

# Problems of the Automotive Business Ecosystem in the Context of a Pandemic

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## ABSTRACT

The main purpose of the study is to assess changes in the automotive business related to the development of the main directions of post-crisis development of the automotive business ecosystem, taking into account the internal restructuring of the management system and the mechanism of state support in the conditions of global and regional isolation.

Research hypothesis: the pandemic is dangerous to the population as a disease. Its development has influenced the behavioral aspects of the workforce and consumers. The external business environment changes and causes changes in the management system. Moreover, there are new forms of business models that have an effect and can be used in post-crisis development. In the conditions of instability and sanctions restrictions, possible solutions in the ecosystem of the automotive business can be the formation of the strength of the value chain at the global and regional levels.

The specific tasks addressed in the article are aimed at creating conditions for adapting businesses and the population to the conditions of restrictions and looking for ways to help those most affected by these restrictions. First, it is necessary to assess the company's stress tolerance. We think that this is not only financial stress resistance, but also psychological, behavioral, managerial, system, team, client, etc. Assessment gives an understanding of the mechanism of action and the possibility of stress relief. The sectoral features of state support for the automotive business ecosystem remain insufficiently studied.

**Keywords:** *coronavirus, transformation of society, automobile business, risks, economy, production*

## 1. INTRODUCTION

The modern stage of development of civilization is characterized by an increase in the processes of globalization in all spheres and sectors of the economy, characteristic of the entire world community. that provided an opportunity for the deepening of specialization and cooperation in the relations among States. This predetermined the development of processes of interdependence and interdependence of economic development of different countries. However, globalization has shown that interdependence and excessive integration do not help to resist crisis phenomena, and often worsened them in the economy of individual countries. In addition, with the development of globalization processes, the possible risks of further deepening of these processes have been insufficiently assessed.

The processes of globalization affect all aspects of society, unifying the economic, political, cultural and religious priorities of individual States. The risks posed by globalization have become particularly acute in the

twenty-first century. The prerequisites for globalization were the desire of many countries to integrate into global processes, since this greatly facilitated their existence: increased availability of markets, expanded opportunities for access to various types of resources [1]. On the one hand, competition and market expansion led to increased specialization and international division of labor, which stimulated production growth. On the other hand, increased competition was accompanied by the ruin of national producers and increased unemployment. Globalization initially carried multinational risks, the effect of which covered the global space and reflected on the state of all its subjects [2]. Despite the fact that this process was objective, it was quite painful when the risk of a pandemic occurred due to the spread of the COVID-19 virus [3, 4].

The collapse in oil prices, caused by a General slowdown in global economic activity due to the virus, but also compounded by the recent ineffective attempt by OPEC and Russia to restrict supplies, puts even more pressure on the collapsing global economic situation.

The current stage of development of Microbiology and medicine has provoked ignoring, as such, the risks of occurrence and spread of infectious diseases, especially

the risk of occurrence and development of a pandemic. Fear of the COVID 19 pandemic sends global financial markets into a panic. Nationwide quarantine measures, a ban on mass events and, as a result, reduced passenger mobility have had a burdensome impact on the world economy. In addition, sudden stoppages of economic activity caused by blockages and other quarantine measures can lead to long-term disruptions to global productivity (supply chains, etc.) after the actual outbreak of the virus has been brought under control [5, 6].

The automotive industry has been feeling the heat for quite some time, mainly due to declining sales and falling demand. International rating Agency Moody's has revised its forecast for global car sales and expects the market to fall by 2.5% in 2020 after growing by 4.6% in 2019. Previously, it was expected that the implementation will go into negative territory by only 0.9%. Moody's explains that the coronavirus epidemic has reduced demand and disrupted supply chains. The recovery in demand will occur only in 2021, and the market can go into plus by 1.5%. The Chinese passenger and commercial vehicle market will fall by 2.9% in 2020, while initially Moody's expected growth of 1% [7, 8].

