Development of the Export/Import Activities Supply Chain of the Construction Industry of Ukraine

Iryna Markina[1*], Svitlana Tereshenko[2], Mykhaylo Heyenko[3], Ihor Kuksa[4], Irina Shulzhenko[5]

[1] *Management Department, Poltava State Agrarian Academy, Poltava, Ukraine, 1/3 Skovorody str., Poltava, 36003, Ukraine, 36003.*
imarkina@yahoo.com
[2] *Economy Department, Sumy National Agrarian University, Sumy, Ukraine, Sumy, ul. G.Kondratieva, 160, 40030*
[3] *Finance department, finance, Sumy National Agrarian University, Sumy, Ukraine, 160 Herasym Kondratiev, Sumy, 40021, Ukraine, 40021*
[4]*Department of Finance and Economic Cybernetics, Luhansk National Agrarian University (Kharkov), Kharkov, Ukraine, Kharkiv, st. Alchevskih, d. 44, 61002*
[5] *Management Department, Poltava State Agrarian Academy, Poltava, Ukraine, 1/3 Skovorody str., Poltava, 36003, Ukraine, 36000*

***Abstract* – In this analytical article the information of the construction market of Ukraine in the modern conditions of management is presented. Considered: macroeconomic conditions of market development in the segment of segment analysis, statistics on domestic and foreign markets and expectations of the development of the market of building materials in Ukraine. The analysis of foreign economic supply chain activity of Ukraine on the world market is carried out; the state of Ukraine's integration into the world economy is estimated; the role of foreign investment in Ukraine for the development of international cooperation is defined. The ways of increasing the effectiveness of Ukraine's cooperation with the World Trade Organization (WTO) are determined; prospects of Ukraine's interaction with EU countries are considered.**

Key words – *export-import, supply chain, foreign economic activity, international integration cooperation.*

1. Introduction

In any economic crisis there is always a fall in economic development, including export and import, which negatively affects the trade balance of the country. Ukraine's cooperation with European Union countries gives mutually beneficial possibilities, but it requires action according to the European Union rules, which includes technical re-equipment of domestic production, its compliance with European standards. When it comes to laws and regulations related to this, the state must work with this issue, thus creating new institutional environment for foreign trade development. At the same time the state management in Ukraine should have two main directions: current regulation and strategic changes management (change in sectoral and technological economy structure, competitive recovery, changes in the export/import structure). Changes in the economy structure and strategy are the result of the combination of the two processes: state regulation (laws, taxation, domestic market protection, depreciation mode, interest rates, and national currency exchange rate) and strategic planning at the enterprises (micro level). Enterprises' development strategy should be developed taking into account the state management of macro parameters (or their long term forecast) and national economy specifics.

Since Ukraine became a member of the WTO, not only production requirements to enter the foreign market have changed, but the development of new approaches to the management of individual production processes was required. Under the influence of integration requirements, liberalization of markets and simplification of customs barriers, domestic enterprises must adapt to the changes that occur as a result of integration processes, since in order to successfully export products to the external market taking into account the complicated conditions of competition, it is very important to study all derivative rules of cooperation with foreign partners. The indicator of success in today's conditions should be the ability of Ukrainian commodity producers to form and build their own mechanism to ensure export-import activities supply chain in the context of WTO membership.

Construction plays a very important role in the national economy due to the fact that it is designed to modernize the modern technical basis of production,

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improve the social level, and provide technical re-equipment. However, the development of the construction industry in Ukraine faces a set of serious problems: the inconsistency of business processes with international standards and business excellence; dependence on equipment importation; low level of staffing, wages and labor productivity; weak system of promotion of domestic construction services to the European market; reduction of financing and shortage of investment resources; low innovative activity of construction enterprises in Ukraine; an inefficient system of national standardization and licensing.

Construction is an independent branch of the national economy, intended for creation, reconstruction, expansion, modernization, technical re-equipment and capital maintenance of existing production and non-production facilities [11].

The structure of the construction complex includes various organizations: 1) those which regulate the construction complex, control and comply with the building standards, carry out engineering surveys and develop project documentation for construction - architectural design and design survey organizations; 2) those which develop new engineering solutions, new materials and structures, new technologies for the production of building materials; 3) those which produce building materials and perform different types of construction and assembly works. [12], [13].

Several stages of construction complex development and functioning can be identified [14], [15]:

1) Pre-perestroika (until 1988-1990);
2) Transitional, hybrid-unstable (1990-1994);
3) Uncivilized-market (1994-1998);
4) Civilized-market (currently).

At the moment, non-state enterprise prevail in the construction industry.

In general, in the construction industry the following markets are distinguished [16]:

- The market of construction and installation works, which in turn is divided into the housing construction market, the commercial real estate market, and the industrial construction market;
- the market of building materials, which consists of the market of dry construction mixtures; the market of building bricks; mason's sand market; market of concrete products; market of glazing glass, etc.

