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PECULIARITIES OF DEVELOPING GLOBAL VALUE CHAINS IN THE CONTEXT OF CHEMICAL INDUSTRY

Purpose. To identify organizational, operation, and development peculiarities of the global value chains in the chemical industry.

Methodology. Tools of analysis and synthesis, generalization and scientific abstraction were applied to classify the world economy branches in terms of indices of value chain length and its geographical distribution while determining features of global value chain organization in the context of paint and coatings sector of the chemical industry; and static, economic, and comparative analyses were applied to define and interpret amounts of the value multiplier.

Findings. Global value chains in the context of the chemical industry are studied. It has been identified that they are of more pronounced regional nature; moreover, their development is based upon a principle of approximation to a consumer. Distribution of the value within such chains is of dispersed nature; in addition, they differ in high length. The global value chains are analysed at the level of certain companies in paint and coatings sector of the chemical industry. Such chains are referred to a producer-driven type. It has been defined that they are characterized by heavy expenses associated with R&D as well as composition of paints and other coatings. The majority of production activities, implemented throughout the world, are performed by industrial manufacturers. It has been defined that the chains are developed generally as horizontally integrated structures. The major players in the paint and coatings market actively put into practice merger and acquisition strategies to extend supply chains and increase regional share. Computation of value multiplier helped prove that vertically integrated companies can generate greater value to compare with the companies which function and grow following the principles of horizontal integration.

Originality. The paper substantiates scientific methodological approach to the analysis of the global value chains in the context of chemical industry which made it possible to single out characteristic features of their organization and functioning.

Practical value. Determination of peculiarities of organizing the global value chains helps select possible management methods and tools which will make it possible to improve their functioning efficiency as well as their future progress potentials.

Keywords: *global value chains, chemical industry, mergers and acquisitions, vertical integration, horizontal integration*

Introduction. During the last decades, the global economy has demonstrated a tendency towards the increased participation of industrial producers as well as logistics and IT companies in the world economic relations. Global value chains (GVCs) are considered as one of the recognized tools for integration into the system of such chains. Participation of economic objects in GVCs increases chances to improve competitiveness of a company and business profitability while generating higher level of the added value to retain its share for the national economy and aim at the development.

Literature review. Currently, scientific research on the global value chains is carried out in two ways: from the macroeconomic viewpoint in the context of a theory of international trade and from the viewpoint of a theory of international business. To a greater extent, it corresponds to a microeconomic framework. Case one analyses participation of countries in GVCs and case two solves organizational, legal, economic problems and the ones concerning integration of enterprises, belonging to different industries, into such chains. The majority of scientific sources concern macroeconomic aspect of GVCs study; in turn, aspect two is still understudied.

It should be mentioned that certain studies (for instance, [1]) introduce such a concept as ‘value-added reproduction chain’ prioritizing a purpose to create a consumer value as a result of coherent exercise of functions by individual links of the chain.

Such global institutions as OECD, UNCTAD, UNIDO, WTO, the World Bank and others, having access to international statistical databases and powerful financial as well as human resources, initiate large-scale macroeconomic studies concerning GVCs problems. The following can be considered as the most important research in the last few years: ‘World Investment Report 2020: International Production Beyond

the Pandemic’ (UNCTAD, 2020); ‘Global Value Chains and Industrial Development. Lessons from China, South-East and South Asia’ (UNIDO, 2018); ‘Global Value Chain Development Report 2019. Technical Innovation, Supply Chain Trade, and Workers in a Globalized World’ (WTO, 2019); ‘Global Value Chains: Efficiency and Risks in the Context of COVID-19’ (OECD, 2021); and ‘COVID-19 and global value chains: Policy options to build more resilient production networks’ (OECD, 2020). It is also worth mentioning both topicality and thoroughness of the analysis by experts of internationally acclaimed analytical institutions; among other things, it concerns McKinsey Global Institute.

