

INNOVATIVE APPROACHES TO ASSESSING ORGANIZATIONAL CHANGES AT AUTOMOTIVE INDUSTRY ENTERPRISES: THE EU EXPERIENCE FOR UKRAINE

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Abstract: The article considers the features of organizational changes (organizational innovations) that have been carried out in the automotive industry of countries that have relatively recently joined the European Union (the Czech Republic, Slovakia, Poland, and Romania). These countries, starting from 1990s and throughout 2000s, rebuilt their own automotive industry and managed to attract investors, which resulted in increased production and car exports. The article substantiates that in the modern world the automotive industry has tendencies towards internationalization (production in different countries), development of large multi-brand concerns (production of different classes and makes of cars), cooperation (OEM companies and car dealers cooperating with concerns), and specialization (each country produces cars that meet market needs, either for domestic consumption or for export). This issue is extremely important for Ukraine, as the Ukrainian automobile industry now ranks second among the post-Soviet countries and 11th among the Eurozone countries in terms of production, with 7 automobile plants operating in Ukraine. The purpose of the article is to analyse organizational changes in the automotive industry enterprises in Eastern Europe, including the introduction of innovations, as well as to determine the possibility of implementing such changes in the automotive industry in Ukraine.

1 Introduction

The relevance of the stated research topic is quite high. Organizational changes are those processes that accompany business and are necessary for overcoming the crisis, increasing competitiveness, and reaching a new level of development. As noted by Mescon, Albert and Khedouri, organizational changes are “management’s decisions to change one or more of the internal variables: organizational goals, structure, objectives, technology, and the human factor” [1]. Organizational changes help to overcome the negative impact of external factors or increase the positive impact of positive external factors. The main thing is to choose the right strategy in these conditions. This is also relevant for the Ukrainian automobile industry, which now ranks second in the post-Soviet space and 11th in Europe in terms of production, with 7 automobile plants operating in Ukraine. However, by 2018 car production in the country decreased by 90 times compared to 2008, and continues to decline, while only 2% of the car plants capacity is used [2]. This is related to the new environmental standards for Euro-5 cars,

signing of the free trade agreement between Ukraine and the European Union in 2014, and the growth of foreign car imports into the country. All this makes the need for changes in the automotive industry of Ukraine extremely urgent, and these changes need to take into account the experience of countries that have recently joined the European Union (the Czech Republic, Slovakia, Poland, and Romania). This is what the Article discusses.

The purpose of the study is to analyse organizational changes in the automotive industry enterprises in Eastern Europe, including the introduction of innovations, as well as to determine the possibility of implementing such changes in the automotive industry in Ukraine.

2 Literature review

In the research literature on management the issue of organizational change and management of organizational change at enterprises is considered quite often. As mentioned earlier, Mescon [1] and co-authors see organizational changes in the fact that companies alter

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certain parameters of their activities in response to external threats or for maintaining external opportunities (Figure 1):