The purpose of the research is to investigate the current state of export-import activity supply chain of the construction industry of Ukraine and to propose a model for its improvement.

2. Data, Analysis and Results

The most important factor in ensuring the competitiveness of a construction company is the availability of appropriate resource potential and its skillful use. The main condition for the development and establishment of a market economy, based on the intensification of economic relations between countries, is the strengthening of export-import activity supply chain for a separate entity, industry and for the whole country. In the organization of export operations, special attention should be paid to: the proper selection of sales managers; the right choice of marketing policy; the right selection of agents to search for markets; research of prices; finding ways to minimize the costs associated with organizing and conducting export operations. When organizing import operations it is important to pay attention to: finding more profitable suppliers; the application of currency risk insurance; delivery time organization, its frequency, timeliness, continuity and proper transportation [1].

Considering the data on the structure of Ukraine's gross domestic product by the end use, we can also see the dynamics of the export-import ratio in recent years (Table 1).

The analysis of the current state of Ukraine's foreign economic activity makes it possible to say that CIS, EU and Asia are the main economic partners of the country.

Ukraine is gradually moving towards expanding foreign trade both in goods and services. In recent years, there have been some changes in the geographical structure of export and import, which show an increase in export dependence and the creation of quite dangerous for Ukrainian producers' preconditions for market saturation with Western high-tech goods imported from the EU countries.

Table 1. The foreign trade balance of Ukraine 2005 -2017 (million UAH) [2]

Nominal GDP per year		export of goods and services		Import of goods and services		Net balance	
		GDP%		GDP%		GDP%	
2005	441452	227252	51.5	223555	50.6	3697	0.8
2006	544153	253707	46.6	269200	49.5	-15493	-2.8
2007	720731	323205	44.8	364373	50.6	-41168	-5.7
2008	948056	444859	46.9	520588	54.9	-75729	-8.0
2009	913345	423564	46.4	438860	48.0	-15296	-1.7
2010	1082569	549365	50.7	580944	53.7	-31579	-2.9
2011	1316600	707953	53.8	779028	59.2	-71075	-5.4
2012	1408889	717347	50.9	835394	59.3	-118047	-8.4

2013	1454931	681899	46.9	805662	55.4	-123763	-8.5
2014	1566728	770121	49.2	834133	53.2	-64012	-4.1
2015	1979458	1044541	52.8	1084016	54.8	-39475	-2.0
2016	2383182	1174625	49.3	1323127	55.5	-148502	-6.2
2017	2982920	1430230	47.9	1618749	54.3	-188519	-6.3

As we can see from the table, the negative balance (the surplus of import over exports) of foreign trade in Ukraine in 2017 increased compared to 2016 to 188.5 million UAH.

At the same time, it is important for the foreign economic activity of Ukraine to keep balance in trade relations, since each party has its advantages - raw or technological in which Ukraine is interested, as well as its interest in Ukraine as a transit state with a market of unsaturated goods and limited fuel and energy resources.

The Association Agreement fundamentally changes the conditions of the competitive environment, both internal and external, leading to new trade conditions (adjusting regulations, standards, certification, etc.). This creates challenges for Ukrainian companies, requires identification of these challenges and the corresponding testing and research on their implementation. It is necessary to assess the impact of this document on Ukraine's economy and foreign trade of the state, as well as to formulate its practical benefits for Ukrainian business in the context of European integration processes.

It is known that foreign countries, like Ukraine, in today's crisis require foreign investments, the use of which contributes to the formation of national investment markets, macroeconomic stabilization and makes it possible to address individual socio-economic problems of the country and its regions. The priority areas for foreign investment in Ukraine are: Western region with its natural resources and health resort and tourist complexes; Donetsk-Pridneprovsky region (for the reconstruction of the existing production base and the use of non-waste, low-waste and environmentally friendly technologies); Southern region (reconstruction and technical re-equipment of the port and expansion of health resort and tourist complexes). A special role is assigned to the Eastern region, where given the strong industrial and scientific potential, the most beneficial is the placement of technopoles and technology parks.

It has been determined that to make economy sectors more open, it is necessary to use non-tariff protective methods of import regulation in accordance with WTO rules, namely: quantitative restrictions to the most sensitive to import types of products, licensing, introduction of a clear system of technical standards, sanitary norms, anti-dumping, compensation and other payments.

