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INTERDEPENDENCIES IN THE AUTOMOTIVE INDUSTRY

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Abstract. The interaction of producers and consumers is determined by various factors, but is primarily due to changes in the development of the economy and society. In terms of the car industry, it is of strategic importance to the global economy, playing a key role in terms of growth, exports, innovation and employment. The sector records the most private investment in research and innovation and is a key factor for technological innovation and is also an important growth multiplier, due to strong trade links with several industrial sectors. This is the main scope of this article to show that everything is connected.

Keywords: supplier, car manufacturer, interaction, policies, advantages and disadvantages.

JEL Classification: F53, L62, O21, O44.

Introduction

The history of the automotive industry, although short compared to that of many other industries, is of exceptional interest due to its effects on the twentieth century. Although the automobile originated in Europe in the late 19th century, the United States completely dominated the world industry for the first half of the 20th century with the invention of mass production techniques. In the second half of the century, the situation suddenly changed as Western European countries and Japan became major producers and exporters.

Thus, significant changes suffer from mass needs and a wide range of associated socio-economic interests. The development of the economy significantly increases the ability to meet people's needs, while the structure of society's needs is considerably transformed. The structure of production and consumption is beginning to undergo striking changes as personal needs are saturated with the necessary economic benefits. In the modern economy, consumer preferences are gradually shifting in favor of education, information services, higher living standards, healthier, social priorities. Therefore, primary competencies will be kept as a basis, while defining a new role beyond traditional expertise. There is a risk of declining profitability as OEMs face harsh conditions and shrinking markets globally if they do not prepare for future challenges (Law, 2019).

The opening of the Central European Countries to global capital movements from the late 1980s comes with two sets of questions. The first relates to the risk they may present as a new area of relocation for firms, especially European ones. The second deals with the consequences of investments made on the convergence of structures industries of these countries with those of the countries developed Europeans. This two points of view can be linked. They are committed to global strategies leading to consider this area as an integral part of the Europe region and to include these countries in the networks made up of all of their productive subsidiaries across the continent. Romania has been got used with everything that represents a car since the beginning of the car industry, from the end of the 19th century.

At present, this industry is going through a turbulent period, with disappointing results for shareholders and low profitability. To these factors are added the transformational pressures brought about by electric propulsion systems, connected and autonomous vehicles and Mobility-as-Service, and amplified by uncertainties such as Brexit and potential international trade conflicts. In this context, and with an acute need for investment in vital strategic initiatives, the automotive industry needs to re-evaluate its strategies for the future. Consolidation with competitors is the only way for the automotive industry to survive and keep pace with non-active. Finding a balance between the areas of competition, cooperation

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and co-integration is key to success. The future winners in the automotive industry are those who will adapt their business models quickly and reallocate resources to strategic areas (Crolla, 2015).

Bearing in mind all the arguments I have mentioned, the main objective of the paper is to determine the impact of these three key factors: demand, supplier and buyer.

1. Literature review

The automotive sector explains a large part of a more pronounced deindustrialization over the past three decades than in most comparable countries.

The theoretical model is a multinational automobile production one because describes the behavior between companies along the relationships between external situation and internal tradition. In this model, automotive groups (like Peugeot SA) own a portfolio of brands (like Citroën). Groups and brands have a head office in a specific country, their country of origin. Brands sell car models on the market of one or more countries, their destinations. It is important to emphasize that the model takes into account the fact that brands have a network of production sites in many countries. In 46% of cases, cars are produced in the country of origin of the group or brand and in 63% of cases, cars are produced in the country of origin. destination. The sum is greater than 100% because these countries may be the same. In addition, 20% of world production is carried out from a third country, which is called "export platform", which is neither the country of origin of the brand, nor the country of origin of the group, nor the place of sale of the vehicle.

The network of production sites is considered as exogenous data. The opening and closing of a production site are decisions which require several years. The international organization of production induces geographical frictions, namely trade-related costs, marketing costs and coordination costs. The costs of international exchange (between the country of production and the country of destination) correspond to the cost of importing a car. Coordination costs (between the country of origin and the country of production) represent all the constraints induced by the spatial separation of decision-making and production. The costs ofmarketing (between the country of origin and the country of destination) are the costs associated with the remote.

