OPPORTUNITIES AND THREATS TO GLOBAL PROGRESS OF THE AUTOMOTIVE INDUSTRY

Milan Kováč, Andrea Lešková

INTRODUCTION

Data and information about the development of the automotive industry, as well as strengths and weaknesses of the sector on the regional, national and international level are insufficiently available. To prepare this article it was necessary to analyse relevant publications mainly carried in web (e.g. from Deloitte Touche, KPMG, Ernst&Young, Oliver Wyman, A.T. Kearney, J.D. Power, Roland Berger, ACEA, EUCAR, etc.). Our interpretations are based on the combined data set of many published reports. This prognosis and forecasts for automotive are characterised by unprecedented uncertainty in after-crisis time.

Consumer demands and new regulations will heavily influence the development and marketability of innovations in the auto industry. The environmental issues, growing urbanization and changing customer behaviour are the key factors influencing the global automotive industry.

- Environmental issue: fuel efficiency and environmental friendliness rated as most important product issues (aspects: powertrain efficiency technology, ice downsizing, electromobility).
- Urbanization: the industry has to move from vehicle-oriented to human-oriented urban design and mobility concepts. Congestion and limited parking space are expected to be major concern in megacities (aspects: lightweight materials, innovative urban car design concepts).
- Changing customer behaviour: advanced world is moving from car “ownership” to car “usership” and customers expect the same services when in the car as they receive at home, in the office or on their smartphone, including music, telecommunications and internet access, as well as navigation system that integrates with broader traffic control systems to make their journey as efficient as possible (aspects: mobility services, connected car concepts, compatibility with personal electronic devices).

Most important trends and challenges in automotive for the next years are analysed in this article.

1 SELECTED IMPULSES TO DEVELOPMENT IN AUTOMOTIVE

Over the next decade, the automotive industry as a whole will experience dramatic transformation. The economic crisis has acted as an accelerant, placing pressure on many OEMs (original equipment manufacturer) companies and suppliers to change. Multiple forces are shaping the industry’s future. Governments are focusing on three areas to secure individual mobility: preservation of resources, environmental compatibility and safety. So OEMs will begin to build cleaner, safer and more diverse range of vehicle.

1.1 TRENDS THAT SUPPORT AUTOMOTIVE GROWTH

Characteristics that will influence the future automotive market development in the Western European region are [9]:
- Overcapacity will be a dominant issue in the years to come;
- Market entrance of Chinese and Indian automobile manufacturers will force consolidation process of Western automotive industry;
- All major premium brand OEMs have plans for significant expansion in China.
- Tier 1 suppliers will increasingly get in the role of contract manufacturers;
- Alliances between manufacturers of premium and small cars are the new business model for excellent manufacturers (e.g. Daimler/ Renault);
- The future focus of automobile manufacturers will be on their positioning as a mobility provider;
- The role of the car is changing: a shift from status symbol to commodity;
- Electrification will change the structure of the automotive industry and the development of electromobility will lead to market entrance of power supply companies;
- Standardized technology but very unique applications will be the characteristics of the vehicle of the future;
- OEMs and suppliers have to face massive investments that arise from variety of new technologies.
Global challenges focused on automotive sector presented fig. 1.

**Fig. 1: Global challenges in the automotive industry**

<table>
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<tr>
<th>External</th>
<th>Customer</th>
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<tr>
<td>- Legislation (environment, safety, others)</td>
<td>- Stagnating demand and price pressure in established markets</td>
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<tr>
<td>- Raw material and energy costs</td>
<td>- Segmentation and polarization (low cost vs. premium)</td>
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<td>- Exchange and interest rates</td>
<td>- Decreasing loyalty</td>
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<th>Competition</th>
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<td>- Quickly entering every segment</td>
<td>- Global overcapacity</td>
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<td>- Moving targets—everyone optimizing or restructuring</td>
<td>- Complex alliances, partnerships, M&amp;As</td>
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<td>- Global game (for example, aggressive Asian companies, new entrants)</td>
<td>- Consolidating ecosystem (suppliers, dealer groups)</td>
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- Source: [13]

The OEM has to shorten product lifecycles in order to react to individualise and fast changing consumer demands with innovative products. "Time to market" is the issue that drives development for automotive manufacturers. The development time for a car will decrease further in the next few years, from 54 months in 2004 to 36 months in 2012. [7] OEMs develop more and more niche models for special target groups. Innovations lay the path to sustainable growth and these are best achieved through partnership with other automakers or by outsourcing. Outsourcing and transferring out of development and manufacturing activities are two of the key ways to master the complexity of automotive product development and production. [15] Partnerships and alliances between best in class in automotive and other related industries based on cross-sector cooperation are seen as an essential strategy to achieve further growth. Cooperation has progressively extended to most areas of the automotive business, including purchasing, R&D and collaborative engineering, manufacturing, product planning and human resources. Innovation and product quality offer the starting points for OEMs differentiation.