Generally, contemporary scientific papers consider sectors of the global economy being the most efficient from the viewpoint of integration into GVCs, i. e. electronics, car manufacturing, manufacture of textiles and garment industry. Such studies, based upon international statistics, are habitually oriented on the interstate comparative analysis of the value-added movement. For example, O. O. Klochko and I. A. Manuilov analysed participation of countries in the global value chains in terms of consumer electronics sector [2]. The authors formulated and proved the following hypothesis. Despite the fact that a number of the standardized operations are performed in the developing countries and new large Asian manufacturers arise, the value created in the global sector of consumer electronics has a tendency to be distributed towards the developed countries.

Baranovska Ya. G. carried out an in-depth regional and sectorial GVCs analysis [3]. The author defined general tendencies in the progress of global car manufacturing value chains in Eastern European and Asian countries. Papers by N. A. Volgina concern features of GVCs development in the sphere as well as specificity of their management. Paper [4] has proved that car manufacturing sector turns from chains, controlled by a producer, to chains, controlled by a consumer. In addition, new tendencies of car manufacturing geography have been identified; and role of

India and China in the process has been assessed. Further studies (among other things, [5]) made comparative analyses of features concerning value chain formation for car manufacturers in the Central and Eastern European countries and in the Russian Federation. Attention has also been paid to the problems of integration of the countries into the available GVCs controlled by powerful transnational car manufacturers and collaboration among local and foreign GVCs suppliers.

The largest export shares of countries, where production facilities of world-famous brands are located, and high level of international fragmentation of the production stipulate the particular interest of researchers in the issues of GVDs functioning in textile industry and garment industry. First of all, study on value chain formation, initiated by the United Nations Environment Programme, should be mentioned [6]. The study, represented as a report, involves thorough analysis of the value chain (in geographical and subjective intersections; from the viewpoint of generation of social risks as well as government risks and others); impact of each link on the environment is analysed; stages within the value chain, being the most exposed to risks and impacts, are determined.

Dovzhenko I. B. studied global value chains in the context of the fashion industry [7]. The author has identified that under dynamic highly competitive conditions of fashion garments, the world-famed TNCs have developed a 'fast fashion' concept aimed at the accelerated response of clothing supply chain to the changing customer needs. Fast fashion involves a more complex model of supply chain management since decisions are made under the conditions of incomplete information.

Kondratiev V. B. made comparative analysis of GVCs in different sectors of economy; he singled out common features and distinctive ones. In paper [8], the author compares indices of involvement of countries in a process of vertical production fragmentation and studies GVCs in various sectors (namely, in agribusiness, chemical industry, car manufacturing, and electronics industry) taking into consideration technological peculiarities of each of them. More recent studies of the author (namely, [9]) concern the same object, i. e. GVCs; however, focus shifts to the current forms of their upgrade by companies to strengthen competitive positions in the market and sectorial value chains are analysed from the viewpoint of impact of technological advance of Industry 4.0.

Unsolved aspects of the problem. There are not many domestic and foreign scientific sources that concern organizational, functioning, and development problems of GVCs in the context of the chemical sector. According to the data by International Council of Chemical Associations report [10], in 2017, share of the global GDP was 7 %. In 2018, the USA demonstrated its more than threefold increase (almost 25 %) [11]. Generally, 95 % of all produced goods are based upon various industrial chemical processes. The majority of manufacturing sectors from energy generation and transportation to IT and construction use chemicals. Hence, the chemical industry is among the essential components of almost all value chains.

Purpose is to define organizational, functioning, and development problems of GVCs in the chemical sector.

To succeed, a two-stage procedure of completion of the tasks is proposed:

1. To do analysis of GVCs in the context of the chemical sector based upon the data by the international bodies and world-known analytical institutions.

2. To identify peculiarities of GVCs organization in terms of companies of the paint and coatings sector. For the purpose, it is proposed to study activities by manufacturers, being members of GLOBAL TOP-10, and outline prospects for their future development.