Innovation is a determining factor in the growth of companies and countries. Conducting an innovation policy is not meaningless for a country: due to the important role of the domestic bias for production, countries also benefit from the additional competitiveness of these businesses. On the other hand, if the country has a limited attractiveness for production activities, the improvement of the competitiveness of national companies will result in increases in production in the foreign factories of these companies (Saliji, 2021, p. 30).

In emerging economies, social change and rapid growth have given rise to new automotive markets and a demand for relatively inexpensive and fairly modern cars. Up-and-coming local builders and established businesses originating from Triad countries are competing for dominance in these large market segments (Lachaux, 2021).

One thing is certain, uses have changed and consumer expectations are high. Greener vehicles. More connected. More intuitive. With more services and customization. But above all not to the detriment of driving pleasure… A list of criteria that is not always easy for car manufacturers to fulfill. This context has certainly destabilized the automotive industry somewhat. But it also invites manufacturers to reinvent themselves. Develop their products of course, but also their role, their model, their services, their buying process (Yadav et al., 2020).

2. Methodology

In this section, I have described the techniques used to estimate the impact of this trio in the industry I am working and I can see how it changes day by day.

The method used was both qualitative and quantitative. To reach the main objective of this paper I used the quantitative side in order to discover if if every person is dependent on a means of transport and how it would be affected by a crisis in the car industry.

3. History of automotive industry in European Union

Taking into account the definition of CEC geographical space by Pianelli (1994): Central Europe is made up of Poland, Hungary, the Czech Republic and the Slovakia (countries known as the "Visegrad triangle" following the signing in 1991 of the Visegrad agreements aimed at creating a free trade area between these countries). However, these global strategies borrow as much to a logic of industrial rationalization only to a logic of conquering markets. Since then, we can assume that the variety of strategies deployed by multinationals in this region should lead to a mixed picture of the economy of these countries which will later spread across the continent and even around the world.

In the European Union (Drahokoupil, 2020, pp. 7–65, 153–177), the opening of new markets on the occasion of each new enlargement is accompanied by a mobility of capital in the form of foreign direct investment and/or the restructuring of old industrial sites. The interest aroused by Central and Eastern Europe today is no longer solely linked to the territorial recompositions currently at work in these countries, but it also relates to the interference between these processes and the rise in power of the sector automotive, linked to the initiatives of major international groups. The characteristics of spatial deployment and the complexity of location choices, swinging between concentration and dispersion

illustrate, in the automobile more than elsewhere, the changes and recompositions of the strategies of the main groups. If, following these, we consider that, in the long term, industries produce the economic space more than they suffer from it. In an economically and commercially integrated area such as the European Union has become, mechanisms of internal competition have developed between European regions, which the new Member States have been able to take advantage of. Integration was first achieved in the area of trade and led to the formation of a territorial whole where the different components functioned interdependently. This situation of intensification of relations, exchanges and flows extended geographically, over the enlargements, to new regions, some of which have GDP per capita less than half the Community average (Claus, n.d.).

The transition to a capitalist model generated two fundamental changes that affected the automotive industry in the 1990s. First, the trade towards Western Europe. Secondly, there has been a restructuring of the productive apparatus which has resulted, in certain countries such as Hungary, Poland, Slovenia and Estonia, in the establishment of an intensive policy of privatization which has mostly realized with external capital. During this period, some socialist firms went bankrupt, were reorganized and restructured, or were simply taken over by foreign investors; this was the case of Skoda (Czech Republic) by Volkswagen. Thus, the automotive industry in Central and Eastern Europe experienced a radical transformation through foreign direct investment (FDI) and was integrated into the production systems of Western Europe and the various distribution networks. It should be noted that this process of internationalization and integration of the peripheries was similar in other emerging markets of the automobile industry, such as in Spain or in Latin America in earlier periods (Hudson & Schamp, 1995).

Thanks to restructuring and foreign investment, total car production in Central and Eastern Europe has increased.While overall car production is stabilizing in Western Europe, at the same time there is a significant growth in car production volumes in the oposite side of Europe (production has more than doubled). Alone in Western Europe, Germany has seen its production increase over time. This phenomenon is explained by the fact that German car manufacturers produce high-end cars that cannot be produced in the countries of Central and Eastern Europe. The luxury car image, associated with German car manufacturers, explains why some brands have chosen to maintain their production units in their country of origin: for example, 90% of Audi brand vehicles are manufactured in Germany based on what Hudson and Schamp (1995, pp. 2–61 affirmed).

