vec{M}_{01}(j,O_1)) \times \vec{M}_{01}(j)}{R_{01}(j)}. \quad (12)$$

The vector $\vec{Y}_1^{O_1O_2}$ in the eq. (12) depending only on rotational strength given by (3).

Case III. Determination the vector $\vec{Y}^{O_1O_2}$ with the notation (4), is given by:

$$\vec{E}_{01}(j) \times \vec{Y}_1^{O_1O_2} + \gamma \vec{Y}_1^{O_1O_2} = \vec{K}_{01}(j), \quad (13)$$

Multiplying scalar eq. (13) ofthe $\vec{E}_{01}(j)$, obtain:

$$\gamma \vec{Y}_1^{O_1O_2} \cdot \vec{E}_{01}(j) = \vec{E}_{01}(j) \cdot \vec{K}_{01}(j),$$

where

$$\vec{Y}_1^{O_1O_2} \cdot \vec{E}_{01}(j) = \frac{\vec{E}_{01}(j) \cdot \vec{K}_{01}(j)}{\gamma}. \quad (14)$$

Multiplying vector the eq. (13) of the $\vec{E}_{01}(j)$, we have:

$$(\vec{E}_{01}(j) \times \vec{Y}_1^{O_1O_2}) \times \vec{E}_{01}(j) + \gamma \vec{Y}_1^{O_1O_2} \times \vec{E}_{01}(j) = \vec{K}_{01}(j) \times \vec{E}_{01}(j). \quad (15)$$

Using the propriety of vector product in the eq. (15) becomes:

$$\vec{Y}_1^{O_1O_2} \cdot \vec{E}_{01}^2(j) - \vec{E}_{01}(j)\left(\vec{Y}_1^{O_1O_2} \cdot \vec{E}_{01}(j)\right) + \gamma(\vec{Y}_1^{O_1O_2} \times \vec{E}_{01}(j)) = \vec{K}_{01}(j) \times \vec{E}_{01}(j).$$

Replacing the vector product $\vec{Y}_1^{O_1O_2} \times \vec{E}_{01}(j)$ with eq. (13) and replacing the scalar product with (14), we have:

$$\vec{Y}_1^{O_1O_2} \cdot \vec{E}_{01}^2(j) - \vec{E}_{01}(j)\frac{\vec{E}_{01}(j)\cdot\vec{K}_{01}(j}{\gamma} + \gamma\left(\gamma\vec{Y}_1^{O_1O_2} - \vec{E}_{01}(j)\right) = \vec{K}_{01}(j) \times \vec{E}_{01}(j), \quad (16)$$

where

$$\vec{Y}_1^{O_1O_2} = \frac{\vec{E}_{01}(j)\left(\vec{E}_{01}(j)\cdot\vec{K}_{01}(j)\right)+\gamma^2\vec{K}_{01}(j)+\gamma\vec{K}_{01}(j)\times\vec{E}_{01}(j)}{\gamma^2\,(\vec{E}_{01}^2(j)+\gamma^2)} . \quad (17)$$

3. The vector expression of rotational strength for general coupled oscillator (GCO)

Coupled oscillators are found in many important physical systems. Coupled oscillators (CO) are oscillators connected in such a way that energy can be transferred between them. In ref. [7] is described a new approach to analyse the calculated VCD spectra based on the shortcomings of coupled oscillators (CO) and applying a new GCO model to the general coupled oscillator [6]. In ref. [7] it is proposed the division into molecular fragments and an analysis of the general coupled oscillator (GCO) (fig. 4).

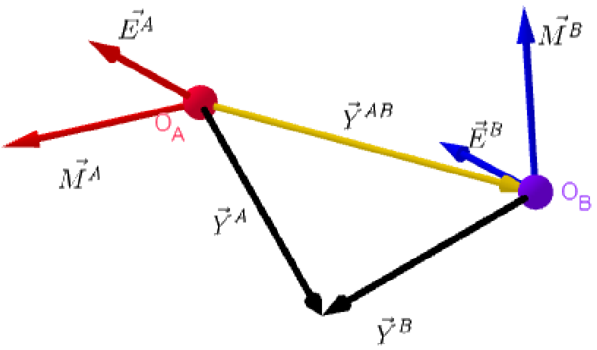

Figure 4. Vectorial representation of $\vec{Y}^{AB}$, $\vec{Y}^A$ and $\vec{Y}^B$

In ref. [7] the total of EDTM andMDTM were decomposed into contributions from different molecular groups, thus defining three molecule fragments: fragment A, fragment B and fragment *R* comprises, the expression for the rotational strength is decomposed into three major components:

$$R_{01}(j) = R_{01}^{GCO}(j) + R_{01}^{IF}(j) + R_{01}^{R}(j) . \quad (18)$$

The first contribution, $R_{01}^{\mathbf{GCO}}(j)$, it is what we identify as the contribution GCO and represents the coupling between the fragments **A** and **B:**

$$R_{01}^{GCO}(j) = -i[\vec{E}_{01}^A(j)\cdot\vec{M}_{10}^B(j) + \vec{E}_{01}^B(j)\cdot\vec{M}_{10}^A(j)] . \quad (19)$$