Flexibility and agility factors are considered as the new differentiator. Flexibility is reflected through capacity utilization. When demand falls, or shifts away from one market segment to another, the most flexible manufacturers will find a way to respond to that change without closing plants.

Consolidation within the automotive industry is another significant momentum. Structural change will mean long-term consolidation. By 2015, the number of suppliers will drop by 50% to 2,800, and only 10 of the 12 independent automakers will remain really independent worldwide. [4] Within the European automotive industry there are only 6 OEMs left compared to more than 70 back in the '50s [10]. Fig. 2 illustrate brand consolidation process in automotive in Europe. Only companies with a strong international orientation survived independently.
Saturated markets and overcapacity are putting intense cost pressure on automakers and suppliers. But the main catalyst for the increased global manufacturing capacity is the rapid rise in demand from emerging markets. Demand from India and China is expected to go up, driven by rising population, increasing per capita income, improving infrastructure. The development of the Asian automobile industry started 20 years later than the development in the Western world. Auto-ownership penetration in these countries is much lower than in developed countries, indicating a huge potential - for example, as referred study [9] the US has a large penetration of 765 vehicles per 1 000 people compared to just 40/1 000 in China and 11/1 000 in India. Automakers are targeting emerging markets by offering no-frill cars (Low Cost Cars priced at USD 6,000 or less) to a larger section of the population. This sector has seen incredible growth historically and is expected to reach 17.5 million units globally by 2020 [11]. This growth has been largely driven by Asia, especially India, with the exception of China. Companies such as GM, Bajaj, Nissan, and Renault are making substantial investments in this segment. This LCC segment has its share of concerns: very low margins, the need for an alternate distribution channel compared to conventional ones, and development of tailor-made marketing strategies according to country as well as for exporting to other potential regions such as the Middle East, Africa and various countries in emerging markets.

Worldwide demand for alternative fuels increase. The strong and lasting discussions around global warming and the significant price increase of energy, led to an increased public awareness and a change of attitude. This has set the basis for a general shift in mind-set towards environmental friendly vehicles. In this context, technology cannot bring solutions on its own. Policy makers must adopt a comprehensive strategy involving technologies as well as market incentives, infrastructure adjustments and changes in driving habits. Asian players and start-up companies are currently leading on electric vehicles and in addition, Asian suppliers control 90% of the Lithium-Ion battery market. USA and European OEMs are still in prototype and field difficult testing stages. Hybrid vehicles segments are the most attractive for growth, they are expected to witness strong growth supported by environmental legislations by various governments on the use of cleaner and fuel-efficient cars. The global market for hybrid vehicles is predicted [4] to increase to more than 11 million a year by 2020. The number of models is expected to increase to 150 by 2014 and 200 by 2019.

Customer requirements are changing individually. The automotive industry will likely see the most dramatic changes in customer buying preferences in its 100-year history [2]. Profound in their nature and implications, these changes will play out differently according to the dichotomy between mature and emerging markets. Car-sharing and integrated mobility businesses will become more popular in developed economies. In the emerging markets, more people will be forced to buy cars simply for transportation.
Legislation, global changes, technology trends and uncertainty on the customer side redefine automotive landscape. It can be emphasises [9]:

- Emerging market buyers generate ultra low-cost cars (ULCCs) segment and this is the fastest growing segment, adding in 2020 13 million vehicles to the market and cannibalizing the "small" segment;
- Senior citizens play increasingly important role in mature markets;
- Consumers marked “Generation X” ask for more tailored products even at higher price, they also professed interest in features that: reduce distractions (via hands-free calling and access to managed content); improve navigation (through GPS and traffic updates); enhance entertainment (with satellite radio, MP3 connections, and access to digital music);
- In existing vehicle classes is notable strong trend towards downsizing (e.g. 4-instead of 6-cylinder);
- New mobility concepts mean “non-buyers”, instead car sharing and new rental formats.