And as the new coronavirus outbreak (COVID-19) intensifies, automakers will suffer even more. The dealers, mainly the Geneva motor show, where automakers are launching their upcoming cars, have been canceled. Consumers are careful to avoid crowded places, including car dealerships. Interruptions due to public holidays, restrictions on the movement of workers within countries, and disruptions in the supply chains of automotive components are expected to lead to a drop in production levels.

In addition, the dependence on China for the production and Assembly of components has revealed the weakness of the automotive industry. And in addition to this, blocking in countries such as China, Italy, and others has also reduced the number of visitors to car dealerships. Although dealers and automakers are looking for alternatives, such as augmented reality and launching virtual products, to keep the business going. Major brands such as Volkswagen, Fiat Chrysler, BMW, Daimler, Groupe PSA, Renault and Toyota have scaled back their operations in Europe, which is now facing this new coronavirus pandemic [6, 9-11].

In addition to the spread of the virus among workers, there are two other reasons for the suspension of production – the deterioration of the sales situation and increased uncertainty about the supply of spare parts. The shortage of components is not only related to China, the largest European manufacturers of automotive components, Bosch and Continental, are suspending production. Because of the violation of logistics chains, BMW is forced to stop its plant in South Africa, Audi-in Mexico.

## 2. METHODOLOGY

The empirical basis of the study was a generalization of the practical activities of a number of organizations, local, interregional, country and international scale, which was based on the study and detailed analysis of corporate problems of these structures, the analysis of scientific publications devoted to the study of problems of the functioning of the automobile business in the crisis, including those caused by the Covid-19 pandemic. In addition, the research was based on the results of brainstorming and strategic sessions in which the authors of the article directly participated.

The research methodology includes theoretical research methods related to the analysis of foreign and domestic literature, as well as qualitative methods: content analysis, focus group discussions, by organizing and holding meetings with experts on the problem under study, sociological observations for collecting sociological data

The article is based on the processing of statistical data on the use of artificial intelligence for the car and its components based on the analysis of theoretical and empirical methods of driving vehicles, conclusions made on the basis of generalization of foreign research on the problems of the automotive industry in various countries of the world. The results of brainstorming and strategic sessions, in which the authors of the article directly participated, are the basis for the conclusions made.

The research area is the definition and development of post-crisis approaches to the forms and methods of development of activities in the automotive business ecosystem in a new economic model.

## 3. DISCUSSION

At present, not a day goes by that the automaker does not suspend its activities or work with minimal labor resources. The outbreak of the new coronavirus (COVID-19), which originated in Wuhan, China, in late December 2019, is rapidly spreading its tentacles around the world and has a serious impact on all aspects of society, including the automotive industry. Throughout January and February, automakers and their suppliers struggled to keep car Assembly lines humming, but in March, the industry took concerted action, synchronized with government recommendations, to ensure the safety of its personnel [12, 13].

When the world health organization declared the COVID-19 outbreak a pandemic, it led to unprecedented global destruction [14, 15]. Factories for the production of cars and components are closing all over the world, sales of cars in car dealerships have sharply decreased, and almost all major industry events are canceled. The whole of March was filled with news related to the coronavirus, and it all started with the cancellation of the 2020 Geneva motor show, which was scheduled to open on March 5. Major brands such as Volkswagen, Fiat Chrysler, BMW,

Daimler, Groupe PSA, Renault and Toyota have scaled back their operations in Europe, which is now facing a coronavirus pandemic. Italy and Spain were the most affected [16, 17].

China, where the story began a few months ago, has obviously managed to control the situation, at least for now. However, car sales fell by more than 80 percent in February, and March will not be the same as people who are just starting to get back to work. Worse, because Covid-19 is currently spreading to Europe and the US, economic growth has virtually stalled. For the automotive industry, this also means that the supply chain ecosystem is now in pause mode. Borders are closed, and for all companies, the main priority is to take natural care of their employees and ensure their safety.

The pandemic is becoming an important element in the information war between East and West at a new stage of development [18].

India has also not been spared, and even though the Bharat VI emissions era is due to start in just 10 days, stakeholders are concerned. From their point of view, everything comes together at once and threatens to throw things out of order. Since Covid-19 is constantly in the news and various state governments are announcing measures to block it, the number of visits to dealerships has naturally decreased significantly [19].