The term $R_{01}^{R}(j)$ contains the contribution of the selected individual fragments (IF) A and B:

$$R_{01}^{IF}(j) = -i\left[\vec{E}_{01}^{A}(j)\cdot \vec{M}_{10}^{A}(j) + \vec{E}_{01}^{B}(j)\cdot \vec{M}_{10}^{B}(j) + \vec{E}_{01}^{R}(j)\cdot \vec{M}_{10}^{R}(j)\right].$$

The term $R_{01}^{R}(j)$ contains the intensities VCD deriving from the rest of the molecules:

$$R_{01}^{R}(j) = -i\left[\vec{E}_{01}^{A}(j)\cdot \vec{M}_{10}^{R}(j) + \vec{E}_{01}^{R}(j)\cdot \vec{M}_{10}^{A}(j)\right] - i\left[\vec{E}_{01}^{B}(j)\cdot \vec{M}_{10}^{R}(j) + \vec{E}_{01}^{R}(j)\cdot \vec{M}_{10}^{B}(j)\right] .$$

Contributions $R_{01}^{GCO}(j)$ și $R_{01}^{IF}(j)$ associated with them will take into account most of the VCD intensity of a specific normal mode [7].

The GCOmodel is more generally applicable, because it contains a correction term (COC) for the initial CO modeland it is applicable to all types of normal modes and is given by [7]:

$$R_{01}^{GCO}(j) = R_{01}^{CO}(j) + R_{01}^{COC}(j) = \frac{\pi \nu_j}{c}\cdot\left[\vec{Y}^{AB}(j) + \vec{Y}^{COC}(j)\right]\cdot\left[\vec{E}_{01}^{A}(j)\times \vec{E}_{01}^{B}(j)\right] \quad (20)$$

or

$$R_{01}^{GCO}(j) = \frac{\pi \nu_j}{c}\cdot \vec{Y}^{GCO}\cdot\left[\vec{E}_{01}^{A}(j)\times \vec{E}_{01}^{B}(j)\right]. \quad (21)$$

Where $\vec{Y}^{GCO}$ determines the distance from the centre O_A and the origin of the coupled oscillator O_{GCO}.

For study general coupled oscillator (GCO), you may need determine the possible positions of the vector $\vec{Y}^{GCO}$.

For simplicity of notation, we write $\vec{Y}_1^{GCO}(j)$ instead of:

$$\frac{\pi \nu_j}{c}\cdot \vec{Y}^{GCO}(j) = \vec{Y}_1^{GCO}(j).$$

Then eq. (21) becomes:

$$\vec{Y}_1^{GCO}(j)\cdot\left[\vec{E}_{01}^{A}(j)\times \vec{E}_{01}^{B}(j)\right] = R_{01}^{GCO}(j) \quad . \qquad (22)$$

In expression (21) if vectors $\vec{Y}^{GCO}(j)$ and $\left[\vec{E}_{01}^{A}(j)\times \vec{E}_{01}^{B}(j)\right]$ are orthogonal then:

$$R_{01}^{GCO}(j) = 0.$$

Let the

$$\vec{Y}^{GCO}(j)\cdot\left[\vec{E}_{01}^{A}(j)\times \vec{E}_{01}^{B}(j)\right] \neq 0$$

when we consider a vector $\vec{K} \neq 0$ we have:

$$\vec{Y}^{GCO}(j)\times\left[\vec{E}_{01}^{A}(j)\times \vec{E}_{01}^{B}(j)\right] = \vec{K}\ (\mathrm{j}). \quad (23)$$

Let vector equation (22) and (23)

$$\vec{Y}_1^{GCO}(j)\cdot\left[\vec{E}_{01}^{A}(j)\times \vec{E}_{01}^{B}(j)\right] = R_{01}^{GCO}(j) \ , (24)$$

$$\vec{Y}_1^{GCO}(j) \times [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B] = \vec{K}.$$

Multiply the second equation on the right (24) of cross product $\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)$ we obtain:

$$(\vec{Y}_1^{GCO}(j) \times [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)]) \times [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B] = \vec{K} \times [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)], \quad (25)$$

we now apply the proprieties of product we have:

$$-\vec{Y}_1^{GCO}(j) \cdot ([\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)] \cdot [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)]) + [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)](\vec{Y}_1^{GCO} \cdot [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)]) = \vec{K} \times [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)]$$

or

$$-\vec{Y}_1^{GCO}(j) \cdot [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)]^2 + [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)](\vec{Y}_1^{GCO} \cdot [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)]) = \vec{K} \times [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)].$$

Given the first relation in equation (24) we have:

$$-\vec{Y}_1^{GCO}(j) \cdot [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)]^2 + [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)]R_{01}^{GCO}(j) = \vec{K} \times [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)]$$

and we obtain:

$$\vec{Y}_1^{GCO}(j) = \frac{[\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)]R_{01}^{GCO}(j)}{[\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)]^2} - \frac{\vec{K} \times [\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)]}{[\vec{E}_{01}^A(j) \times \vec{E}_{01}^B(j)]^2}. \quad (26)$$