We can affirm that a reconfiguration of the geography of the automotive industry in Europe is taking place. This reconfiguration would correspond to the third phase of the territorial deployment of the automotive industry on the European continent. The initial phase of deconcentration within the national borders of each manufacturer was followed by the arrival of foreign manufacturers in the Iberian and British peripheries, which is now followed by the central European phase (Heneric et al., 2006, pp. 191–205, 103–155).

4. Automotive industry in Romania

The car industry is closely linked to other European economic sectors such as electronics, mechanics, IT, metallurgy, chemistry, but also metals, plastics and rubber are essential elements of this industry. 20% of European metal production and 35% of aluminum production go to the automotive industry (Nemes, 2020).

European automakers continue to adopt different strategies; Romania has long been considered a country specializing in heavy industry, particularly steel and equipment. Integration into the European Union, the possibilities of immigration and the arrival of foreign companies are pushing wages up today. Romanian industries are challenged by the arrival of industries with higher added value, such as the automotive industries (Ford and Renault) or new technologies (Nokia). By choosing Romania, car manufacturers have invested in a country where labor is cheap (comparative advantage) and well trained (competitive advantage). Thus, Romania has certain assets to attract foreign firms: economic environment is favourable, social changes have been attractive to foreign firms since the country's entry into the European Union and government policies favor investment by minimizing financial risks (Pichler et al., 2021).

Designing and implementing a mobility market transformation program is so vital. Consumer behavior needs to be shaped in order to generate demand for new and future products as well as to have a larger and more comprehensive authority to promote laboratories in which new ways of promoting the mobility perspective can be established.

According to ACEA, 15.7% of all employees in the Romanian manufacturing industry are directly involved in the automotive sector, including both the production of machines and the production of components for them. The only state that is equal to Romania at the top of the ranking from European Union is Slovakia, also with 15.7% of total employees. And this in the conditions in which the European average is 8.6%.

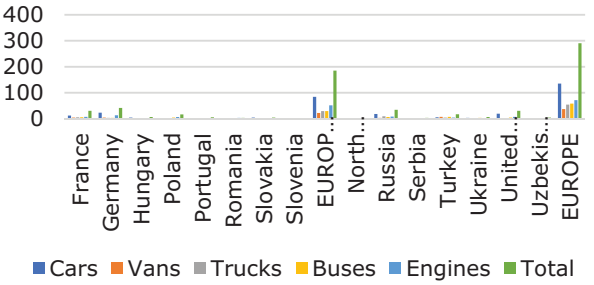

Figure 1. Automobile assembly and production plants in Europe (source: own processing based on Eurostat data from, 2020)

Unfortunately, Romania is much lower in the ranking of the production of complete vehicles. Thus, with 437,628 units assembled, Romania is far behind states such as Hungary with 433,067 units, Poland with 450,534 units or Italy with 796,876 units, not to mention states with millions of assembled vehicles like France, Czech Republic, Spain or Germany.

In this context, with a large workforce but mainly employed in the area of the component industry, and a low production of cars, Romania ranks last in the European Union in terms of the ratio between the number of employees and the vehicles produced. Thus, while an employee in the Romanian car industry produces 2.5 cars, the EU average is 7.4 cars/employee as showing in the Figure 1.

In terms of engine rate (the number of vehicles per 1,000 inhabitants), in the EU the average consists in 560, increasing from 524 in 2016. In Romania the engine rate, as showing from Figure 2, is 357 cars/1,000 inhabitants, and in Latvia it is 342. The highest engine rate is in Luxembourg, 681, Italy (663), Poland (642). Surprising first place, isn't it? We all know that in Luxembourg many companies have their registered offices; that's why most of them could have cars from the company they work with. Consumer preferences in Romania regarding this market show us that compact, family cars are preferred, followed by small class cars (EUCAR Perspective on Commercial Vehicles, 2021).