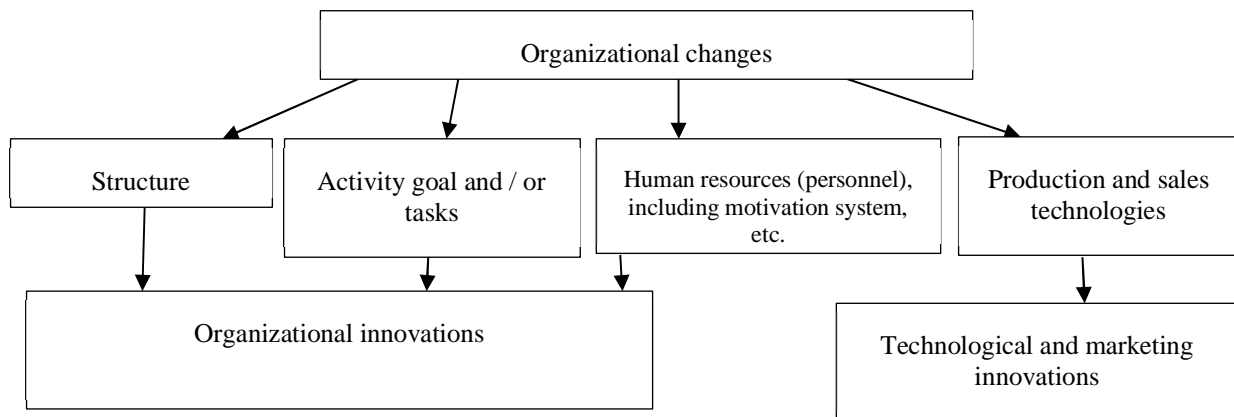


Figure 1 Directions of organizational change

In other words, organizational changes lie precisely in the introduction of innovations - organizational, which include changes in strategy, structure, personnel and personnel management, or technological, when new technologies are introduced, especially in production and sales. This is indicated, for example, by Bykov and co-authors [3], Grigoryan [4] and Goncharov [5]. Changes in the organization can look like development cycles (from birth to formation, growth, and aging), evolution (from birth to growth through selection in competition), or dialectics (when there is a conflict associated with changes in the environment, and changes are the response to this conflict and will bring or will not be able to bring the organization to a new level). This is noted by Wybrańczyk and co-authors [6]. It is completely clear that for existing large enterprises operating in the automotive industry, it is the "dialectical" changes that are most relevant.

Current trends in the development of the automotive industry, especially in Eastern Europe, but also the world as a whole, are described by such authors as Vozmilova and Volgina [7], Terekhov [8], Schwartz [9], Łuczak and Małys [10], Menes [11] and L. Mytna Kurekova [12].

Global trends, which are noted by such authors as Łuczak and Małys [10], include:

- changes in customer demand (taking into account safety, comfort, fuel savings and environmental friendliness);
- diversification of demand by different types of cars: for premium makes, which include Audi, Mercedes, BMW, Lexus, Infiniti, and Volvo, as well as some makes that are produced in the luxury segment, and for mass makes that are available to a large number of potential buyers;
- development of new items for the automotive industry and demand for them (multimedia systems, communication, navigation, trip automation);
- growth of environmental requirements from the

state [10].

All of the above encourage changes in the structure of automobile production. OEM-type enterprises ("original equipment manufacturer" - a company that produces parts and equipment that are sold to automakers under their brand name) open up. The development of those divisions of automobile companies engaged in R&D is becoming important [10].

In terms of meeting demand in different market segments, modern car companies are diversifying production, producing different makes at the same time, for example,

- Volkswagen Auto Group includes several companies that produce different types of cars for various purposes; makes that belong to the concern include Volkswagen, Audi, Škoda, Seat, Bentley, Bugatti, Ducati, Lamborghini, Porsche, MAN, Scania (although there are separate companies for each make, they are quite large car concerns, such as Audi Group);

- PSA group: Peugeot, Citroen, DS, Opel;

- Toyota Motor Corporation: Toyota, Lexus;

- Hyundai Motor Group: Hyundai, Kia;

- FCA: Fiat, Chrysler, Alfa Romeo, Abarth, Maserati, Dodge, Jeep;

- Renault-Nissan-Mitsubishi Alliance (previously Renault-Nissan Alliance 1999-2017): Renault, Nissan, Mitsubishi;

- TATA: TATA, Jaguar, Land Rover;

- Daimler AG: Mercedes, Smart, Maybach;

- BMW Group: BMW, MINI, Rolls Royce [13].

These companies open operations in different countries simultaneously, leaving R&D units mainly in the country where the parent company is located. At the same time, they cooperate with independent OEM companies for the supply of original (licensed) components for cars (many of such companies operate in Southeast Asia, especially in

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China) [15,16]. Based on the results of 2019, the world leaders are Toyota (10.86% of the market), Volkswagen Group (10.77%), Hyundai (7.49%), GM (7.11%), and Ford (6.63%) [14].

The modern structure of an automobile concern can be described by the following scheme (Figure 2).