Consumers want products that satisfy their individual requirements. These customer trends create tremendous economic challenges for OEMs. As the number of applications for technology increases, OEMs and suppliers will need to be selective. The criteria for choosing what to include and what to leave out will depend entirely on what customers are willing to pay for. Customers’ reasons for purchasing vehicles are not faster, higher, further but nicer, safer, greener [15]. Smaller car models with enhanced safety features will enjoy stronger sales. Safety remains a primary customer need across all markets. This will present several challenges to engineers as they try to improve crash safety standards and innovations while meeting the need for cheaper, more efficient cars. OEMs will need to focus on the development of user-friendly, intuitive, low-cost vehicles. Vehicles targeted for the older driver will need to be designed with human factors in mind: easier vehicle entrance and exit, larger displays, improved lighting, and augmented night driving. [14] With features designed to augment safety and reliability, these cars will improve the ownership experience compared with current low-cost options.

Vehicles are both a transportation necessity and a status symbol. The current practice of developing unique luxury models for specific markets may no longer be economically feasible and the development and marketing of luxury models will need to use global platforms to reduce overall expenses and maximize platform volume. [9]

More and more customers are turning to the Internet to purchase cars. While the need to test drive is the major barrier to growing online sales, customers are also hampered by [14]:

- An inability to access accurate and complete product and pricing information online;
- Unsuitable interface to negotiate on pricing with dealers;
- Concerns about delivery;
- Lack of integration with related services, such as financing and insurance.

Key to any lasting transformation in the automotive industry is the primary issue of skills and workforce flexibility. [7] Both OEMs and suppliers will have to plan for a future that requires ever more skilled workers from design to production. Having a high-skilled, flexible workforce is seen as one of the top drivers of future business success in automotive. Globalization presents another set of challenges related to human resources. A global workforce means different demographic profiles and different sets of expectations across geographies. Workforce planning will emphasize workforce training to enable a flexible, diverse, and global workforce to ensure that engineers and managers are equipped with emerging skills and to transition production workers into skilled trades’ positions.

The automotive industry has always set standards in automated production. It is a source of impulses for innovative technologies focused on reducing costs, increasing flexibility and assuring availability. Considering rising costs and competitive pressure in global markets, international automobile manufacturers must squeeze maximum efficiency out of their processes; not only in production, but also in the development stage. Production has to adjust faster and faster to new cars models and a large number of individual feature variants. The complexity is growing in production and logistics. Just-in-Sequence and Assembly to order principles are a further key issues of modern automotive production. [8] To optimally fulfill individual customer wishes, the right component has to be ready for installation on the respective body at the right time and in the right place. Precise identification of each individual component in assembly lines is crucial. This logistical challenge can only be mastered with an appropriately dimensioned “manufacturing execution system” with advanced ITC tools support.

Understanding these mentioned elements - structure, customers, technology, and people - and how each will evolve over the next decade, is key for both OEMs and suppliers. The transformations implied will touch on every step of the complex business process involved in taking a car from “a designer’s imagination to a customer's driveway”.
1.2 SUMMARY OF THREATS IN AUTOMOTIVE

These factors, considered as challenges for future development in automotive industry, may pose threats in terms of turbulent changes in business environment. For example, globalisation gives OEMs the chance to expand to new markets, but also increases the threat of new entrants or increased competition in traditional markets. Reputable companies published prognosis and promulgated its results of their scan of business risks for automotive sector in global terms. The fig. 3 shows the relative importance of the top ten risks. These risks will do the most to influence markets and drive corporate performance in near future.

The model – in the form of radar, is divided into four sections [6]:
1. Compliance threats originate in politics, law, regulation or corporate governance;
2. Financial threats stem from volatility in markets and the real economy;
3. Strategic threats are related to customers, competitors and investors;
4. Operational threats impact the processes, systems, people and overall value chain of a business.

The risk radar is a simple device that allows presenting a snapshot of the business risks in industry sector. The risks at the center of the radar are those that industry-leading executives (e.g. interviewed academics, consultants, experts) considers to be the greatest threats to global business. [6]

Fig. 3: Industry sector risk radar

For instance, there are several potential barriers to further progress in automotive industry [11]:
- The credit crunch and its aftershocks pose existential threats to leading automotive global firms.
- Environmental regulations and sustainability challenges continue to escalate, most dramatically in automotive sector.
- New competitors are emerging from distant geographies (e.g. European OEMs currently face an aggressive sales offensive by Korean OEM Hyundai).
- With the global economy slowing, cost containment is now crucial to survival in automotive sector.
- More and more of an automobile value is created by electronics – the balance of power between different manufacturers is shifting.
- New generation technologies challenge automotive companies to develop new competencies.
- Customer structures change, e.g. society is aging, the income structures are polarizing, and the number of female customers as important purchase decision makers is increasing.
- Consolidation in retail and the dominance of multi-brand operations will spread.