Results. GVCs concept relies on association of various enterprises from different countries in the coordinated business network whose operation stages (i. e. from design, production, marketing and distribution up to after sales service) are linked in a value chain. As a model, GVCs describes a product move-

ment from a supplier to a consumer through stages adding value to the product.

Since 2015, the world has been demonstrating such a fundamental trend as stagnation of global value chains. According to the methods described in [12], their trade portion, determined with the help of a proportion of foreign value in the export, defined by means of a relative share of the export value, was 29 %. It should be noted that 1990–2008 demonstrated a tendency of persistent 25 up to 33 % increase in the above-mentioned index, i. e. its average annual growth was 1.5 %. The post-crisis 3-year period showed variety of fluctuations; starting from 2011, a consistent trend towards the decrease in the global export value chain share was shaped [13].

In terms of significance of their export share, the worldwide GVCs in the chemical industry do not differ substantially; they are rather of the regional nature than of the global one. According to the analytical report 2020 by McKinsey Global Institute, export share is minor; over the last five years, it will be 5–11 % [14]. It should be mentioned that in the total rating of industries, whose value chains are considered from the viewpoint of ability to move across borders depending upon the influence of both economic and non-economic factors, the chemical sector has the lowest indices along with the mining industry, metallurgy industry, and food and beverage industry. At the same time, the pharmaceutical industry, garment industry, and production of communication equipment have the highest export share within the supply chain being up to 60 %. Hence, more than 50 % of the global exports of the sectors have a potential for further geographical move.

It should be pointed out that study [14] divides value chains of all sectors (types of economic activities) depending upon their belonging to one of the categories into global innovations, labour intensity, regional processing, and resource intensity. Fundamentally, the categories represent features underlying development of the chains.

Value chains of the chemical sector belong to the category of innovative chains. Their peculiarity is as follows: the influence of economic factors on 'geographical mobility' is rather insignificant. In turn, such non-economic factors as government support in the context of increase in the national marketability or the national security are more important ones.

More pronounced regional nature of value chains in the chemical industry is also supported by the indices of industry globalization degree represented by UNCTAD reports. Hence, owing to 52 % export share in revenue, the chemical sector occupies worldwide 'middle positions'. Top positions belong to electronics, manufacture of machinery and equipment, and production of textiles and garment industry (export shares are 78, 80, and 82 %, respectively). Agriculture, being a branch where foreign economic activities generate only one seventh of the earned revenue, has the lowest rating [13].

Further analysis of the report shows that measuring indices, helping define the most common (i. e. archetypical) configurations of international production, are considered (Table 1, Fig. 1).

The data demonstrated in Table 1 support the idea that a fragmentation degree of value chains in the chemical sector is higher than the averaged analytical value being 2.27. Hence, compared with the mining sector, the fragmentation degree is 60 % higher. To compare with the longest value chain (car industry is meant), difference in the index value is only 14 % down. At the same time, in the chemical sector, geographical distribution of the added value is much closer to that one being distributed regionally resembling a situation in the food industry where the chains are developed on the principle of approximation to a customer.

Generally, the data, represented in Fig. 1, help classify industry sectors in terms of length of value chains and the value distribution. As Fig. 1 explains, group one includes two branches with the shortest chains, i. e. the mining sector and agriculture since they are resource-dependent and hence, immobile ones.

Table 1

The key indicators in the field of world production [13]

Sector/industry	Length/ Fragmentation of value chains		Geographical distribution of value added	
	Steps number	Distance, km	Concentration (dimension – number of countries accounting for 80 % of value added in gross exports)	Contribution (dimen- sion – share of countries in which contribution is > 5 % of GDP), %
Agro-based	1.9	1,484	29	30
Extractive	1.5	1,402	22	12
Food and beverages	2.4	1,971	23	24
Textiles and apparel	2.6	2,278	20	6
Pharmaceuticals	1.8	2,433	21	4
Chemicals	2.4	2,911	21	36
Automotive	2.8	2,789	12	6
Machinery and equipment	2.5	2,457	16	37
Electronics	2.6	2,990	14	37