In order for Ukraine to become an active participant in international investment processes, it is necessary to take certain measures at both the state and regional levels. In order to participate in international projects at the regional level, we suggest that the environmental certification of enterprises (first of all, construction enterprise) should be applied, which would be carried out in accordance with the international IPCC method. We also suggest creation of centers for the preparation and implementation of joint projects, the supply chain activities of which should be coordinated by the regional authorities. The main task of the Center for the preparation and implementation of joint investment projects is the identification of projects for attracting investments into the following areas: information and legal support; technical support; economic support: management support. In 2017, Ukraine traded with 159 countries, exporting goods to 158 countries (except the Faroe Islands) and importing from 155 countries (except the Bahamas, Djibouti, Central African Republic and Togo). The main export goods of Ukraine are agricultural products, machinery and raw materials. As of the end of October 2017, Ukraine sold its products abroad for almost $ 35.2 billion and purchased - $ 39.8 billion. Therefore, the net balance is negative, which negatively affects both dollar exchange and other main economy indicators.

The construction industry is one of the leading industries of the economy of any country. It reflects the general state of its development. The volume of construction depends, first of all, on the demand for construction projects, which is ensured by the high level of purchasing power and the availability of sufficient investment in high-value facilities. In recent years, the demand for construction in Ukraine has been negligible and it is moving to its pre-crisis levels. Fig. 1 shows the index of the volume of completed construction works for the period of 2013-2016.

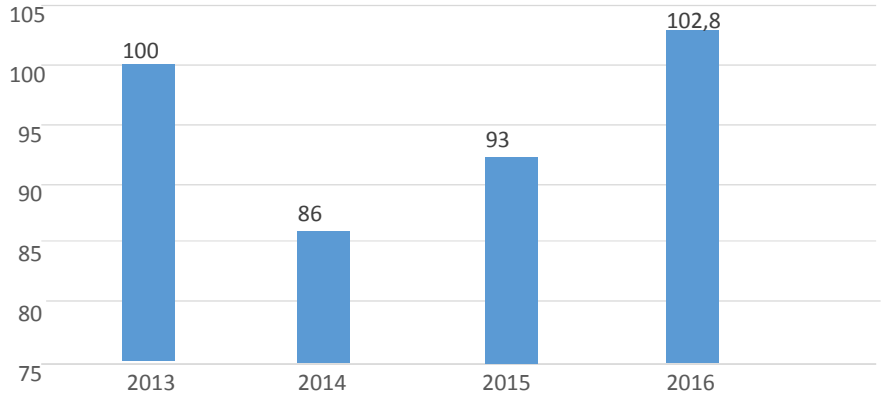

Fig. 1 The index of the volume of completed construction works for the period of 2013-2016

According to Figure 1, volumes of construction work declined in 2014-2015, when Ukraine experienced internal economic problems and the reduction in construction volumes signaled the economic recession and uncertainty of investors in a favorable economic and political situation in the country.

For example: in January-September 2014 enterprises of Ukraine carried out construction works worth 34.4 billion UAH. Index of construction products compared to the corresponding period of 2013 was 86%. Construction of buildings decreased by 17.6%, including non-residential - by 30,8%. At the same time, construction of residential buildings increased by 4.8%. Construction of engineering structures decreased by 16.7%.

The new construction, reconstruction and technical re-equipment amounted to 83.8% of the total volume of executed construction works, capital and current repairs - 8.8% and 7.4% respectively. In this case, enterprises of 6 regions of the country (Kiev, Dnipropetrovsk, Donetsk, Odesa, Poltava and Kharkiv regions) completed 64.7% of the total construction.

In January-February 2018, compared to January-February 2017, construction activity decreased in 10 regions of Ukraine, in particular, in Luhansk (by 83%, to 33.3 million UAH), Odesa (by 39%, up to 584, 6 million UAH), Sumy (by 19.5% to 85 million UAH) [2]. The largest increase in the volume of construction works completed in two months was recorded in Zakarpattya (by 93.8% to 124.7 million UAH) and Chernivtsi (by 71.9% to 168 million UAH) [3] The decrease in construction volumes has a direct impact on the demand for construction materials and it can have two consequences:

1. Reduction of building materials production;
2. Shift to foreign markets.

Obviously, the reduction of production affects the interests of real estate developers and, in order to ensure the profitability of business and maintain the stability of its operation, they will try to create conditions to enter new markets, including foreign markets.

The European Union market is attractive to Ukrainian producers, because:

1. The hryvnia exchange rate against the euro will allow them to receive significant income at relatively low prices in the currency;
2. European Union countries have a strong single market with unified customs and technical requirements;
3. The geographic proximity of the EU countries can reduce Ukraine's logistics costs.

Ukraine currently renders provides construction services abroad 3 times more than it receives from there. As noted by the State Statistics Service, for 9 months in 2017, Ukrainian builders provided foreign customers with services worth $ 77.29 million dollars. Over the same period, from foreign construction companies Ukraine received services worth almost 25.47 million dollars. Thus, this type of activity this year Ukraine has a positive balance of $ 51.82 million dollars.

According to the State Statistics Service, construction is only 1% within export of services and 0.6% within import of services.