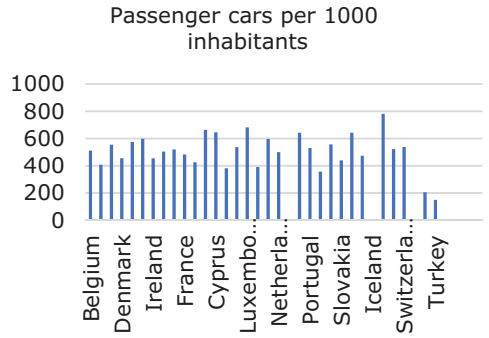

Figure 2. Motorisation rates in the EU, by country (source: own processing based on studies; the last study was in 2020)

The newest cars, up to two years old, are in Ireland (29.2%), Luxembourg (23.8%), Denmark (23.3%) and Belgium (23.1%). many cars over 20 years old were registered in 2018 in Poland (36.5%), Estonia (29.6%), Finland (25.2%), Romania (21.4%) and Malta (20.8%) (which shows once again the history of the car industry in our country) (Report – Vehicles in use, Europe 2021).

5. TRIO supplier manufacturer consumer

Thus, a country's economy is based on production and export capacity. But for the products to be successful, they must be of good quality, well packaged and comfortable to use. Producers also need skills to sell the result of their work (Schwab & Sala-i-Martin, 2018).

Trade would be a stabilizing force in the difficult times that mankind is going through. When EU domestic demand was reduced, trade diminished the negative effects of by redirecting demand from growing economies. Thus, trade will be an even more important source of growth in the future in all respects, helping to stabilize relations between various actors: suppliers, producers, buyers. In general, the development of global value chains emphasizes the interdependence between imports and exports. It is well known that production in the EU depends on imports of energy and raw materials, but it is often overlooked that the same is true for spare parts, components and means of production such as machinery and technical equipment. Together, these products account for 80% of EU imports. They are essential for the functioning of the economy and for the competitiveness of EU businesses (Maloney & McLaughlin, 2005).

However, trade policy can only have a positive effect if it is supported by domestic reforms. Structural reforms, reducing bureaucracy, facilitating access to finance and increasing investment in infrastructure, skills and research and development is essential to strengthen the Union's capacity to reap the benefits of open markets (Krzywdzinski, 2014).

The main point of the Romanian economy is based on the car industry. The factory from Mioveni, but also the one from Craiova, which in recent years has increased its production capacity and brings out more cars at the gate, contributes significantly to the Romanian economy. However, in addition to Dacia and Ford, there is a large related industry developed around cars. We produce not only finished cars, but also a lot of car components and subassemblies – some go to the aforementioned factories, supporting the industry, while others go to export. In total, the transport machinery and equipment industry represents 44.9% of the total Romanian exports. At the level of exports to the EU, the percentage is 35.1% as showing in the Figures 3 and 4.

Every year another big name in this area opened a factory. Most of the foreign companies that invested in Romania preferred the west of the country, due to the easier possibility to export the products. In fact, the lack of infrastructure has always been a major issue for investors, whether we are talking about those who produce car parts or those who assemble cars.

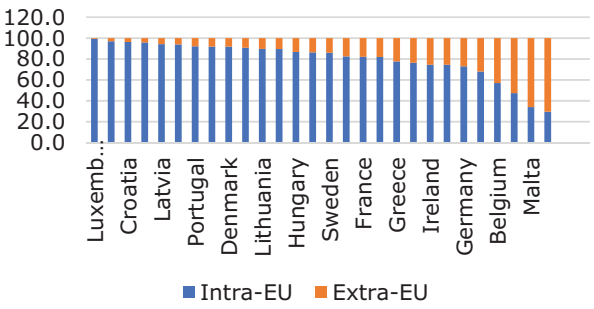

Figure 3. Extra- and intra-EU imports of motor cars, 2020 (source: own processing based on Eurostat data, 2020)

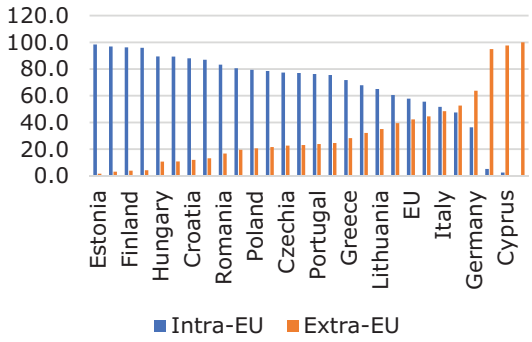

Figure 4. Extra- and intra-EU exports of motor cars, 2020 (source: own processing based on Eurostat data, 2020)

Our country produces over 80% of the parts needed to assemble a car, from steering wheels, wiring and bearings to ultra-modern and intelligent systems.