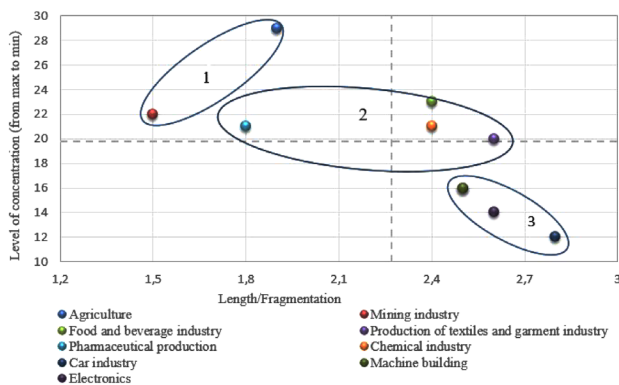


Fig. 1. Clustering of value chains in the inter-industry aspect

Group two includes sectors with the scattered regional and global distribution of the added value; however, in this context, length of the chains varies. Hence, the chemical industry provides almost 5 % of GDP for 36 % of countries, and has one of the longest chains (i.e. 2,911 km). Simultaneously, the pharmaceutical industry, having the shortest value chain being 2,433 km, and fragmentation degree, being quite lower than the average one (i.e. 1.8) provides 5 % GDP crossing for 4 % of countries only.

Group three includes branches where value chains are the longest ones and geographical distribution varies from highly concentrated (for instance, in the context of auto industries, only 12 countries provide 80 % of value added to the global exports) to the scattered (in the context of the production of textiles and garment industry, 20 countries generate four-fifth of the value added in exports).

It should be mentioned that 5 % contribution of both abovementioned sectors to the GDP falls on 6 % of countries only (for comparison, machine building and electronics, being the members of group three, have the highest index of their participation share, i.e. 37 %).

Consequently, there is every reason to state that despite availability of common characteristics, the archetypical con-

figurations of international cooperation hide significant dissimilarities inside the sectors depending upon strategies of some companies in the market, complexity of the applied production technique, its innovative degree, and other factors stipulating specificity of the supply chain organization.

At the same time, it is required to mention a number of factors, which in aggregate identify expediency of the GVCs fragmentation in any sector. As a rule, this involves transaction cost reduction, expenses on coordination of links based on offshore agreements, decrease in labour costs as a result of transferring production to the African-Asian sector, and relative decline in prices for materials and the related services. Meanwhile, a process of production fragmentation on different stages and regions cannot be endless. There is optimum fragmentation degree depending upon the level of trade and transaction costs [8].

Hence, the following stage of the study is to determine a degree of involvement of some companies in the global chains. Currently, a tendency towards their oligopolization (i.e. concentration under control of a relatively small number of TNCs) is observed. Hence, if analytical data on the activities by the major players in the paint and coatings market are included in the study, then the results of GVCs analysis in the context of the paint industry will be the most informative ones.

Table 2 represents information on the manufacturing companies from the 2020 GLOBAL TOP-10 with 50 % volume of the paint product market [15].

From the organizational viewpoint, GVCs joining involves the process either in the form of the simplest procedures, i.e. establishment of a branch or a subsidiary, or in the form of more complex reorganization aimed at consolidation being merger or acquisition to build a strategic alliance. Hence, increase in market penetration resulting from the value chain expanding/lengthening is represented by the index of agreements concluded in the fashion of M&A (Mergers and Acquisitions).

As Table 2 explains, almost all major players in the paint and coatings market actively put into practice merger and acquisition strategies. In 2017, the Sherwin-Williams Company merged with Valspar Company, and became the largest global paint and coatings manufacturer. Restructuring, conducted in the past two decades, helped expand world-wide presence of the company, increase sales outside North America, and add large-scale production and distribution in Europe and Asia.

Over the past three years, North American Company PPG finished acquisition of ten large paint and coatings manufacturers inclusive of German, Dutch, and Italian companies, engaged in production of automotive coatings and car repair (original equipment manufacturer, OEM), industrial coatings, and having well-run sales systems.