At the same time, both construction import and export are being reduced in Ukraine. Moreover, there is a greater reduction in the export of construction services. Thus, in 9 months of 2017, the volume of services provided by Ukrainian builders to their foreign counterparts decreased by 63.2% compared to the same period last year. At the same time import of construction services in Ukraine for the same period decreased by only 22.3% [3].

We believe that the main feature of the international market of construction services is the close connection with investments and technologies, the constant use of which in the economy of the recipient countries creates new opportunities for transnational investment. This suggests that the transformation in recent years was conditioned by general economic factors (high rates of economic growth in developing countries) and specific factors (growing needs for infrastructure reconstruction in developed countries,

large-scale privatization in European countries). We agree with the fact that the EU construction sector is leading in European foreign trade. European construction companies own more than 50% of the most important international construction contracts and they have much larger business than companies in Japan and the United States. The European construction services market is an economic system with its structure, development factors, internal and external connections. It operates, taking into account the main economic motives of its participants: making profit, increasing competitiveness through the use of new technologies, access to new borders, investment, improving the quality of social infrastructure, continuous improvement of quality standards, etc.

The international construction services market was formed in the late 50's and passed four development stages:

- the first stage, the post-colonial period (until the 1970's): the development of military facilities in the countries of the British Commonwealth by US construction companies and ambiguous programs for the construction of infrastructures and mining enterprises in Asian and African countries after the collapse of the colonial system;

The second stage, the oil boom period (1970s - the crisis of 2008): intensive construction of road transport and social infrastructure in the Percian Gulf countries in the 1970s against the rising oil prices and the formation of unprecedented currency savings, which was changed by uneven regional flows of international trade in construction services against sharp decline in world oil price, followed by a new rise in the world market of construction services against the rising oil prices;

The third stage, the period of the global financial crisis (2008-2010), which is characterized by the decline in the share of European countries in the world import of construction services, an increase in the corresponding US share, as well as by the reduction in international trade in construction services by 3 - 5% annually, by mass "Freezing" of objects, falling demand for engineering services, redistribution of assets between market players, strengthening of competition;

-the fourth stage, the post-crisis period (2010 - up to now): extremely slow growth of the world market of construction services against the backdrop of rapid recovery of other services growth; in the structure of the world tertiary economy sector there are fast-growing markets with stable demand (telecommunication, information services, etc.) [8].

The main producer countries of construction services in the international market for a long time remained the EU and the US, and the US market is half the EU market (for example, in 2015 these figures amounted to 674 and 1199 billion dollars). However, the in-depth study found that China has a dominant position in the international construction services market with an annual volume of construction services of about 3000 billion dollars. Contractors from developing countries (Turkey, Brazil, Indonesia, Mexico, the Philippines) have a significant potential in international building services. In this case, contracting companies from developing countries in the last 15-20 years have been increasingly establishing cooperative relations with firms from industrialized countries in the implementation of specific investment projects. Most of the construction services in the EU are exported to developing countries in the form of infrastructure facilities construction, while the import of construction services to developed countries is concentrated mainly in reconstruction and repair work. In countries with poor infrastructure, the share of EU construction services in the total import of services is significantly higher than, for example, in the new industrialized countries. According to the structure of manufacturers, the EU market of construction services consists of small private construction companies with an average of 5 to 20 employees (the share of such small companies' reaches 95% in France and 90% in Germany). At the same time, the major volume of construction works in the EU countries provides for the supply chain activities of large construction companies, transnational construction business. The EU construction sector is a leading sector in European foreign trade. European construction companies own more than 50% of the largest international construction contracts and have significantly more construction contracts than Japanese and American companies. At the same time, the construction sector does not implement as many innovations as other sectors of the EU economy. Therefore, the main tendencies of construction development in the EU and the formulated directions of development in the European construction technology platform, are concentrated in the area of science-intensive technologies (additive production, artificial intelligence), due to which by 2030 it is planned to receive a reduction: by 30% - energy consumption of enterprises producing construction materials; by 30% - the volume of natural resources extraction for the production of these materials; 30% - the cost of the life cycle of buildings; by 50% - construction period of capital construction objects; 40% - construction industry waste. It is also planned to increase recycle of construction waste up to 99%. For a long time Germany, France, Great Britain and Italy have been the main producing countries for building services. And according to the data from 2005 to 2015, they account for more than 70% of the total volume of construction services in the EU [2].