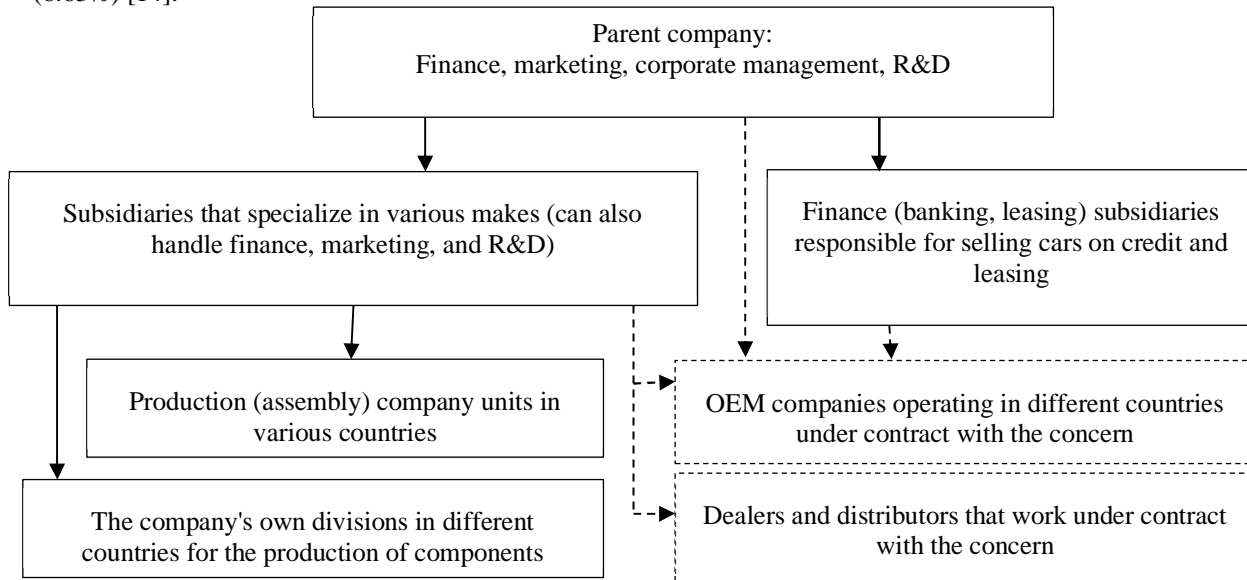


Figure 2 Modern structure of an automobile concern

In other words, a large automaker manages not only smaller "branded" companies (for example, like Volkswagen AG manages Audi and Škoda), but also creates financial divisions for lending and leasing, and works with independent OEM companies and with dealer companies and distributors. A concern is building an international business, which includes several elements. Some of them are directly controlled by the parent company, others are carried out under contracts. That is, the division of labour by areas (R & D, components, car assembly, sales) and the distribution of production by country is a current trend for global automakers. One feature of modern automotive business is the emergence of leaders in production and consumption from around the world.

For instance, 28.02% of cars are produced and 29.02% are used in China, 19.32% of cars are produced and 12.5% are used in the European Union (leaders - Germany, Spain and France, the Czech Republic is in the fourth place), in the USA 11.85% of cars are made and 19.80% are used, in Japan 10.55% of cars are made and 5.85% are used [14]. This is what determines the export orientation of enterprises in the industry, or the focus on the domestic consumer, or the growth of imports into the country.

Those authors who considered peculiar features of the development of the automotive market in Eastern Europe, such as Menes [11], Mytna Kurekova [12], Vozmilova, Volgina [7], point out that after joining the European Union, automotive products of these countries under their own brands were not competitive. Škoda was an exception, however, it was later purchased by Volkswagen). At the same time, the pressure on the car market in Eastern

Europe is exerted by the import of cars, not only of the new makes, but also used cars (for example, 70% of cars imported to Poland from other EU countries in 2019 were used cars, and they were imported duty free PZPM, 2020 [17]). As it has already been mentioned, this trend is also relevant for Ukraine. That is why the authors note that the automobile production in Eastern Europe in many aspects involves deep specialization and export orientation (for example, the production of Volkswagen commercial vehicles in Poland), or the production of mass inexpensive car makes (Škoda in the Czech Republic, Fiat in Poland, Renault Dacia in Romania), Volkswagen, Kia, Peugeot and Citroen in Slovakia (although the country also produces the Land Rover luxury car) [9]. These countries, therefore, participate in the global division of labour, they house both assembly plants of large concerns and OEMs. At the same time, assembly plants specialize in certain makes and areas (in the economy segment, in the commercial segment).

3 Methodology

Qualitative and quantitative methods must be used to assess the organizational changes made in the automotive industry in Europe. The analysis includes four EU countries that have relatively recently joined the European Union and restructured their industry (Slovakia, Poland, Romania, and the Czech Republic).

Quantitative methods help to understand how the automotive industry of each country has changed: the volume of cars produced and the dynamics (growth rate). It is advisable to consider the dynamics until 2000, until 2004 (the countries in question, except Romania, joined the European Union that year), and until 2010 (last 10 years).

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The International Organization of Motor Vehicle Manufacturers is the main source of data for quantitative analysis, as it provides information on car production by country and region for each year [14].

