UNIVERSITY OF PITESTI SCIENTIFIC BULLETIN

Faculty Of Mechanics And Technology AUTOMOTIVE series, year XXI, no. 25

INNOVATION - CHALLENGES AND PRIORITIES IN THE AUTOMOTIVE INDUSTRY

Nicoleta ISAC
University of Pitesti, Romania

Article history:
Received: 04.11.2015; Accepted: 11.02.2016.

Abstract: *The competitiveness of the European automotive industry is closely linked to the success and continuity of these research and development efforts, which are an important part of the competitive position of industry. This is reflected in the volume of investment that the industry has in R & D so that the automotive industry account 20% of R & D investment in manufacturing in Europe totaling approximately € 20 billion per year, as such, the automotive industry is one of the main investors in R & D in Europe.*

Keywords: innovation, automotive industry, R&D

INTRODUCTION

The European automotive industry strives to be the most innovative in the world and sets global standards for production and vehicle technology [1]. The new technological possibilities will continue to play an important role in addressing the enormous challenges arising from the expected future demand for passenger and freight transport in Europe [4]. Identify solutions that are truly effective and sustainable will require much more than the development of cleaner engines, alternative concepts to drive vehicles with better aerodynamics, a lower rolling resistance and advanced solutions for vehicle electronics [2].

CHALLENGES IN AUTOMOTIVE INDUSTRY

In 2015, 40% of the world population lives in cities with over one million inhabitants, 17% living in megacities with more than five million inhabitants. The design for this medium cars in the future will have a very different approach from the current vehicle. Some new contact points will be:

- Easy switching between relaxation and driving positions;
- Emphasis on passenger entertainment and information systems
- Automation of "stop-and-go" in traffic situations
- Protection of passengers attacks
- Effective protection of smog and air conditioning
- Almost zero emissions

By analyzing the direction and speed of market changes and anticipate future customer needs, will focus the entire organization, so that long-term corporate objectives become clearer and more important, emphasis on innovation and expands the incremental improvements in system innovations [3]. For example: *For further its range of products, a manufacturer of electrical and electronic, in the European automotive industry has identified a growing need for customer mobility, safety, comfort, connectivity and ease of use*. The automotive industry is intended to become an "engine of investment". However OEMs will be able to drastically

reduce the need to invest annually in development and production. Figure 1 shows the comparation of total annual investment between 2002 – 2015.

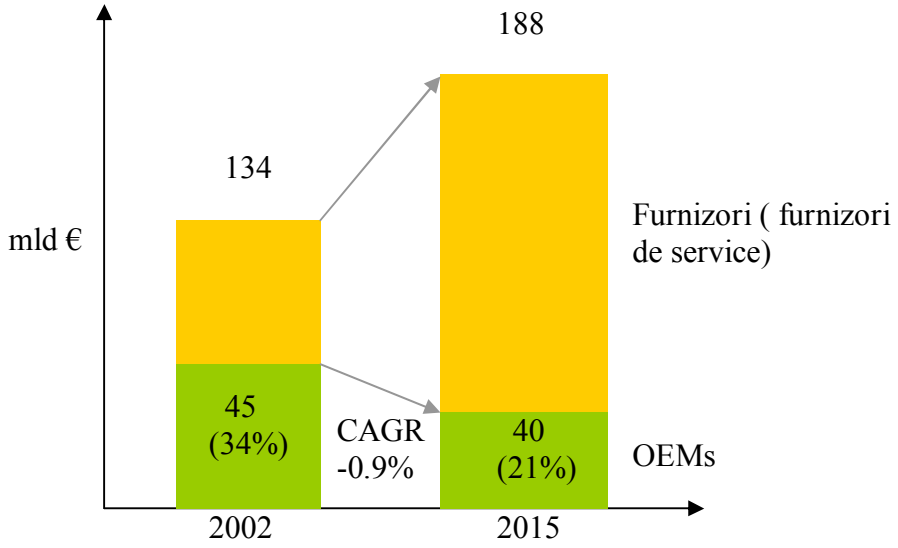


Figure 1: Total annual investment (worldwide, billion €) [6]