The turning point took place in 2021, when the world-famous Finnish company Tikkurila was acquired. The company is a leading manufacturer and distributor of decorative paints and coatings. It operates in 11 countries; more than 80 % of its income is received from Finland, Sweden, the Russian Federation, Poland, and Baltic states. As a result of the Agreement, PPG Company had an opportunity to extend its geographic reach within the markets of the abovementioned states and enhance its competitive position owing to a new portfolio of new brands of decorative surfacing products as well as to access to innovations of the target company.

Dutch Company AkzoNobel implements a strategy of its balanced geographic footprint, within which it is planned to make no less than 50 % profit in the developing markets. To expand their own position in some South American and Central American countries, being on top in the world ranking of growth prospects for the next decade, in 2021 AkzoNobel concluded an agreement to acquire Grupo Orbis, a Colombian company of paint and coatings. In the same year, 100 % acquisition of Titan Paints, one of the best-known Spanish brands, was completed. The agreement includes three facilities and seven logistic and service centres for decorative paints; in addition, it helps enhance a footprint of paint and coatings busi-

GLOBAL TOP-10 of Paint and Coatings Companies*

Company	Net profits in 2020, USD billion	Staff number in 2020, thousand	Number of present countries	Market share in the region (country) of the company origin in 2020	Number of M&A agreements over the last years
1. The Sherwin-Williams Co., the USA	14.69	61,0	>120	45 % in North America	(2001–2020) – 30 (2011–2020) – 11 2020 – 1
2. PPG, the USA	13.8	47.0	>70	43 % in North America and Canada	2018–2020 – 10 2021 – 4
3. AkzoNobel, the Netherlands	10.44	32.2	> 150	37 % in Europe	2020 – 5 2021 – 2
4. Nippon Paint Holdings Co., Japan	7.3	25.0	29	26 % in Japan; and 52 % in Asia	(2016–2019) – 4 2021 – 3
5. RPM International Inc., the USA	5.5	14.6	170	75 % in North America	(1990–2020) – 175 (2011–2020) – 70 2020 – 1 2021 – 2
6. BASF Coatings, Germany	3.78	11.4	170	35 % in Europe	2016 – 2 2019 – 1
7. Axalta Coating Systems, the USA	3.70	13.0	>130	40 % in North America	(2016–2020) – 23 2021 – 1
8. Kansai Paint Co. Ltd., Japan	3.29	15.9	85	35 % in Japan	(2007–2016) – No less than 12
9. Asian Paints Ltd., India	2.58	7.16	> 60	44 % in Asia (including India)	(2000–2020) – No less than 11
10. Jotun, Norway	2.54	9.855	> 100	16.7 % in Scandinavia	No agreements were concluded

*Compiled by the authors based upon information posted on sites of the companies, their integrated 2020 reports, and press releases [15]

ness of AkzoNobel in Spain and Portugal. Moreover, to approach North American market of coatings for yachts, an agreement was concluded in 2020 to acquire the New Nautical Coatings Company, the owner of a premium brand Sea Hawk.

Japanese company Nippon Paint, a market leader in nine countries (i. e. in Japan, Australia, Turkey, and Asian states) is among the major suppliers of car and decorative paints. In the largest global Chinese paint market, the company has 36 % stake in the DIY segment. Acquisition of firms is considered as the fastest way to increase a market share; among other things, it concerns European economic environment. For the purpose, in 2019 Nippon Paint concluded an agreement to take stock in Betek Boya manufacturer; soon it became the leader in Turkish market. Turkey was considered as a promising country for many reasons, namely: large population, many people aged from 25 to 44; powerful car industry; and favourable geography for exports in Southeastern Europe, to the Middle East, and in the RF. Three years earlier, the advantages were appreciated by Kansai Paint, another Japanese manufacturer which acquired 50 % stake in paint and varnish subdivision Polisan Boya of Turkish company Polisan Holding.