Qualitative methods are associated with the study of data in publications on which companies in the automotive industry operate in the countries in question, and which organizational changes have been made in these enterprises in recent years. The sites of automobile enterprises as well as other publications in open sources were used for the analysis. Methods of analysis and synthesis of the received information are applied.

4 Results and discussion

First, on the basis of statistical information, it is necessary to compare the volume of car production in Eastern European countries integrated into the European Union (Slovakia, Poland, Romania, and the Czech Republic) with the volume of production in Ukraine.

Figure 3 shows the change in production volumes of all types of cars in Slovakia, Poland, Romania, and the Czech Republic in 2000-2019.

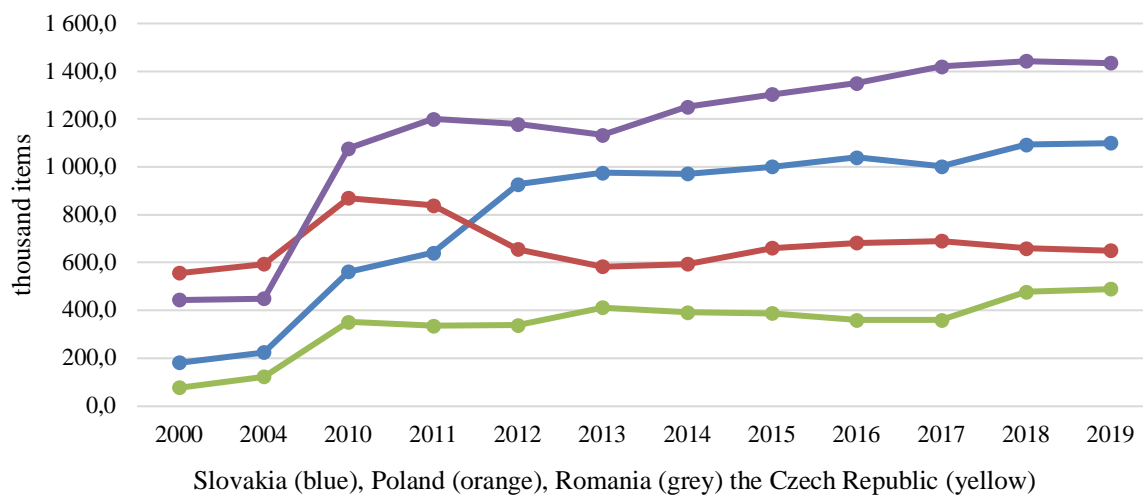


Figure 3 Production of all types of cars in Slovakia, Poland, Romania, and the Czech Republic in 2000-2019

As it can be seen from the presented data, in comparison with 2000 and 2004 (integration with the European Union, although for Romania it was 2007), all of the represented countries increased car production, the Czech Republic and Slovakia to a greater extent.

In 2019, the volume of car production in the Czech Republic was 8.09% of production in the European Union,

in Slovakia - 6.20%. Among the countries of Eastern Europe that are members of the European Union, this comes to 32.8% and 25.16%, respectively [14].

The change in car production for Ukraine during the same period was quite different (Figure 4):

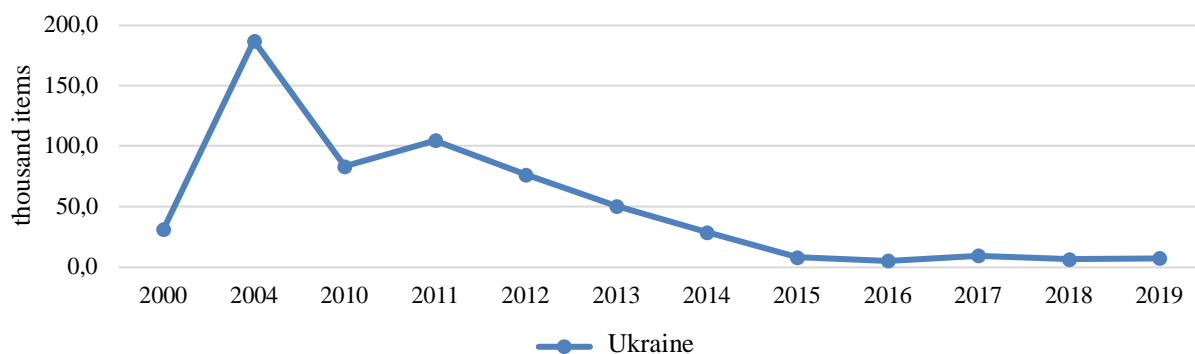


Figure 4 The volume of production of all types of cars in Ukraine in 2000-2019

From the presented data it is possible to note considerable decrease in the volume of car production from 2004 to 2010 and from 2012 to 2019.