- Total annual investment will increase on average by 2.6%;
- The main engine on this growth will be the expansion of investments to achieve an increase in production figures
- Asset intensity will remain at a high level as they will do in the new factories in emerging markets and productivity will be geared more toward markets with robotics
- Because of the sharp increase in the sales revenue report OEMs investments will decrease from 5.4% in 2002 to 3.4% in 2016 [10]

What we emphasize is that electrical and electronic equipment will remain the most important element of innovation in the automotive industry since 2015 and beyond, and will grow by 6% per year. A rebound in revenue growth of 8% and more, will be payable software, semiconductors, display and power generation. However, electronics will also face with an increase in cost optimization and will produce significant changes to standards and functional integration.
The industry will focus on the most important innovations and consists of emissions / fuel efficiency / weight, power-train new concepts and developments in architecture [5]. By 2016, the production of power trains that use traditional fuel - petrol will drop by 0.3% annually from 48.5 million units to 46.5 million. Diesel engines will experience annual growth of 2.1%, from 12.6 to 15.8 million, while alternative fuel vehicles (biofuel, natural gas) will increase to 3.8 million units per year. The strongest growth will be in hybrid power trains, with a compound annual growth of 21.4% to 11%.

Vehicle of 2020 will be characterized by several significant developments implemented in stages over the next 12 years which will make a car very different from that of today [9]. A focus on innovation in automotive software will be focused on electrical systems, electronics, engines and auxiliary systems and propulsion system and is showed in Figure 2.

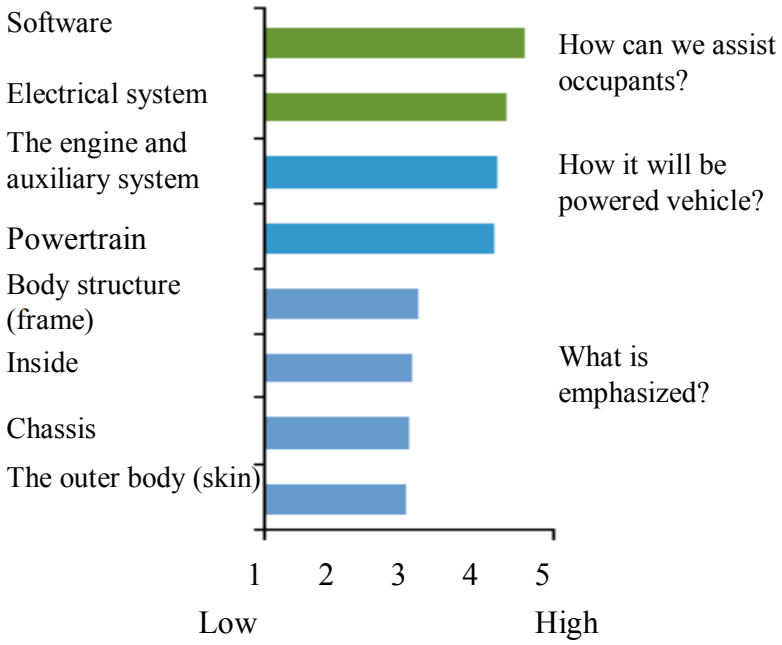


Figure 2. The level of innovation in various aspects of vehicle till 2020 [11].

As for the costs, a strong growth in the value creation is evident only in electrical modules / system. At the same time, development costs must be reduced. All major automobile companies have launched initiatives to reduce R & D offshore engineering costs. Module approaches will reduce R & D costs per unit and enable companies to cope with more variety and shorter cycles of models. The new design and software "test-bed" will also help to lower costs in developing automotive components. These are just some examples of the many initiatives needed to keep cars affordable for the general public. Lower cost of innovation and R & D will play a crucial for future growth of the automotive companies and the industry as a whole [7].

The successful development of innovation needs a system of elements that fit like pieces of a puzzle: innovation strategy clear, is closely linked to the business model of the company, a team that has culture to put the strategy into practice, an organization that can effectively and efficiently lead the necessary innovation processes and a smart business plan that allows innovations to be transformed into tangible profits.