During the decade American company RPM, being guided by a principle ‘value creates value’, implements dynamically a strategic merge programme for stakeholders while acquiring new firms and products, and investing in their further growth. The acquisition strategy is intended to expand global presence of the company. This way, more than 175 agreements of M&A type have been concluded for the last thirty years.

In the context of BASF Coatings division, operating as a part of the world largest chemical group and being engaged in the development, production, and marketing of automotive coatings and decorative paints, the year of 2016 was quite eventful since two strategic agreements were concluded. Agreement one was purchase of assets of Chinese company Yinfa. Gaining access to the high-tech manufacturer of auto-

otive coatings in China and potent distribution network helped BASF Coatings got an opportunity to expand a line of goods in Asia-Pacific region while adding product portfolio by Yinfa to proper successful brands.

Agreement two was acquisition of the global business of Chemetall company being the world leader in the field of technology and innovation on the market of metal surface treatment. The purchase helped the BASF division supplement the available line of coatings and implement common innovative solutions in the sphere of surface protection technologies.

The current requirements for business digitalization stipulated for BASF Coatings acquisition of the majority of share purchase of Belgium internet platform UBench in 2019. The innovative platform is instrumental for car fleets, leasing and insurance companies to control the whole car life from regular maintenance and operational damage repair up to resale at the end of its life. The purchase made it possible to expand the product portfolio of BASF Coatings while adding digital service solutions to it.

GVCs depend heavily upon the investment solutions of corporations. In this respect, along with M&A agreements, BASF Coating implements intensively the investment projects expanding production and construction, namely research centres and laboratories. In such a way, a plant construction in Shanghai industrial park made BASF Coatings a leader among coatings suppliers for Chinese automotive industry.

For the last five years, American company Axalta, the world leader of suppliers of liquid and powder coatings, has intensified reorganization procedures to expand impact in the global market. Capital Paints LLC (UAE-based manufacturer of thermoactive powder coatings) was purchased in 2019. New partnership with Master Paints Industries (leading manufacturer of paints in Pakistan) was announced in 2020. According to the agreement, Master Paints would distribute regionally two brands by Axalta – Standox and HIPIC.

For the last two decades, Asian Paints, being the largest manufacturer in India as well as the third in sales in Asia, has implemented more than 11 mergers and acquisitions agreements. Hence, the company acquired ownership of Australian, Singaporean, and several Indian paint and varnish firms; in addition, it initiated several joint ventures (inclusive of American PPG to expand presence in the Indian market of nondecorative coatings). In its structure, the firm has chemical division to manufacture such goods as phthalic anhydride and pentaerythritol for their following use for paint production. Since 2013 Asian Paints has been represented in the market of decorative and industrial paints as well as in the market of housewares, in the segment of decorative components, and goods for bathrooms and kitchens. Vertical integration has helped the company to proceed from a product-oriented brand to a client-and-service-oriented brand.

Norwegian company Jotun is the only firm in the market of coatings implementing 'organic growth' strategy to achieve the development goals. For the purpose, new plants are built and investments are made in the available productive facilities and logistical facilities. In 2020, only about 17 % of the company products were manufactured and sold in the region of origin. Almost similar sales share is in Northeast Asia, in the Middle East, in India, and in Africa; 24.5 % accounted for Southeast Asia, and the Pacific region. As authorities believe, the strategy is more acceptable to compare with mergers and acquisitions of other companies from the viewpoint of risk and cost control as well as from the viewpoint of the possibility to support the available corporative culture.