Table 1 presents the indicators of the dynamics of car production by country, including comparison with global and European dynamics.

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Table 1 Indicators of the dynamics of car production by country in comparison with global and European dynamics (growth rate, %)

Country	2019 until 2000	2019 until 2004	2019 until 2010
Slovakia	605.7%	492.2%	195.8%
Poland	116.8%	109.4%	74.7%
Romania	627.1%	401.3%	139.8%
The Czech Republic	321.9%	319.8%	133.2%
The European Union	103.5%	96.8%	104.1%
Ukraine	23.2%	3.9%	8.7%
World	157.5%	143.0%	118.3%

The table shows that Slovakia has had the highest growth rate in the automotive industry since 2000, 2004 and in the last 10 years. Romania is in the second place in terms of growth, and since 2000 its automotive industry has been growing even faster than in Slovakia. The Czech Republic is in the third place. These growth rates are much higher than those across the European Union, and even around the world. In Poland, the dynamics of the automotive industry development is much lower, and in the past 10 years it has even decreased by 25.3% but increased since 2004 by 9.4% (which is higher than in the European Union as a whole).

Ukraine has significantly reduced the volume of car production (by 76.8% compared to 2000, by 96.1% compared to 2004, and even by 91.3% over the past 10 years). The reasons for the decline in car production in

Ukraine are the reduction in exports to Russia (formerly the largest consumer of the Ukrainian automotive industry) and duty-free import of new and used cars from the European Union, which has reduced the competitiveness of Ukrainian cars and reduced demand in recent years [2].

Based on information in research articles and statistical information, automotive companies operating in Eastern European countries such as Slovakia, Poland, Romania and the Czech Republic as well as the history of organizational changes associated with those companies in recent years, after integration with the European Union are presented in the tables below.

Table 2 presents the main automotive companies in Slovakia and the history of organizational change in these companies.

Table 2 Enterprises of the automotive industry in Slovakia, and their history of organizational changes

Enterprise	Modern features	Implemented organizational changes
<i>Volkswagen (Bratislava)</i>	Produces small cars: VW Up, Škoda Citigo, SEAT Mii. Produces SUVs: Volkswagen Touareg, Audi Q7, Porsche Cayenne.	Originally a BAZ company (with the production of some Škoda models), it was bought by Volkswagen AG in 1991, re-equipped, and enlarged to produce other models. Shops for the production of components were opened. Logistics (delivery and distribution) is fully transferred to DHL. Gradually, from part of the work on the car production (the rest to be completed in Germany), it moved to a full cycle, to the production of finished cars.
<i>PSA Peugeot Citroen (Trnava)</i>	Specializes in 3 makes: Peugeot 207, Citroën C3 Picasso, Peugeot 208.	Opened as a new PSA Peugeot Citroën plant in 2003 (with business processes developed at the parent company), with the production of bodies (including stamping and welding), and assembly. Since 2011, the plant has increased production capacity and now has 3,500 employees.
<i>Kia Motors (Žilina)</i>	Specializes in 2 makes: Kia Cee'd, Kia Sportage.	Opened in 2007 as a new enterprise of the Kia concern in Žilina (2800 employees), with modern equipment that can produce up to 8 models on one line.
<i>Jaguar Land Rover (Himpa)</i>	Specializes in 2 makes: Land Rover Discovery i Land Rover Defender.	Opened in 2018 in Bratislava, at once as a fairly large enterprise with 1,500 employees, with modern equipment and business processes that have been developed by the parent company.

That is, in addition to Volkswagen Bratislava (the largest automotive company), others were founded as new companies, which immediately "adopted" the processes developed in the parent companies. Only Volkswagen had

to significantly restructure the processes at the old plants. Table 3 presents the main automotive companies in Poland and the history of organizational change in these companies.