By reviewing the components of a car that are produced in our country, based on the Figure 5, we find almost everything a car needs to be functional:

In Dolj County, the German company Kirchhoff produces bodies. Also in Romania we can find mirrors, headlights, doors or wings in Bihor county, at the Inteva factory.

Other Germans, from Draexlmaier, manufacture car curbs in Brasov County. In Covasna, Autoliv produces steering wheels and seat belts, while in Neamt county airbags are produced at TRW Automotive. Also in Moldova, in Iasi County, we find car seats and benches manufactured by Lear Corporation.

We also find wiring companies, in Olt and Hunedoara, but also gearboxes, in Alba, as well as components for the electronic part, in Cluj, and brake pads, in Prahova.

In Romania we also have large tire manufacturers, the most famous companies in this sector worldwide – Continental, Michelin and Pirelli – having representatives in our country.

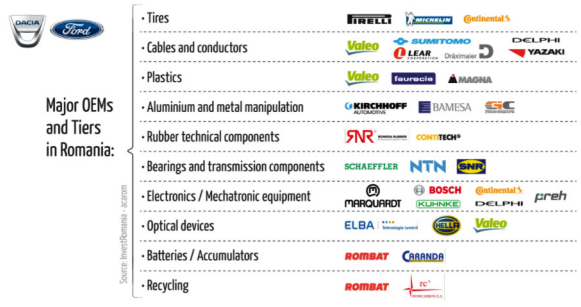

Figure 5. Mapping of horizontal sectors developed as a result of the evolution of automobile production (source: own processing)

Even if there is still the perception that what is made in Romania cannot be very good, globalization has changed a lot from the classic way of looking at products. For example, we buy from Germany Mercedes cars with high-performance Bilstein shock absorbers, produced in Sibiu and we enjoy their quality, we may not know that. The potential of our country is increased, especially in terms of car parts companies. A first factor for which a car parts company would go to our country is the low cost of pay and the large number of skilled workers (Gscheidle, 2014).

One reason why car parts companies avoid our country when it comes to investment is the changing economic climate, the high level of taxes and the eternal problem of infrastructure. In addition, in other countries, the authorities give tax exemptions to new investors, thus encouraging them to expand their business in those countries.

Together, the automotive and auto parts industry, generates about 14% of Romania's Gross Domestic Product (GDP) and accounts for 27% of the country's exports.

The real revolution in the car industry is also stimulated by the ambitious plans of the European Union, which aims to eliminate much of the carbon dioxide emissions generated by cars from urban areas by 2035. Thus, it is crucial that Romanian companies both producing cars and parts to quickly modernize production but also to become vehicles that incorporate a new type of added value and even new business models. To support the commitments of carmakers, the EU and its Member States need to put in place ambitious and supportive measures to accompany the transformation of the car industry and ensure that it is fast, fair and beneficial to all parties.

The main affected will be the car manufacturers and some of the manufacturers of subassemblies for heat engines. This is in the conditions in which the production of electric motors requires 90% less labor force than in the case of thermal motors. First of all, the classic cables for heat engines will disappear, along with the speed decisions. On the other hand, electric cars need a larger number of electrical wiring, and Romania is, in this field, one of the main players in Europe.

The establishment of numerous automotive component manufacturers has led to the development of partnerships with local actors. Within these partnerships, a special role is played by the collaboration with the academic environment. It is considered to make available to the students some specific laboratory devices, as well as the specialized literature. The agreement also provides for cooperation in order to develop the education of students and the training of their staff through: academic study and/or work on joint projects, development of curricula and joint courses. The parties also consider the possibility of creating joint projects funded by the European Union or other relevant organizations but also the field of quality assurance and continuous improvement of employees in the sector.