The main economic and institutional factors of the high stable demand in these countries for construction services are as follows: in Germany, this is a rather cheap mortgage (about 2% per annum), resulting from the "cheap money" policy of the European Central Bank and the availability of innovative and high-tech industrial production; Great Britain (among the EU countries the largest contribution of construction services to the country's GDP - 6%) supports infrastructure and housing projects and also has the most favorable international financial and investment climate among the European countries, in particular in the segment of real estate financial transactions. According to the indicators of the construction sector, France is significantly ahead of Great Britain: an average of 125 thousand objects are built annually in the United Kingdom, in France this figure is not less than 300 thousand, as a result in the UK housing prices are continuously rising, while in France they are stable or declining. In Italy, construction services market is formed by construction companies with a focus on overseas markets (over the past 10 years, the share of foreign contracts of Italian construction companies has almost doubled, while profits from foreign Italian sites are up to 12 billion euros a year). The construction services market and the EU construction sector are subject to mechanisms for general and special regulation both at the national level of the EU Member States and at the level of supranational EU institutions, and trade in construction services is subject to protection and promotion of investments , avoidance of double taxation, the movement of citizens, etc. [8].

The above mentioned information and a number of restraining objective factors significantly limit the prospects of Ukrainian construction companies to compete on the international market of construction services in general and on its European segment in particular. But among the positive trends, we must determine the significant growth of the competitiveness index of domestic construction services and the growth of international trade index.

From January 1, 2016, the Free Trade Area Ukraine-EU came into operation, which significantly weakened the customs restrictions for Ukraine on certain types of goods. The improvements include the establishment of zero customs rates and the gradual reduction of customs tariffs for certain product groups. According to the report of the Ministry of Economic Development and Trade of Ukraine [6], the changes concerned 632 items related to construction materials, of which more than 80% received zero customs tariff.

In Ukraine, over the past decades, cross-sectoral linkages of the construction materials industry have been changing due to the growth of domestic energy prices and other resources, as well as changes in the structure of the construction materials production (as a result of uneven decline in various sub-sectors). Since the construction materials industry is closely related to transport, reduction in the production of construction materials leads to a reduction in freight traffic.

In our opinion, the main factors of the fall in the production of construction materials are: a sharp price increase, increased transport costs, change in demand structure, and different levels of profitability of production and exports, rapid increase in imports. As a result, there is a lack of a unified system of economic and technological links, certain proportions of capacities or a single industry potential, and there are only some "islands" with different levels of competitiveness and perspectives of survival. It is from this perspective that the construction materials industry is considered in the present.

In general, the EU policy on import of raw materials is quite predictable and clear: the European Union restricts the import of finished products, stimulating the import of raw materials from which it is possible to produce certain goods and form value added. The EU, through the customs regulation system, is trying to protect its own manufacturer and saturate the market with scarce goods. Table 2 shows changes in customs rates on certain goods.

As it can be seen from Table 2, the zero rate was immediately introduced on cement of alumina – a product that is the most expensive in this category of goods. Other types of products are tax-deductible.

Table 2.Changes in customs rates for certain goods [7]

Table 2.Changes in customs rates for certain goods [7]

Code	Product	Current customs rate	Basic customs rate	Transition period, years	FTA Rate
2523 21 00	White cement, colored or not	10	10	3	7,5
2523290000	Other types of cement	10	10	3	7,5
2523 30 00	Cement of alumina	2	2	0	0
2523 90	Other – water-cement	10	10	3	7,5

In general, zero rates are for the raw materials: ores, primary chemical compounds, materials for building mixes and other. The finished product manufacturer will have to cope with customs rates. However, the

rate for most positions over the next 2-3 years will be reduced.

The EU-Ukraine Association Agreement gave new opportunities for exporting Ukrainian raw materials, which could have a negative consequence and lead to a situation in which Ukrainian raw materials would be exported to the EU countries, processed and returned to the Ukrainian market as finished products with high added value [5].

We believe that the main purpose of the mechanism for providing export-import activity supply chain is to organize and balance export-import operations in accordance with the operation conditions of the enterprise and its potential to respond to external changes through internal transformations.

The decline in the construction materials industry through cross-sectoral communications caused a decrease in production volumes in all other industries whose products are consumed by construction companies, primarily in the transport sectors, as well as in the oil and gas industry.

The dynamics of the construction materials market is calculated on the basis of 10 commodity lines: cement, commercial concrete, concrete products and reinforced concrete constructions, paving shaped elements, metal structures, sandwich panels, translucent structures, ceramic bricks, gas blocks, silicate bricks.

The export of cement products decreased by more than a third in 2015 compared to the previous year, and in the total export volume, the cement industry does not exceed 0.2%. The complicated socio-political situation in our country has led to such consequences as a significant change in the structure of importing countries of Ukrainian producers, reduction of supplies of cement industry, etc., which makes it necessary to develop state regulation of foreign economic activity of domestic enterprises.