Oliver Wyman [8] calls such a system "innovation strategy", "Innovation Strategy Framework" (ISF) It consists of four elements: innovation proposition, organization and culture, focusing on competence and collaboration. Regarding the cost pressure on innovation, this is showed in Figure 3.

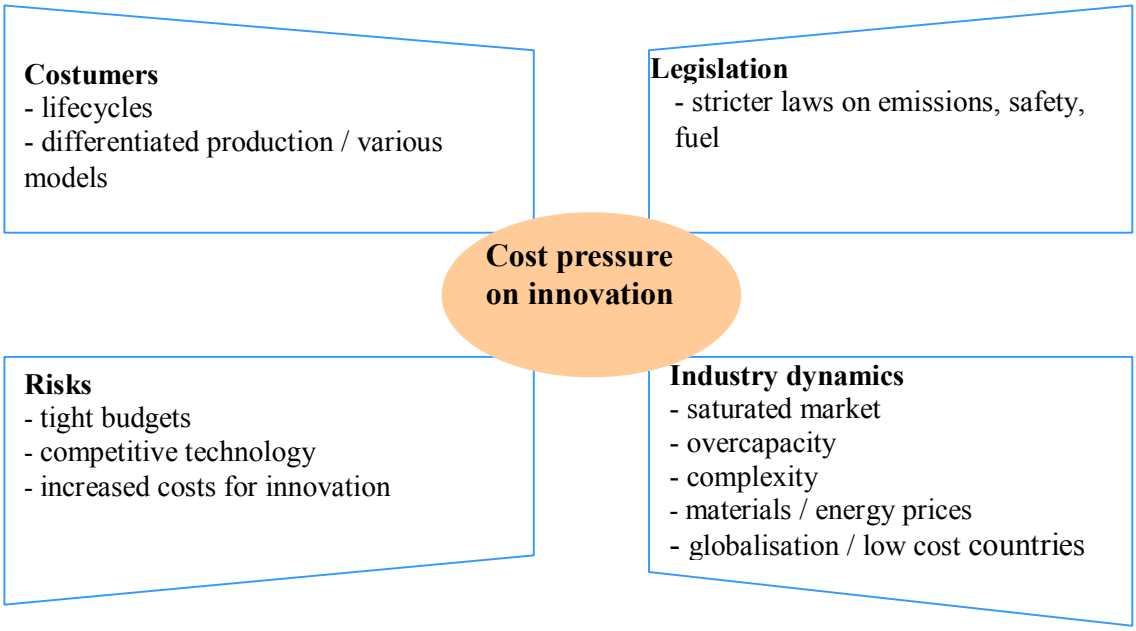
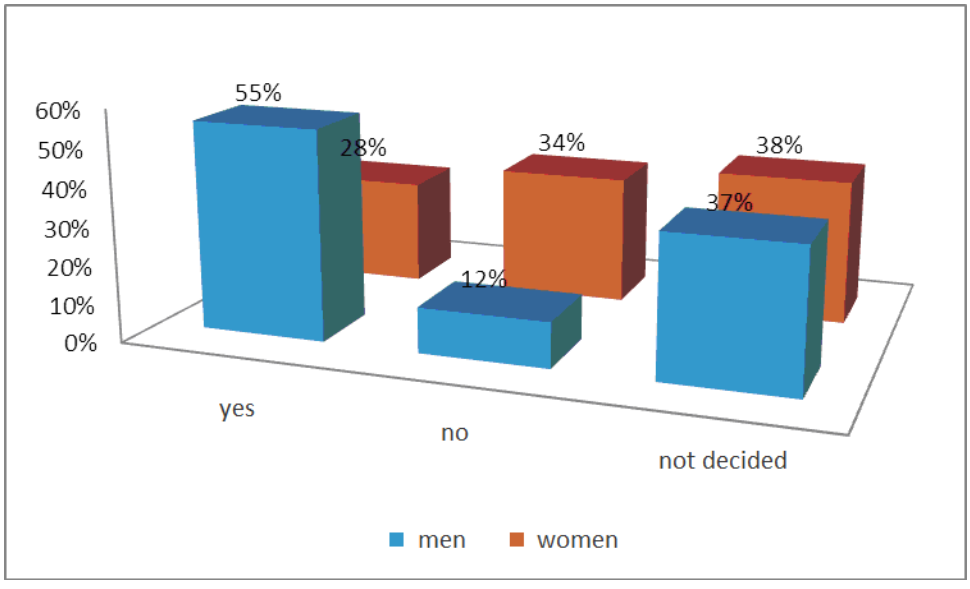