While governments are also doing their best to curb the spread of Covid-19, growth has been severely affected. If the situation continues, it will be disastrous, especially in terms of job losses.

In the automotive industry, this has been happening over the past year due to the economic downturn, which has only worsened thanks to Covid-19. Layoffs have already become the norm for much of 2019 in the chain of vehicle manufacturers, suppliers, and dealers. The numbers will only grow if the virus threat continues to spread in the coming months [20, 21].

In addition to the spread of the virus among workers, there are two other reasons for the suspension of production – the deterioration of the sales situation and increased uncertainty about the supply of spare parts. The shortage of components is not only related to China, the largest European manufacturers of automotive components, Bosch and Continental, are suspending production. Because of the violation of logistics chains, BMW is forced to stop its plant in South Africa, Audi in Mexico.

However, if the situation does not get out of control, and by mid-April the situation with the pandemic will return to its place, there is no doubt that the consequences will be tinged with a serious economic crisis. In this regard, the automotive business will need significant efforts in terms of increasing sales [22, 23]. The main priority should be to increase consumption, and this cannot happen when people have lost their jobs. At the same time, the crisis will equally spread to all segments of automotive equipment [24]. In the B2B segment (such as heavy commercial vehicles), there are concerns that some fleet operators will stop operating as businesses will no longer

be viable. There are also forecasts that production capacity for truck manufacturers will decrease by 60 percent compared to 2018 levels [3, 25]. It is obvious that with the end of the Covid-19 pandemic, the fight will only begin. Already, the supply chain is being restructured, which will affect the supply of key automotive components. Since March 2020, KAMAZ has adjusted its production plan, as the spread of a new coronavirus has continued in China and other countries where automotive components are produced the company has introduced a part-time working week in case of interruptions in the supply of components from China. Outside of the PRC, cases of infection were detected in more than 31 countries, including Russia [26].

#### **4. RESULTS**

As a response to the challenges of the pandemic, several automobile concerns have developed appropriate rules of conduct. Many of them are based on the use of digital solutions.

Augmented reality technologies

Volkswagen India decides to launch its second SUV of 2020-the T-Roc in digital format, adhering to the formula of social distancing. The online launch of the T-Roc came just two weeks after the German automaker launched its BS6-compatible Tiguan Allspace in Mumbai on March 6.

Remote work

Hero MotoCorp, the largest manufacturer of two-wheelers in India, is setting up a task force to respond to the coronavirus outbreak. Employees were ordered to work from home every spare day, and non-essential travel and physical meetings were stopped. The company says it is well prepared with a plan of action in case of unforeseen circumstances. Rolls-Royce has confirmed that it will suspend production at its Goodwood manufacturing plant from Monday, March 23. The suspension is currently scheduled for two weeks and leads to an already planned two-week Easter technical shutdown. He added that day-to-day work will be provided by non-production employees at the company's head office or working remotely. Mahindra & Mahindra announced a "work from home" (WFH) policy from March 18 to 31 for 7,000 employees working in the workplace. However, the company's production and research operations will continue to operate. FCA India, which retails jeep-branded SUVs, says it has "allowed more than 50% of its employees in its offices in Mumbai and Pune to work from home until at least March 31, 2020, and is taking active measures to ensure the "social distance" that is the need of the hour. Tesla, represented by its chief Executive, Elon Musk, allowed its employees to stay at home in case of the slightest symptoms of ill health.

The implementation of social orders

The UK government is in talks with major car manufacturers, including Ford and Honda, to produce ventilators for ventilators (artificial lung ventilation) at

their UK manufacturing facilities. This idea has a precedent: in China, the automotive industry is already helping to fight the spread of coronavirus. Chinese automaker BYD has set up production lines at its Shenzhen facility to produce face masks and disinfectants. It says it produces 300,000 bottles of disinfectant and five million masks a day, making it the world's largest producer of the latter product. In Russia, the government has declared a week-long quarantine, which will help suspend the work of car dealers. An exception is made only for service departments that perform MAINTENANCE and repair of equipment, including medical equipment. Tata Motors is releasing an "internal memo" written by CEO and managing Director Gunter Butchek. It shows that the company has a three-level response plan at its disposal to reduce the risk of coronavirus for its employees.