Instruments and organizational tools for stimulating export-import operations in foreign economic activity are transition to new technical standards, reduction of customs rates on imported equipment and technologies, ensuring interrelation between cement industry emission reductions and allocating funds from carbon trading to industry development, deoffshorization of investments, creation of an export credit agency to improve the financial resources provision of projects related to upgrading the technical and technological base by importing and simulating the export of products. Politicians and economists believe that Ukraine is gaining independence from import. Today, 80% of construction materials come from domestic producers. Despite the fact that today almost 7,000 players are involved in the market, there are many other areas that could become promising and cost effective. The most suitable regions for the opening of enterprises producing construction materials are the Kyiv, Zhytomyr and Chernihiv regions. Niche of construction materials production in the northern regions is 95% full. Experts note that competition has been intensified by the decline in the construction market in recent years. However, there are no foreign competitors in this area there aren't any customers of Ukrainian products abroad. This is due to the peculiarities of transportation. For example, heavy and cumbersome concrete is unprofitable, since its delivery will be higher than its price.

The foreign market is still being replenished with building materials from Ukraine. Now we import more timber, gravel, wallpaper, pebbles, rubble, etc. However, the construction market still requires innovations. There are still many untapped trends in Ukraine in this area.

Ukraine needs to expand the range of products and find new players. For example, domestic producers do not produce products and construction materials intended for interior decoration, etc. Because of this, the market is full of Belarusian, Italian, French and Chinese products.

Experts call conservatism another feature of the Ukrainian market of construction materials. For example, today Dutch companies have developed and are using a new technology for the production of extruders. As a result of its application, the products are ideally equal. Innovations in the domestic industry appear slowly and they are dictated by the market. At the same time, innovations in the construction and production of materials are mastered by the small business [2].

Due to the lack of financial revenues and reserves, underdeveloped system of loyal distributors, poor communication within the company, due to the weak and inflexible production base, the lack of innovative potential, part of the players found themselves in a stalemate situation that led to redistribution of the market. The problem is also that producers are not competing on price rather than quality. In addition, importers exaggerate the quality of their products and sell them in Ukraine at a higher rate. And this happens despite the fact that today there are decent domestic products. The rapid growth of production in Ukraine is not expected, as the volume of construction fell by 70%. Some of the plants that produce construction materials, either closed the line or suspended production.

The development of a state strategy for the development of construction materials enterprises consists of the following stages:

- Macroeconomic studies of the market, state, indicator trends and competitiveness of the industry;
- Classification of existing enterprises in terms of competitiveness and development efficiency in the future using marketing tools;

- Long-term forecasting of the demand for products of the industry, determining the place of industry in the structure of the Ukrainian economy;
- Definition of forms and directions of state support for the planned strategy to develop the industry given its limited resources [1].

To develop a methodology for optimizing the management of material resources of a construction organization and to construct an export-import strategy of the construction industry, we have constructed an algorithm (Fig. 2).