Figure 3. Cost pressure on innovation [8]

ANALYSIS OF CONSUMER PREFERENCES ABOUT DACIA CARS

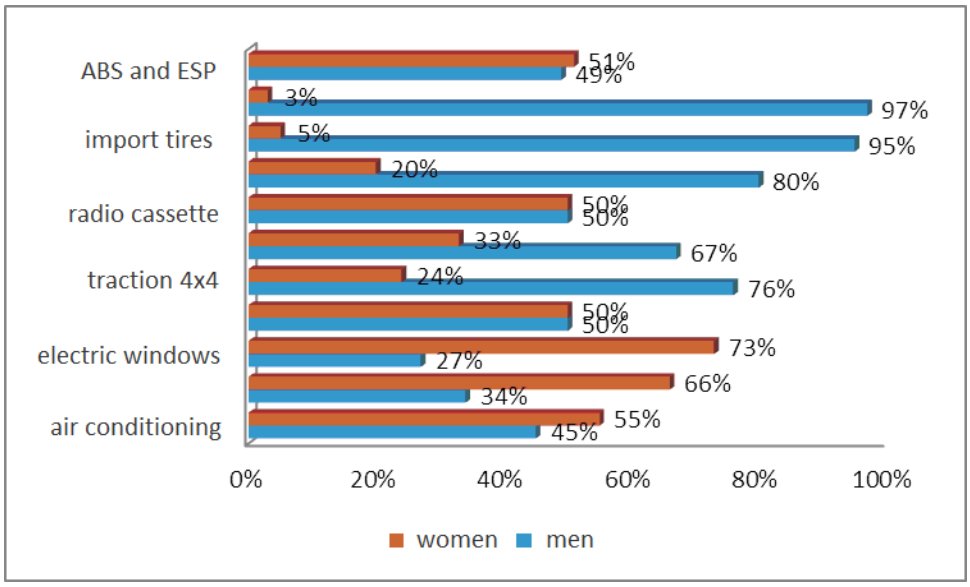
The central objective of this research is to outline the structure of preferences of potential customers in the automotive market in Romania and their preferences about structure Dacia manufacturing, and it was conducted on a sample of 120 respondents.

1. Do you intend to buy a Dacia car?



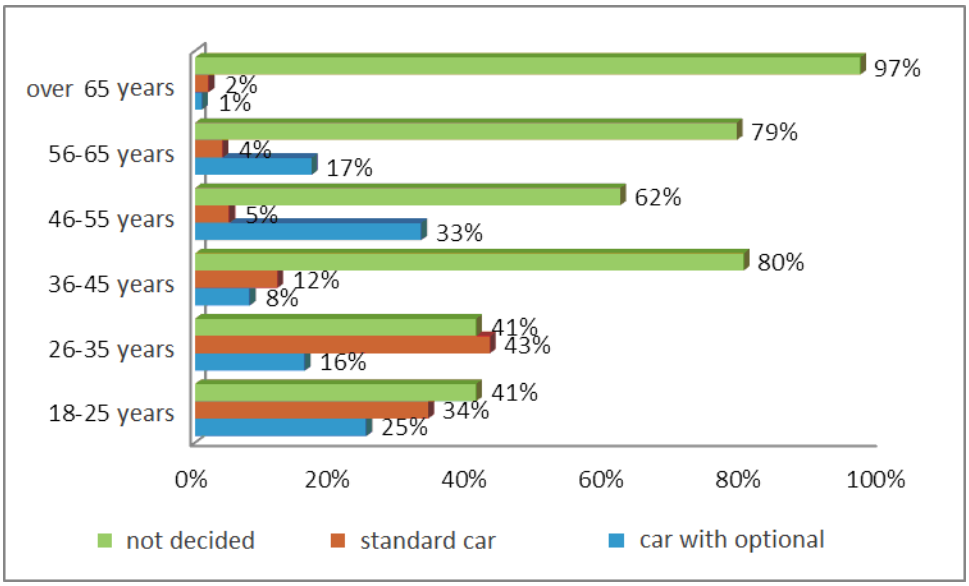
We observe that men have more confidence in a Dacia car, they intending to buy such a vehicle at a rate of 55% in while the women account for 34%. In terms of getting a concise response percentages are about the same, 37% -38%.