Consequently, the paint-and-varnish industry demonstrates a tendency towards regionalization of value chains which corresponds to the global tendency. COVID-19 intensified the tendency and changed forecasts of structural growth of the market. In this context, it was expected at the start of the year of 2020 that the world sales of paints and coatings would increase up to USD 179 billion in 2025 primarily through the advanced stronger demand in the industrial sector [16]. 2020 sales analysis shows that during COVID-19, Europe demonstrated increase in decorative paint demand; it especially concerned online purchasing. Manufacturers of the product group managed to use the increased demand to put up sale prices. In the last third of 2020, AkzoNobel drove up markups on decorative paints up to 21 % compared with 14 % during a similar period of the previous year. According to the data by Valence Group, EBITDA index of paint and varnish firms, operated in decorative segment, was 50–60 % higher than in other sectors of the chemical industry [17].

At the same time, the chemical branch, taken as a whole, including paint and coatings production has high level of export concentration, measured by Herfindahl-Hirschman index (its value is more than 0.6). It results in origination of potential bottlenecks in the global chains causing delays in delivery or even making the process impossible. Export of cyclohexanol is a typical example. It is a raw material used to manufacture paints and varnishes; 76 % of its amount is accounted for the only country, Japan [14].

Against a high export share of paint and varnish manufacturers, GVCs fragmentation level is minor in the context of their general output since internal economic relations inside the chains are not strong enough.

Continuous temporal and spatial technological intercommunication between different production stages in different countries and regions is typical for large chemical corporations being the vertically integrated structures. Consequently, fragmentation degree of the global value chains will be higher in such companies. It may also be assumed that the amount of the value added will also be greater. To prove the assumption, it is expedient to calculate the value multiplier. S. O. Kozhevnykov [18] adopted the macroeconomic index to a level of economic entities and represented it as a ratio between the aggregate of mass of commodities, manufactured by an enterprise, and cost of primary resources, involved in economic turnover.

Fig. 2 shows values of the index, calculated for six companies. Two of them (i.e. Hempel and DAW Group from Germany) are not in the abovementioned rating; nevertheless, they make the top 5 of European TOP-25 of paint and varnish manufacturers. In addition, they have minor gap with the world leaders in terms of sales. The changes in the objects to be analyzed depend upon the fact that American firms submit annual reports according to 10-K form having no output data for making calculations (among other things, the information concerning operational expenses on their types).

As diagram 2 demonstrates, two vertically integrated companies – BASF Corporation and Asian Paints – have higher indices of the multiplier to compare with firms, which growth is based upon horizontal integration. Increase in multiplication effect is explained by the possibility to decrease expenditures connected with raw material and freight since they are no less than 60 % of the total cost of paints and coatings production.

It was expected that in 2021 the gap in a multiplier value would be even larger since on average, European prices for raw materials were raised by 30 % [19]. The abovementioned can be explained by the following: high demand for coatings in the world market (especially in the decorative segment; oil price hike; global deficit of sea containers resulting in the increase in expenses connected with goods transportation from Asia to Europe; and increase in extra nontariff expenses connected with new Great Britain-EU customs treaties adding value of the imported raw materials.

Conclusions. The analysis showed the following:

1. North American countries, Central and Eastern European countries, and Eastern Asian countries are the key GVCs participants. Consequently, the regions demonstrate their highest concentration. The abovementioned depends upon transportation costs, infrastructure quality, and availability of regional trade agreements.

2. American companies are the most active ones in the merger, acquisition, and consolidation market.

3. As for the GVCs organization, the major players in the paint and coatings market are guided by the provisions of their development strategies setting a goal to expand their own global presence or to be present within certain regional markets. In this context, the latter becomes a priority-oriented tendency. In such a way, the majority of firms expand their activities in the markets of other countries/continents while merging the top local brands as well as regional operators of supply chains.

4. While consuming numerous products (both final and intermediate ones) and organizing simultaneously complex manufacturing processes, in a greater or lesser degree chemical industry is characterized by the availability of various GVCs. In the context of the paint and coatings sector, the global chains may be specified and characterized as a producer-driven, i.e. those ones where properly transnational manufacturers dominate in the coordination of the factory area network.