The world is changing in terms of technology. Constant evolution, discoveries and innovations in this field are effectively revolutionizing all areas of business.

Of course, the car industry is no exception, so the cars (or the cars of our dreams) are docilely subject to

trends. Flexible producers or "visionaries", as we like to call them, have chosen to comply with market requirements and have done well because, after all, those who do not adapt perish. The rapid evolution of digitalization and newcomers in this industry have raised the bar and set out to leave their mark on the biggest car shows in the world. Car shows and more have become synonymous with opulence, extravagance (sometimes ostentatiously displayed) and extreme luxury.

Car manufacturers are moving towards a different kind of promotion, investing in technology-focused shows, increasingly turning to what we call digital marketing and social media.

For many decades in a row, car shows have provided a rare opportunity for consumers to closely compare different cars at the same time as all the famous car manufacturers presented their latest models in a common space.Now, most consumers and potential customers "do their homework", ie document themselves online and can even compare different cars online due to transparency (including, but not limited to price transparency) and of course, due to the availability of information online. It is obvious, therefore, that not only the industry is changing, but also the buyers (Cornet et al., 2019).

Yes, consumer behavior has changed in the sense that any conversations or interactions with salespeople are conducted in other words, the public is much more informed and the demands are growing.

What is the consequence? Manufacturers, in turn, react to behavioral changes spread among shoppers and focus much more on the online environment.

It is clear that adaptability is an essential criterion for survival in an industry and in a period governed by change, evolution, speed. Traditional car manufacturers are making efforts to adapt to new trends, which is why they are increasingly focusing on digital events, supertechnological in the hope that they will be able to meet the requirements and demands of growing consumers. with unitary, integrated, user-oriented interfaces. The direction therefore seems set for now: the sleek and glittering universe of car shows will gradually become the prerogative of the vintage trend and will likely continue to attract the traditionalist segment of the car-consuming public. On the other hand, carmakers will now focus their investments on digitization and state-of-the-art software solutions (Singh & Singh, 2020).

Hybridization, electrification, connectivity, and autonomous driving are the main directions pursued by all the major car manufacturers in the world. All of them involve the development of artificial vehicle intelligence, forcing manufacturers to either develop their own IT divisions or to collaborate with companies in this field. Cursed by many, artificial intelligence (AI) already exists in most cars on the road. Computers that manage the operation of engines, tire sensors or ABS and ESP systems are the easiest to understand uses of artificial intelligence in vehicles. The "empire of artificial intelligence" is coming incredibly fast with epoch-making changes in the field of electric cars and autopilots. In no more than 10 years, the big car manufacturers will completely give up the production of diesel and petrol cars. More and more countries and/or local governments are announcing from now on that, in the near future, the circulation of cars with combustion engines will be banned as it is showing in the Figure 6. It is very important for every person to know from now on the future (as long as it will be, quite short) of diesel and petrol cars.

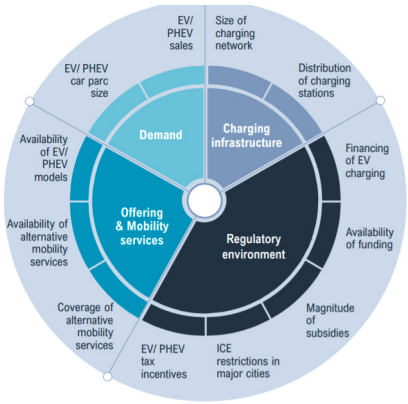

Figure 6. Key dimensions of the Romanian E-mobility Index calculation (source: Romanian E-mobility Index – 3rd edition study)

The examples are relevant to understanding the validity of these statements (Wellings et al., 2021).

1. A very good example, which affects the entire population of the globe, is with electric cars and an automatic driver. Electric cars and "automatic driver" cars started to be talked about only a few years ago. In 2018, the first cars with "automatic driver" and "artificial intelligence driver" were put into operation.