2. With what would you like your car to be equipped?



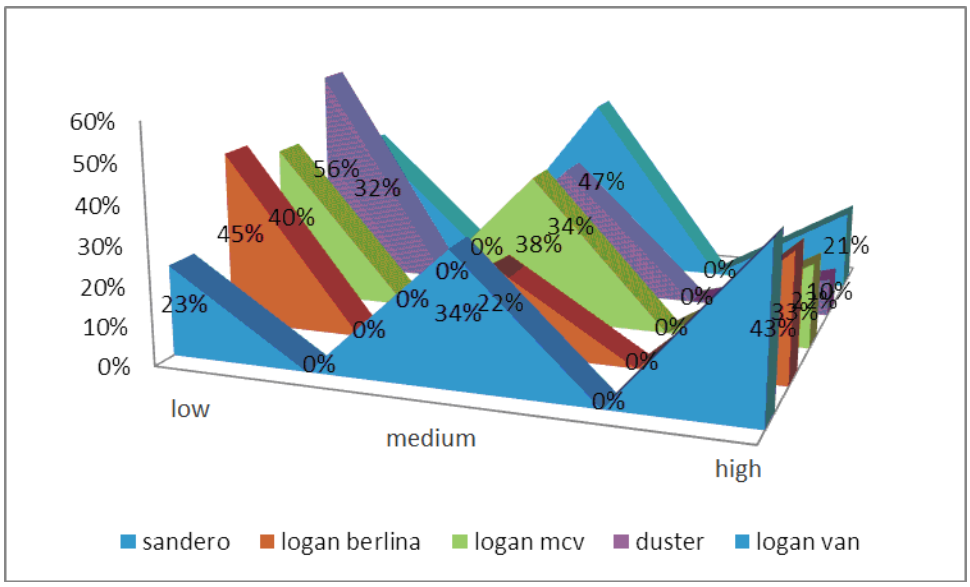
Note that men place more emphasis on the mechanical and automotive area, instead women are more focused on the comfort,

3. Would you like to buying a standard car, with optional or you are not decided



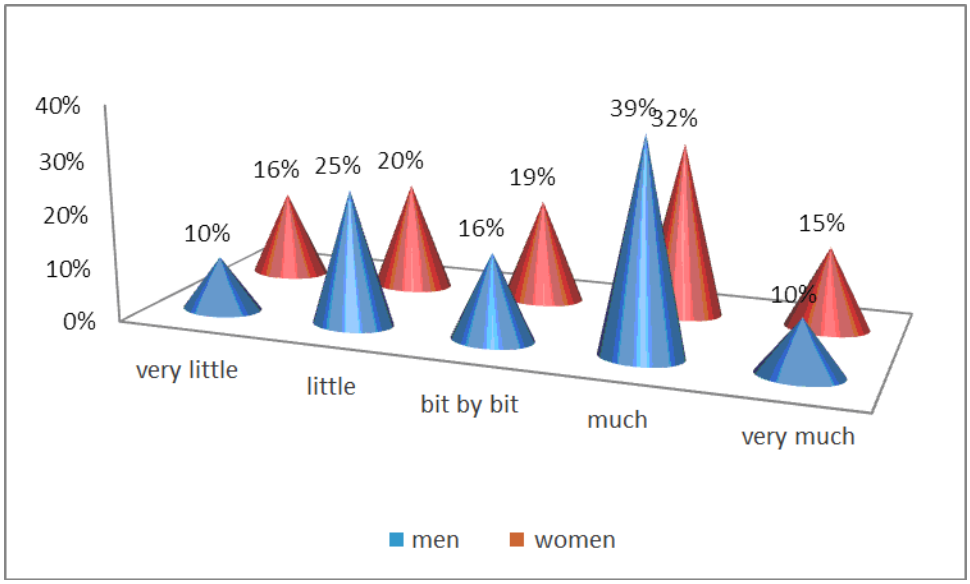
The young people up to 26 years opt for standard machines, probably due to high taxes, the same fact being among people up to 36 years. By the age of 65 years they prefer cars with optional and alternative, and among retired this alternative is not very important they are undecided in percentage of 79%.