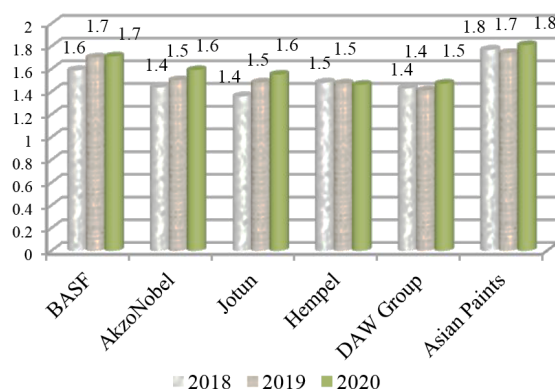


Fig. 2. Value multiplier of the major players in the paint and coating market

Since the chemical branch as well as paint and coatings sector as its component has powerful innovative potential, characterized by high R&D costs, the top companies of the industry are an integral part of the chains while controlling a process of formulating for paints and coatings as well as the majority of manufacturing operations scattered around the world.

5. The companies, engaged in manufacturing of varnishes and paints, being their core business, generally develop GVCs based upon horizontal Y-type integration involving the enterprise intensification by means of merger of control of a competitor's activities (to neutralize them), access to a sales network, and achievement of critical purchase volume and production to provide a scale effect, gain benefits at the expense of increase in the goods range, and access to innovations.

6. The current global challenges should vary the approaches of manufacturers of paints and coatings as well as manufacturers of industrial products as a whole and approaches to GVCs expansion. They should follow intensions to expand their geography and supplement their technological portfolios by new solutions, and their product portfolios by new stock keeping units. Nevertheless, their first intension should be addressing closeness of primary resources and providing of their guaranteed access.

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Особливості побудови глобальних ланцюжків доданої вартості в хімічній промисловості

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Мета. Визначення особливостей організації, функціонування й розвитку глобальних ланцюжків доданої вартості в хімічній промисловості.

Методика. Використані методи аналізу й синтезу, узагальнення й наукової абстракції – при групуванні галузей світового господарства за показниками довжини ланцюжків вартості та їх географічного розподілу, при визначенні особливостей організації глобальних ланцюжків додавання вартості в лакофарбовому секторі хімічної промисловості; статистичного, економічного, порівняльного аналізу – для визначення та інтерпретації значень мультиплікатора доданої вартості.

Результати. Досліджені глобальні ланцюжки доданої вартості в хімічній промисловості. Установлено, що вони мають більш виражений регіональний характер і будуються за принципом наближення до споживача. Розподіл доданої вартості в таких ланцюжках є розосередженим, а їх протяжність – високою. Глобальні ланцюжки додавання вартості досліджені на рівні окремих компаній у лакофарбовому секторі хімічної промисловості. Такі ланцюжки віднесені до типу «producer-driven». Встановлено, що вони характеризуються високим рівнем витрат на НДДКР, створення рецептур фарб та інших покриттів, а більшу частину виробничих операцій, котрі здійснюються в різних країнах світу, реалізують компанії-виробники. Визначено, що ланцюжки будуються переважно як горизонтально інтегровані структури. Компанії-лідери світового ринку фарб і покриттів активно реалізують стратегії злиття й поглинання з метою розширення ланцюгів поставок і збільшення регіональної присутності. На підставі розрахунку мультиплікатора доданої вартості доведено, що вертикально інтегровані компанії здатні генерувати додану вартість у більшому обсязі в порівнянні з компаніями, які функціонують і розширюються за принципами горизонтальної інтеграції.

Наукова новизна. У роботі обґрунтовано науково-методичний підхід до вивчення глобальних ланцюжків доданої вартості в хімічній промисловості, що дало змогу виділити типові особливості їхньої організації та функціонування.

Практична значимість. Визначення особливостей організації глобальних ланцюжків доданої вартості дає можливість здійснити вибір відповідних методів та інструментів управління, що забезпечить підвищення ефективності їх функціонування.

Ключові слова: глобальні ланцюжки доданої вартості, хімічна промисловість, злиття й поглинання, вертикальна інтеграція, горизонтальна інтеграція

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