Since April 1, KamAZ has opened sewing workshops at each of its factories, which produce medical masks and protective suits. About 50 employees are involved in their production. Protective equipment will be delivered to medical institutions in Naberezhnye Chelny free of charge.

The Italian automobile company Automobili Lamborghini is converting several workshops to produce surgical masks and medical shields for a hospital in Bologna. The company plans to produce one thousand masks and 200 medical shields per day.

#### Challenges for public transport

Covid-19 is also a big challenge for the urban transport system. Recently, taxi drivers, in particular Uber, are forced to not only constantly wear a mask while working, but also treat the car with antiseptic agents after each passenger. At the same time, the carsharing system solves this problem in a different way. Yandex (the Russian IT giant) has entered the market with a new tariff that allows you to use the service in a personalized way, which significantly reduces the risk of illness. Covid-10 has become a real challenge for passenger companies, especially in large cities. Thus, according to the Department of transport of Moscow, the decrease in use is observed for all modes of transportation: 30% of passenger traffic decreased by rail, 24% - by land transport, 10-15% - by carsharing and taxi, 6% - by personal car. At the same time, more than 6.5 thousand units of rolling stock are subjected to daily sanitation, 10,000 drivers and 600 dispatchers are daily measured temperature, and 85 teams are also working to wash and disinfect public transport stops daily [27].

#### For urban transport systems

- reduction of the number of trips in parallel with the expected increase in the cost of servicing rolling stock due to disinfection - increase in the cost of production with a drop in overall profitability
- Taxis; many taxi drivers use rented cars for transportation. The cost of renting about 2 thousand rubles makes it unprofitable to carry passengers. Some operators, Yandex, have set up a courier delivery service. Users will

be able to transfer a parcel weighing up to 10 kg, and the delivery itself will take 2-3 hours.

The Service "Yandex.Taxi" added the "Courier" service to the app. With its help, users can send a parcel weighing up to 10 kg. The courier will arrive in at least 20 minutes and deliver the parcel in 2-3 hours, the company says.

To order courier delivery, the user must specify the recipient's address, phone number in the app, and add additional information in the comments, such as the intercom code or the order number in the online store. Couriers deliver parcels contactless, and you can pay for them with a card or Apple Pay in the app.

On April 3, the service appeared in all major cities of Russia, it was clarified vc.ru in Yandex. The minimum delivery cost, for example, for Moscow will be 169 rubles. To deliver a parcel couriers are a partner, this fare will also be available part of the drivers along with the rate of "delivery".

Users "Yandex.Taxis" can already order food delivery from restaurants (via the "Food" service) and products from stores (in "Shop"). In March 2020, a source close to Yandex vc.ru he said that the company considers the taxi service as one of the possible options for creating a "super application".

Thus, the analysis developed in conjunction with the onset of a pandemic situation, followed by a quarantine activities to reduce the risks of the global society, allows us to formulate the problem of automobile business in the spread of the virus COVID-19. First, a reduction in the production of mobile assets, which will affect all sectors of the economy since there is no single organization and no person who would not benefit from the services of automobile. Second, segmental analysis allowed us to formulate a number of challenges for the auto business directly:

- in the segment of car sales in the B2C sector, there is an increase in their cost on the one hand, and a decrease in the purchasing power of the population, on the other. In the B2B sector, there is also a similar trend, which is associated with the temporary termination of certain enterprises, as well as the bankruptcy of some of them, in the context of rising prices for rolling stock

- in the freight transport market: economic sanctions that prevent efficient international transport of goods are compounded by a decrease in business activity of enterprises across the entire range of transport; the volume of cargo transportation within the country has been significantly reduced, which is also due to the suspension of most enterprises during the quarantine measures.

- in the passenger transport market, the profitability of enterprises in terms of intra-city transport has significantly decreased, and in intercity transport, before the changes in the epidemiological situation, the activity of carriers has almost collapsed.