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Table 3 Enterprises of the automotive industry in Poland, the history of organizational changes

Enterprise	Modern features	Implemented organizational changes
<i>Fiat Auto Polska / FCA</i>	Produces 39.91% of all cars made in Poland in 2019; specializes in mass makes of Fiat: Fiat Seicento (Fiat 600), Fiat 500, Fiat Panda. They are produced both for export and domestic use.	Created during the acquisition of Polish FSM plants by Fiat (1993). Only a few plants, where the re-equipment of production was made, retained the production (assembly) of cars. Others switched to the production of components.
<i>Opel Polska (GM Poland)</i>	Produces 16.39% of all cars manufactured in Poland in 2019; specializes in Opel Astra J hatchback and Opel Cascada brands.	Originally opened as a GM plant in Poland in 1998, it initially specialized only in certain mass-produced cars (assembly only). At the plant in Gliwice in the 2000s, with the growth of production capacity, modern production systems were introduced: Just-in-time, Just-in-sequence.
<i>Volkswagen Poznań</i>	Produces 41.05% of all cars made in 2019 in Poland; specializes in commercial vehicles, primarily VW Caddy and VW Transporter, majority of the cars are exported.	Opened as a joint venture between Volkswagen AG and the Polmo agricultural machinery plant. Initially specialized in the assembly of SUVs and vans; in 2016, a second plant was opened in Belemżice for the production of VW Crafter. That is, it is a company with deep specialization according to the type and make of assembled cars, Head management, R&D, marketing are from Volkswagen AG (Germany).
<i>Ursus</i>	Specializes in the production of agricultural machinery, buses and trolleybuses under its own brand Ursus.	The company (until 2012 POL-MOT Warfama) implemented a diversification plan: it began to produce not only agricultural machinery, as originally, but acquired a bus plant, Ursus brand, motor plant; develops cooperation in R&D with the University of Military Technology and the University of Lublin. The company has attracted Turkish and Dutch investments. It built a holding company that includes subsidiaries specializing in the production of various types of products.

That is, in Poland, only Opel Polska opened as a new company, albeit long ago. The rest of the enterprises were created in the process of their purchase and re-equipment. New models, new equipment, new business processes were

introduced there. Of all the national car brands in Poland, only Ursus is preserved.

Table 4 presents the main automotive companies in Romania and the history of organizational change in these companies.

Table 4 Automotive companies in Romania, the history of organizational change

Enterprise	Modern features	Implemented organizational changes
<i>Automobile Dacia</i>	Dacia, Romania's oldest (since 1966) and largest car company, which produces Renault Group cars, accounts for 8% of Romanian exports. Production capacity of 350 thousand cars per year. Cars are assembled under the brands Dacia (main) and Renault, 50% of car production in Romania.	It was purchased in 1999 by Renault. Renault-style models and production processes typical for Renault plants in France were introduced. A test centre was set up in 2010, part of the R&D was partially transferred, and in 2005 the world's largest logistics centre, Renault, was opened next to the plant to manage the supply of car parts.
<i>Ford Romania</i>	Specializes in production of Ford EcoSport, Ford Puma (previously Ford Transit, Ford B-MAX).	The company was opened on the territory of the former Olcit car plant in Craiova (Daewoo Automobile Romania used to be located there as well). Daewoo Automobile Romania bought Ford in 2008 and rebuilt it to produce Ford cars. Currently employs 3,500 staff, production capacity of 350 thousand cars, but only 10% is used.
<i>Roman Braşov</i>	The company, which opened in 1921, produces ROMAN and DAC trucks for the needs of manufacturing and	The company has undergone 2 significant changes. Privatized in 2003 (94.27% of the shares were bought by the Malaysian company Pesaka Astana). The new

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Enterprise	Modern features	Implemented organizational changes
	construction companies and the army. A large number of trucks are exported.	owner tried to bring the company out of losses, created an industrial park, before that there was a big reduction in staff. The second stage of change is the purchase in 2014 by Prescon Braşov. The new owner tried to restructure the company's processes, improve both business processes and upgrade equipment and products. However, in 2014 the company became insolvent, its operation was suspended in 2016, and only in 2017 it resumed (an export contract was obtained).
<i>Igero</i>	Manufacturer of intercity and city buses under the brand Igero. Started working in 2003.	The company was founded in 2003 as an engineering centre, without production. It first worked under the principle of production outsourcing with Roman, then moved production to the Romprim plant in Bucharest. Buses are equipped with MAN diesel engines.