Many strategic uncertainties arise from such risks, which can be driven by broader environmental and industry changes, and have the power to threaten or invalidate the current model of a business in automotive. [13] Inability to innovate is considered as key difficulty: developing a culture of innovation and increasing the pace of product development is crucial for automotive “best in class” OEMs.
2 AUTOMOTIVE INDUSTRY PROGRESS IN SLOVAKIA

The automotive sector in Slovakia has experienced unprecedented expansion during much of the last decade. But the global financial and economic downturn will have a major impact on the country. Slovakia's reputation as a cost effective and productive manufacturing location means that the medium-term outlook is positive. [5]

The three reputable car producers are located in Slovakia - Volkswagen Slovakia, PSA Peugeot Citroën Slovakia, Kia Motors Slovakia – and present the progressive technologies, high-tech production methods and close cooperation but represent a different cultures of manufacturing and management approach. These companies created specifics supplier chain structure, which is situated near to OEM plants. The automotive production is densely concentrated in west territory of the Slovak Republic, and those regions are highly dependent on the sector.

Important for the further development of suppliers’ and OEMs network is the proximity to other car manufacturers’ factory in Central Europe region and strong connection to Western European car producers and subcontractors. In the visions [3], the main objectives were stated as: strengthening of regional competition and innovation ability, knowledge transfer, R&D- investments, new alliances between companies and universities, green production, human resources development concepts, diversification of automotive supply chains in the region via functional differentiation and specialization.

Opportunities and threats, in condition of Slovak republic, can they be expressed: [3]

- Development of total consumption and production is pre-dominantly led by OEM trends and foreign direct investment. Demand is expected to increase, as a result of increases in vehicle production capacity.
- Development of innovative activities in plants; costs reduction, processes optimisation; latest production technologies.
- In response to the presence of multinational automotive companies, local parts suppliers are increasing in number and in the quality of their products. This poses a threat to directly competing products, but also offers opportunities for manufacturers of more elementary products.
- Demand for high quality replacement parts at competitive prices will increase in the next five years, as a result of ageing vehicles.
- The international transportation industry in Slovakia is growing strongly because of its geographical location, resulting in an increasing demand for parts for heavy commercial vehicles.

Fig. 4 presents statistical outline of automotive manufacturing in Slovakia’s OEM plants.

Despite a recent recovery, the global automotive industry is bound to face uncertainty in the coming years, meaning that Slovakia's strong exposure to car manufacturing is likely to increase the volatility of economic growth. [12] Diversification within automotive production and Western firms' push to reduce their cost base could help Slovakia to mitigate this volatility.
CONCLUSION

In studies published of prestigious companies the following challenges in automotive industry were mentioned: economic downturn, overcapacity, climate change, demographic change, people's mobility, de-location of activities, “death” of the combustion engine, greener propulsion systems, internationalisation of the entire value chain, newly emerging areas like Africa, Asia, new in-sourcing strategies of OEMs, X-by-wire concepts, re-skilling: from manual labour to service, ageing workforce (particularly in German regions). These mega trends are continuing influences to OEM companies. To attain sustainable profitable growth and differentiate themselves in the global market, cars producers must develop a multi-faceted strategy that is adaptable to evolving market forces.

Establishing new public-private research institutions is a general trend in automotive business to ensure a connection with global innovation dynamics and allow regional SMEs and universities access to new knowledge. In view of the fact that innovation requires the ability to recombine heterogeneous technical, disciplinary, and professional stocks of knowledge, networked forms of cooperation are playing an increasingly important role.

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Address of authors:
prof. Ing. Milan Kováč, DrSc., Technical University of Košice, Slovakia, Faculty of Mechanical Engineering, Department of Technologies and Materials, Division of Automotive Production, milan.kovac@tuke.sk;

Ing. Andrea Lešková, PhD., Technical University of Košice, Slovakia, Faculty of Mechanical Engineering, Department of Technologies and Materials, Division of Automotive Production, andrea.leskova@tuke.sk

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CHALLENGES AND RISKS TO GLOBAL PROGRESS OF THE AUTOMOTIVE INDUSTRY

Abstract
Globalization has created new demands for worldwide operations and management practice in automotive sector. This article deals about mapping of possibilities to future developing worldwide automotive industry. The issue is focused on the analysis of different factors that represent opportunities and risks in after-crisis transformation process in global scale. The next part of this paper describes main requirements to progress of automotive industry in Slovakia. The presented article focuses on characteristic of selected trends in automotive market for near future. There are specified some purposes of innovation. Subject of article covered the tendencies in the development of the automotive industry.

Key words
Automotive industry, future challenges, trends, business risks.

JEL Classification
L9, R4