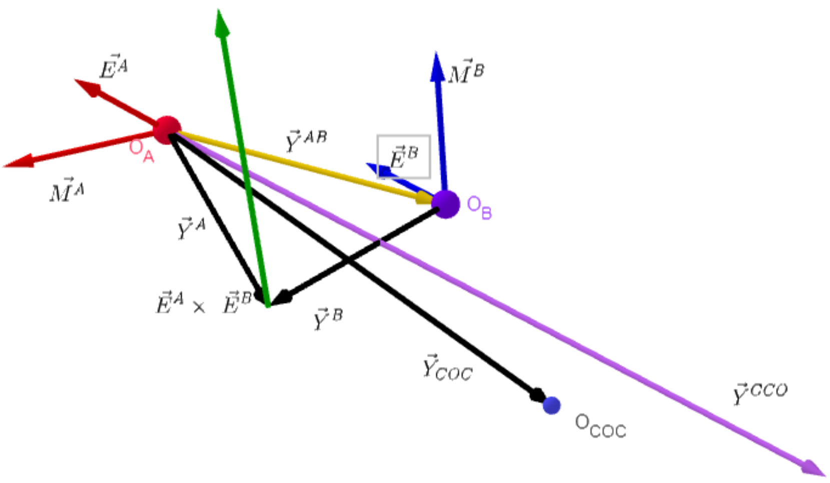

Figure 5. Representation of vector $\vec{Y}^{GCO}$ is the important component for general coupled oscillator (GCO)

$$\vec{K}\times[\vec{E}_{01}^{A}(j)\times\vec{E}_{01}^{B}(j)]=-\{\vec{E}_{01}^{B}(j)(\vec{E}_{01}^{A}(j)\cdot\vec{K})-\vec{E}_{01}^{A}(j)(\vec{E}_{01}^{B}(j)\cdot\vec{K})\}.$$

If $\vec{K}$ orthogonal of $\vec{E}_{01}^{A}(j)$ or of $\vec{E}_{01}^{B}(j)$, then relation (26) can be equal to

$$\vec{Y}_{1}^{GCO}(j)=\frac{[\vec{E}_{01}^{A}(j)\times\vec{E}_{01}^{B}(j)]R_{01}^{GCO}(j)}{[\vec{E}_{01}^{A}(j)\times\vec{E}_{01}^{B}(j)]^{2}}.$$

The vector $\vec{Y}_{1}^{GCO}(j)$ can be collinear of vectors $\vec{E}_{01}^{A}(j)\times\vec{E}_{01}^{B}(j)$.

4. Conclusions

The equation (26) represents the possible position of the vector $\vec{Y}^{GCO}(j)$:

$$\vec{Y}^{GCO}(j)=\frac{c}{\pi\nu_{j}}\vec{Y}_{1}^{GCO}(j).$$

Using the notation $\vec{K}\times[\vec{E}_{01}^{A}(j)\times\vec{E}_{01}^{B}(j)]=\vec{V}$, the vector $\vec{V}$ perpendicular of $\vec{K}$ and vector $[\vec{E}_{01}^{A}(j)\times\vec{E}_{01}^{B}(j)]$, it follows that it will be in the same plane as the vectors $\vec{E}_{01}^{A}(j),\vec{E}_{01}^{B}(j)$. We have the $\vec{V}$ is coplanar with $\vec{E}_{01}^{A}(j),\vec{E}_{01}^{B}(j)$ and can be written in linear combination with them:

$$\vec{V}=a\vec{E}_{01}^{A}(j)+b\vec{E}_{01}^{B}(j).$$

Let denote by

$$\frac{R_{01}^{GCO}(j)}{[\vec{E}_{01}^{A}(j)\times\vec{E}_{01}^{B}(j)]^{2}}=\gamma\,\mathrm{si}-[\vec{E}_{01}^{A}(j)\times\vec{E}_{01}^{B}(j)]^{2}=l,$$

Then

$$\vec{Y}^{GCO}(j)=\gamma[\vec{E}_{01}^{A}(j)\times\vec{E}_{01}^{B}(j)]+l\vec{K}\times[\vec{E}_{01}^{A}(j)\times\vec{E}_{01}^{B}(j)].$$

The vector $\vec{Y}^{GCO}(j)$ is linear combination with vectors $[\vec{E}_{01}^{A}(j)\times\vec{E}_{01}^{B}(j)]$ and $\vec{K}\times[\vec{E}_{01}^{A}(j)\times\vec{E}_{01}^{B}(j)]$, they are linearly independent.

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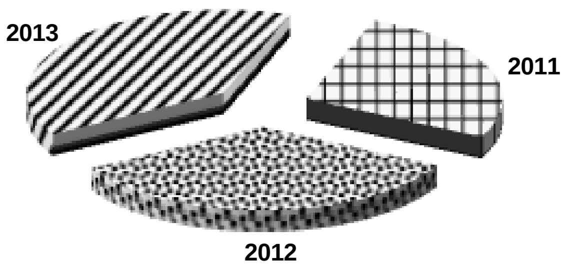

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