Now, in 2021, all major manufacturers of vehicles are reconsidering their production strategy, more and more deciding to build "computers on wheels", "cars with artificial intelligence driver". More and more of the big companies (Tesla, Volkswagen, Audi, etc.) will produce only electric vehicles, and most of them will be (in the next 8–10 years) with "automatic driver". Electric cars will become widespread around 2030, and soon they will only have an automatic driver. They will radically change the lives of mankind in the sense that:

1.1. People will no longer own a car because it will be easier and more efficient to call, with their mobile phone, a car, which will arrive at the indicated place and will lead them where they want.

1.2. Everyone will only pay for the distance traveled, and during this time they can focus on some activities (they can be productive).

1.3. There will be no more parking problems.

1.4. The applications of artificial intelligence will be so great that those over 30 to 50 years of age will never have a driver's license and will never own a car.

1.5. Personal cars will be about 90–95% less, which will generate many and very great beneficial effects for all

mankind, of which we should mention even the reduction by about 95–99% of the number of accidents and people of these, about 1.2 to 1.5 million are currently dead.

1.6. Electric and autopilot cars will change cities a lot in the sense that: they will be less noisy; they will also have a much cleaner air; they will have a lot to gain by capitalizing on the former parking spaces; noise and air pollution will be eliminated; they will cause more and more people to commute (while they can work), to move away from the big urban agglomerations, to live in a healthier and more pleasant environment.

2. "Wheeled computers" (ie "electric cars with automatic driver") will lead to the disappearance of the classic car repair services. An electric motor, compared to a combustion engine: it has an incomparably smaller number of parts; it breaks down much harder; has a several times longer warranty period; it is much easier to repair, in less time and at lower cost. For example, removing and replacing an electric motor will only take 10 minutes. Their faulty engines will no longer be repaired anyway, but will be sent to a local repair shop who will repair them with robots. In "wheeled computers", in case of light failure, there is a reserve of lighting. If a person's electric car has been damaged in traffic, another car in good condition will be brought to his phone, which will be free of charge until he receives his repaired car.

3. In the conditions of using electric cars it is easy to understand that gas stations will disappear.

There will be electric recharging stations everywhere, including at home (for those living at home). Parking meters will be replaced with meters that distribute electricity.

4. Over 95% of car insurance activities will disappear because car accidents will be reduced to the same (or even greater) extent.

5. In the near future, the production of diesel and petrol cars will be completely abandoned (Wedeniwski, 2015).

The "artificial intelligence" forecast warns us that in no more than 10 years, major carmakers will give up production of diesel and petrol cars altogether.

Investments will be particularly high with digitization for electric cars and self-driving, but the gains will be commensurate.

6. More and more countries and/or local governments are announcing from now on that diesel and petrol cars will be banned in the near future.

More and more countries and/or local governments estimate and announce from now on that, from 2035, others even from 2030, will ban the circulation of polluting cars, with gasoline and diesel engines, in more and more cities (in the more polluted) (Krzywdzinski et al., 2018).

7. Arguments that will lead to the abandonment of diesel and petrol cars by as many people as possible:

7.1. The purchase prices of electric cars will be lower and lower.

7.2. The maintenance and operation costs of electric cars are incomparably lower.

7.3. Electric cars are sold with several times higher warranties.

7.4. Repairing "computers on wheels" is quick and at a much lower cost.

7.5. The use of electric cars is much easier, more relaxing, with less stress and with a substantial reduction in car accidents; these useful effects are even greater than those with autopilot.

7.6. Many of the major car manufacturers will give up production of diesel and petrol cars altogether in 2025.

7.7. Since 2025, more and more countries and/or local governments are banning the circulation of diesel and gasoline cars in more and more cities.

7.8. There will be a growing increase in taxes (on pollution, use of public roads, parking, etc.) for cars on fuel.

7.9. Fuel cars will become increasingly old-fashioned and inefficient if only for the following reasons: a) they are polluting; b) are noisy; c) they will have access bans in more and more cities; d) due to their removal from production: d1) they will get older; d2) will be more and more frequently defective; d3) costs will be higher with maintenance, repairs, fuel and operation; d4) spare parts and repair specialists will be more and more difficult to find, etc.

Therefore, cars will drive themselves and the interaction between the major market players will diminish.