## 5. CONCLUSION

What happened: consumers reacted to the coronavirus pandemic and this resulted in a decline in markets: sales and maintenance of cars, cargo and passenger transport (part of the business is prohibited-cashing), reduced production of trucks, cars and buses. The situation was aggravated by the decline of the Russian currency by 15% against the us dollar.

Countries began to protect themselves from the virus and introduce quarantine measures:

- self-isolation;
- border closure;
- suspension of production;
- re-profiling of production facilities;
- and other measures.

Further development of the situation depends on how well the government will deal with the consequences of the coronavirus. If the situation begins to develop according to the Chinese scenario, there is hope that Europe will cope with the disease and restart factories. Then no one will notice any interruptions in deliveries, and there will be no catastrophic drop in sales. In a situation of continuing uncertainty for a long time with the term of stopping European production, we can expect a deficit in the car market. It is worth taking into account the fact that now the cars in stock will be sold at the old prices. Then the order for the future will be formed, taking into account the new economic reality. There is a certain advantage for producers in this – when production starts to resume, they will not be able to reduce prices, but to increase them to the extent necessary. The only thing that can control the rise in price is demand, which will also collapse along with the supply. S&P Agency expects a 15% decline in passenger car sales in the world in 2020 due to coronavirus.

What should business, the state and the population do in these conditions:

- the state behaves differently in such situations (we can see this from statistics, measures taken, etc.). But the main task is to create conditions for adapting businesses and the population to the conditions of restrictions and look for opportunities to help those most affected by these restrictions.

- the business will survive if there is effective management, which includes not only managers(team), but also the equipment and adaptability of the system to work in conditions of restrictions. In fact, anti-crisis management is necessary, but not in the sense of a crisis in the company, but a crisis in the external environment. First of all, evaluate the company's stress tolerance.

We think that this is not only financial stress resistance, but also psychological, behavioral, managerial, system, team, client, etc. Assessment gives an understanding of the mechanism of action and the possibility of stress relief. In fact, it is necessary to make a temporary forecast of the situation and plan the necessary changes. Remote work is already used as one of the options for adapting to

the conditions. In the future, this may be a trend of use in certain areas of management. It is necessary to strengthen analytical work: - assessment of the importance of costs, - assessment of technical and technological opportunities; - search for new forms of work for the company, such as online sales; - search for acceleration opportunities.

The perspectives of the research

After the pandemic, many things will change and it is necessary to understand the direction of research. Among the businesses that have been severely affected, not only foreign trade, tourism, hotels, hairdressers, fitness, sports, theater, movies, etc. but also the ecosystem of the automobile business.

We highlight several areas of future research: first of all, it is necessary to assess the possibility of creating a strong value chain in the enterprise. And strength is more important than the effectiveness of each individual element of the value chain. The accelerator will perform the actual digitization and will change the attitude toward business optimization. The digital environment, as practice has shown in the context of the pandemic, can provide remote business processes, but with low efficiency and this may not be related to the IT infrastructure itself.

Testing remote work will lead to a review of the structures and it will be necessary to investigate the construction of structures with remote access in the ecosystem of the auto business. Working in the context of the pandemic required closer cooperation between the state and business. This can be developed in joint demand support projects. Hence, the greater interest of the research will be directed to the possibility of developing a distributed business model, which creates opportunities not to stop business processes in extreme conditions of global or regional isolation. The state and the business partner – it transfers part of its public services to the business. The basis for further development will be ecosystems of different levels and directions, and we will focus our main research areas in this area – the development of the automotive business ecosystem in the post-crisis period.

The main results of the study are the possibility of using the results and recommendations of the study in the development of assistance programs for the entire ecosystem of the automotive business based on the development of public-private partnerships. It shows the industry - specific risks that businesses in the ecosystem are exposed to.

The state and the business partner – it transfers part of its public services to the business. The basis for further development will be ecosystems of different levels and directions, and we will focus our main research areas in this area – the development of the automotive business ecosystem in the post-crisis period.

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