We can say that the automotive industry in Romania has retained many national brands, having been able to restructure production processes in old enterprises, introducing organizational and technological innovations. For example, Dacia, despite its purchase by Renault, produces cars under its own brand despite the fact that some of the engineering is provided by the parent company. Also, ROMAN and DAC brands of trucks have remained, the bus brand Igero has appeared. Furthermore, the country also produces cars of world-famous brands. In

addition, a large number of OEMs that produce components for other European plants (gearboxes, wheels), as well as tire plants (the most famous brand - Michelin) have been opened in Romania. The studies note the high importance of the production of spare parts and components for the Romanian economy [18-20].

Table 5 presents the main automotive companies in the Czech Republic and the history of organizational changes in these companies.

Table 5 Enterprises of the automotive industry in the Czech Republic, the history of organizational change

Enterprise	Modern features	Implemented organizational changes
<i>Škoda Auto</i>	Produces about 57% of all cars in the Czech Republic, is part of the Volkswagen Group. Founded after the First World War, it first produced trucks and only then cars. At present it produces only cars under the management of Volkswagen. It has 3 factories in the Czech Republic, and several factories abroad.	The first significant change in business was related to the purchase of the company by Volkswagen (1991). The new owner has updated the product line of cars, brought cars to the Western European and world markets, and improved the brand. At the same time, the production and logistics systems were restructured. Since 2010, a growth strategy has been adopted. This enabled the opening of Škoda production plants in China, Russia, India, and other countries. However, design and R&D issues largely remain with the parent company
<i>Hyundai Motor Manufacturing Czech (HMMC)</i>	Established in 2007 as an enterprise with 3,500 jobs and production capacity of up to 300,000 cars per year. Produces Hyundai cars.	It was created as a new company (all business processes transferred from the parent company), and organized cooperation between component manufacturers in the Czech Republic and Slovakia.
<i>TPCA (joint venture Toyota, Peugeot and Citroen)</i>	Originally a joint venture of Toyota, Peugeot and Citroen, now a manufacturer of Toyota cars (small cars) for sale in Europe.	Two stages of work: first in 2002, the company was established as a joint venture between Toyota, Peugeot and Citroën, which produced these makes for sale in Europe (mainly small cars). The company was opened as new, with business processes from Toyota. The second stage - in 2018, when the plant became fully

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Enterprise	Modern features	Implemented organizational changes
		owned by Toyota and engaged only in the production of cars of this brand for Europe.
<i>Tatra Trucks</i>	Manufacturer of Tatra trucks for industrial, construction and military needs, also for export.	Significant organizational changes began in 2003, when the company was acquired by the American company Terex Corporation. New models were introduced, and car deliveries to the markets of the United States and Western Europe were organized. In 2011 - cooperation with DAF (purchase of DAF cabs and Paccar engines).

Apparently, the national brands Škoda and Tatra were retained in the Czech Republic, although these companies became the property of larger foreign automobile corporations. Thanks to the new owners, the companies rebuilt their processes, updated their product lines, entered new markets and were able to ensure their own growth. At the same time, new car plants of large automobile concerns have been opened in the Czech Republic, and cars of world brands are produced there. It is important to note that in the Czech Republic there are many OEM companies that supply components to both automotive companies in the Czech Republic and foreign markets.

5 Conclusions

The analysis allows us to draw the following conclusions.

1. The development of the automotive industry in the modern world has the following trends:

- Internationalization (production in different countries);
- Formation of large multi-brand concerns (production of different classes and brands of cars);
- Cooperation (OEM companies and car dealers cooperate with concerns);
- Specialization (in each country cars are made according to market needs, either for domestic consumption or for export).

2. With the accession of new countries to EU membership, as practical experience shows, the national automotive industry cannot compete with world leaders (large automakers), forcing it to either close its own car production or integrate into the global automotive system on the basis of innovative business processes (logistics, production cooperation, production technology, sales, etc.).

3. The most useful for Ukraine is the experience of Slovakia and Romania, which after joining the EU were able to maintain national brands in the automotive industry, restructure processes, upgrade car product lines and achieve significant growth in car production in the short term.

4. The experience of the EU countries, which Ukraine should borrow and implement, is that it is necessary to create conditions for attracting foreign investors to existing enterprises of automobile production, to upgrade equipment, reorganize production. This will allow establishing the production of foreign brands at Ukrainian enterprises, as well as components for them. In the legal field, such a plan can be implemented within the framework of the Association Agreement with the European Union, which provides for the possibility of duty-free export of cars to EU countries. The operation of foreign automobile concerns in Ukraine is an extremely profitable offer for both global automakers and the Ukrainian economy as a whole.

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Review process

Single-blind peer review process.