"Smart specialization" is the banner of European industrial policy. Reduced to essentials, smart specialization aims to concentrate financial resources and other support mechanisms in a limited number of priority areas where regions can successfully compete in international markets. At the heart of the smart specialization process is "entrepreneurial discovery" – an evidence-based, participatory and iterative (periodically repeated) process of identifying key areas of competitiveness at the regional level. They are to be supported financially in particular by innovation support schemes. This approach is based on the idea that regions "have knowledge of local innovation systems and can mobilize economic actors towards a common goal".

Entrepreneurial discovery has, in addition to public policy outcomes, important process benefits: local innovative actors are encouraged to explore strategic options and collaborative solutions. Too often, smart specialization is understood to be paramount or even exclusively associated with a list of priorities in public funding through the Structural Funds. The aim of this project is first and foremost to create a culture of discovery dialogue entrepreneurship at regional and national level. This dialogue starts from the strategic motivations of the economic and research actors, from their needs for collaboration and leads, finally, to the regular adequacy of the support instruments that are intended for them as it is showing in Figure 7.

For regional companies, the identified trends translate into the need to increase the intensity of

research – development – technology transfer activities leading to the creation of customized parts and accessories, such as: brakes with a higher reaction speed, robotic gearboxes, external airbags, environmentally friendly mufflers, lighter materials (there is a tendency to replace metal with plastic), smart steering wheels, active window systems, custom accessories, etc. (Simonazzi et al., 2021).

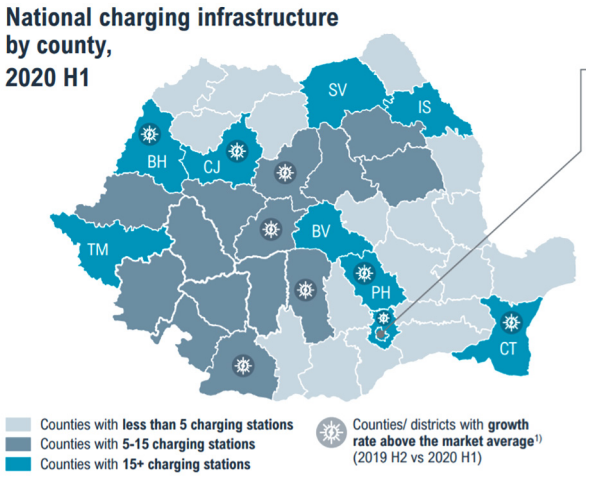

Figure 7. National charging infrastructure by county (source: Romanian E-mobility Index – 3rd edition study)

As a conclusion of this chapter,these three important actors in the automotive industry helped the increase of it;furthermore helped maintain healthy competition in this sector where bringing novelty is the key.

Conclusions

The automotive industry will never lack innovation and new technologies. Whether for safety, fun, utility or simply innovation, car developers are constantly working to bring something new to this industry.

Many new technologies have been developed around the idea of safety, but some are meant to revolutionize not only the automotive industry, but the transportation industry in general.

Technological advances are becoming more and more abundant, which charges us with optimism for a cleaner and more organized, in short, more comfortable future that is being worked on simultaneously with all the forces involved. Structural change is inevitable and will affect all elements of the existing value chain. New trends are already creating challenges for the workforce in this sector and trying to ensure a responsible social transition requires increased social dialogue between employers and unions and other forces (International Manufacturing Forum for the Automotive Industry, 2018).

Four significant technological trends affect the supply chain of the automotive sector: electrification and decarbonization of transport; digitization of the production process; autonomous driving and connected cars, as part of a new concept in mobility (Brown et al., 2021).

A comprehensive industrial policy, combined with a balanced climate, environment and energy policy, would be needed to support the transition to electromobility, the development of connected cars and self-driving. The EU's leading position in the green technology sector can ensure a strong market presence due to the high growth potential of high-tech, high-quality vehicles. Encouraging public and private investment in research and development would be of great importance to the European car industry (Lăcriţa, 2021).

There is a science called Interpretive structural modelling that helps to discover the relationships that supplier has and how it helps to create connections or to analyse the multi-criteria decision-making for complex problems that has to create stability. The existent studies are based on FORD company, the America's best automakers because The United States enjoys the highest position and has one of the largest automotive industries in the world. With this research I tried to underline the position of Romania in this industry not only in Europe but in the world (World Economic Forum, 2021).

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