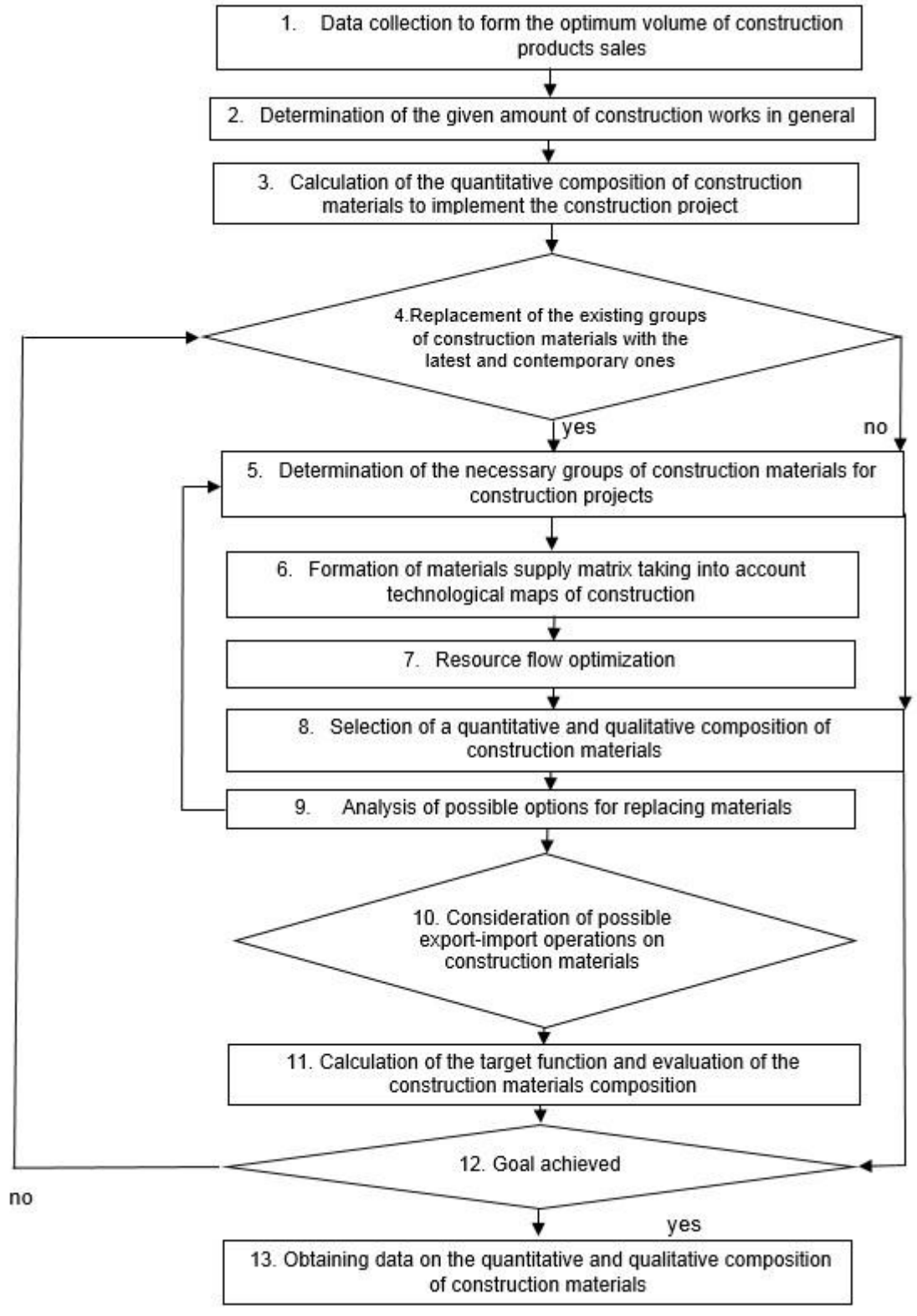

Figure 2. Algorithm for optimizing the provision of the construction industry with construction materials

In block 1, a production program of a construction organization is formed and the task of rational distribution of the necessary building materials is set. The results are transferred to block 2, where the details of the planned amount of construction work are considered taking into account the need for material resources.

In block 3, resources are distributed by volume and the relevant information is transmitted to block 4.

In block 4, economic-mathematical models of optimal distribution of construction organization resources are constructed and transferred to block 5. In block 5, the information for filling the developed models is prepared and the results are transferred to block 6, where the volumes of optimally distributed resources are calculated. The results are transferred to block 7, where the analysis of the results is carried out. The analysis results are transferred to block 8, which determine the suitability for using the obtained results. Block 9 elaborates proposals for adjusting tasks, models and information.

If the results are not satisfactory and the goal of optimization was not achieved, blocks 9 and 12 identify the causes and disadvantages of the material availability process. The information is transmitted to blocks 1, 5 to correct the decisions taken. If block 8 reveals that the results are suitable, they are transmitted to block 10, where possible export-import operations to provide construction organization with construction materials are developed.

Analysis of construction production shows that to optimize the provision of construction materials we need special software, designed with full consideration for the construction specifics and able to work in the integration with network technologies and design documentation.

Let's say that a construction organization has *a* kind of construction materials y = (1, 2 ... .a) in the number of b_y, which are used to produce *v* kinds of construction products x = (1,2 ... .v). Unit of each product kind when it is sold brings profit Dx (x = 1,2 ... .v).

When modernizing construction production, new technologies are used which are characterized by the norms of consumption of *y* resource per unit of x product b_{xy}.

Indicating the output of construction products of the x type through Qx (x = 1,2 ... v), the optimal production output is the output in which the construction organization will receive the maximum profit from the sale of total construction products

$$D = \rightarrow$$

$$\sum_{x=1}^{v} DxQx \quad \max \qquad (1)$$

Given the utilization of available resources

$$\sum_{x=1}^{v} byxQx < by \qquad y = (1,2 \dots a) \qquad (2)$$

and plan integrality $D_x \geq 0$ x=(1,2…v) .(3)

Thus, the created economic-mathematical model for optimizing the use of available construction materials of a construction organization belongs to the class of linear programming problems, for the solution of which there are certain methods. The analysis of the solution of this problem will give an answer to the question, which construction materials are fully used (they are considered scarce) - and the time of export operations with materials that are still unused comes. These materials are suitable for import operations, while bringing the optimal profit D.

If a construction organization has free resources and can sell them at a market price in the international market, then it should quote such prices Wy for the y resource = (1,2 ... a) at which it would receive the profit R.

$$R = \rightarrow$$

$$\sum_{y=1}^{a} byWy \quad \min \qquad (4)$$

Provided that there ia a profit

$$\sum_{y=1}^{a} \text{byWy} \geq \text{D x} \quad \text{x} = (1,2 \dots \text{a}) \qquad (5)$$

$$Qy \geq 0 \qquad y = (1,2 \dots .a)$$

Consequently, the obtained economic-mathematical model is a problem of linear programming. The solution of this problem gives optimum prices for each resource, in particular, for construction materials.

The application of information systems allows us to ensure coordination of the supply chain activities of the construction company and its partners (contractors) to reduce the time of construction, construction costs and improve the quality of finished products.

The construction industry is characterized by a number of problems of a systemic nature: worn-out equipment; increase in transportation and storage costs; use of raw materials of low quality; orientation on local raw materials without taking into account the qualitative level.

From our point of view, the state should take a direct part in economic processes, by supporting the economic activity of enterprises and forming a regulatory field of business. It should provide fair competition and equal conditions of management for all entities; promote resource conservation, innovation development, increase competitiveness and efficiency of the national economy.

All forms of state influence on economic processes are usually divided into two groups:

1) Direct influence (implemented by measures and tools for both administrative and economic regulation, in particular, development of standards, various financial subsidies, etc.);

2) Indirect influence (implemented by economic measures and tools to create conditions under which for business entities it is more profitable to make decisions in accordance with the strategic goals of the national economy development) [7].

Problems of state influence on economic processes, which are connected with international exchange and foreign economic activity, need a special attention. Successful foreign economic activity of business entities for any country is extremely important, as it allows it to increase production output, create new jobs, strengthen the state budget and successfully solve social problems.

In our view, taking into account the peculiarities of continuously transforming modern global and regional markets, new barriers to enter these markets and new risks of foreign economic activity, connected with modern political and macroeconomic instability and the activity of transnational business, are appearing.

The state should defend national companies, provide support to exporting companies, equalize the competition for all economic entities and smooth out the existing imbalances.

Effective development of construction will promote the growth of public services and amenities, increase of jobs, stabilization of production, development of machine building, metallurgy and metalworking, sawmill industry, energy, transport, tourism development, etc. The growth of construction inevitably booms the country's economic growth and contributes to solving many social problems [17].

Tendencies and prospects for economic development of the construction industry today are top priorities. The construction market attracts little attention from researchers and designers, although the volume of capital revolving in this area is quite significant. To a large extent this is due to the fact that the most important problem of the construction market today is its persistent opacity. This is due to the lack of system profile information, imperfect classification of construction materials and types of objects and units of measurement, the use of "shadow schemes" in the supply chain activities of construction organizations, the performance of repair and construction work by unskilled self-taught teams. Researchers believe that the construction complex has a significant resource potential for rapid economic development, but it is not fully used [18], [19].

3. Conclusions

Economic and trade cooperation between Ukraine and the European Union is currently strategically important and significant for Ukraine. As in 2017, the EU countries accounted for the largest share in the structure of Ukraine's export and import (41% of total import and 34% of Ukraine's total export).

However, Ukrainian products are not competitive in the EU market, as most of the competitiveness indicators of Ukraine are worse than the average European ones. For example, inflation in Ukraine is high and is 48% a year, against the average inflation in the EU countries, which is 0.11%. Worker productivity in Ukraine is also lower, the exchange rate is volatile, and high taxes and complex administration make the business climate in Ukraine less attractive than the European one, directing most of the investments into the EU countries.

The Association Agreement provides for the abolition of 80% of customs tariffs and quotas, mainly for commodities. For the rest of the goods, mainly those that are products of the full cycle of finished production, customs rates are reduced, while quotas are increased. The complete process of reducing trade barriers will last for three years to allow gradual reduction of rates.

The statistical data indicate a significant impact of the foreign economic activity intensity on the economic development and the increase of foreign investment. However, the country still has not completed the reform of the institutional structure of the economy, including the relationship between the center and the regions in conducting foreign economic activity. The unfavorable business climate remains at the same level, inconsistency in the formation and implementation of policies to increase national and regional competitiveness is observed.

Ukraine's foreign trade has a number of challenges to be addressed in order to stimulate economic development of the country: Ukrainian goods are less competitive than European, the Ukrainian economy is dependent on export and import, and their structure indicates the technological backwardness of Ukraine from the EU countries.

To equalize the situation several state strategies are observed. The most suitable course is the course for import substitution and the creation of a complete production cycle in Ukraine. The strategy is to use Ukraine's strengths - its production potential and infrastructure to produce goods that do not require significant investment at an early stage.

In general, the Association Agreement between Ukraine and the EU is a powerful document that will facilitate the development of trade between both entities. The weakness of the Ukrainian economy and its decay in recent years allow us to conclude that there

are more threats coming from signing of the Agreement, since Ukrainian goods can be squeezed out of the market by the European ones. Nevertheless, the Agreement provides guidelines for changes in Ukrainian regulations that will enhance the technological and environmental standards of Ukrainian products, while timely and correct state actions will allow Ukraine's economic potential to be developed and, with free access to the European market, significantly increase production output and export.

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