4. How do you think is the price of the cars based on their quality?



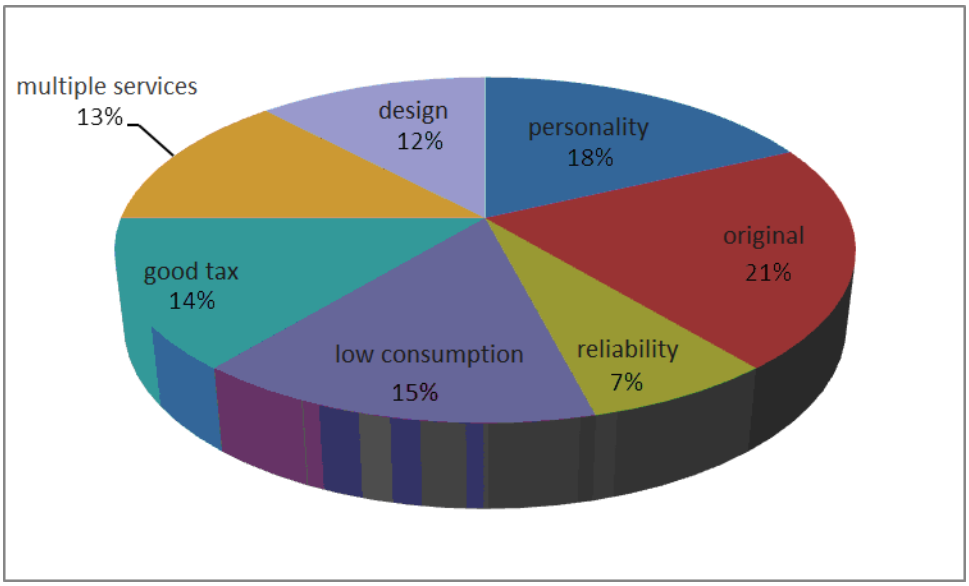
According to the respondents' top choices, the price for Duster cars is lower, medium for Logan Van and high for Sandero.

5. Promoting a new type of car has an influence on the decision making process?



Promoting a new type of car has a greater influence on the decision to purchase a car for men.

6. What is your most important advantage for the Dacia cars?



The most important advantage of Automobile Dacia is originality in 21%, followed by personality tailored to each person, low power consumption and the amount of fees for them. This list is complemented by the services offered by Dacia by automotive design and reliability.

Due to changes in the automobile industry, the Renault Group ranks and a growing market segment with strong potential. Renault's strategic partnerships are designed to support its worldwide expansion.

CONCLUSIONS

Innovations can only be successful if addresses mega trains, legislation, competition or customer. Most automotive innovations today are based on inventions creative engineers. OEMs and automotive suppliers must align innovation management in accordance with customer requirements and future market trends. The product portfolio, marketing process innovation, price policy, market research, centers of R & D closer to the market, client-segment innovations (brands for example, groups, etc) are all ways to improve customer and orientation to marketing innovations in the automotive industry.

Future trends:

- Switching from standard to large fleets differentiated products that more closely follows the needs and tastes of customers;
- Large-scale production is still an important tool in achieving cost effective;
- Facility design modern production to operate profitable at almost all levels of capacity utilization, whether arising from fluctuations in macroeconomic shocks or changes in customer preferences;
- Customer feedback and interaction is required for a successful product;
- New technologies for alternative fuels and fuel efficiency technologies.

Proposals for innovation

Technological vision: Top performers constantly scans the market trends for long-term technologies. They develop and secure a long-term vision of innovation, regardless of the short-term trends.

Customer knowledge: Understanding customer preferences enables companies to better focus their innovation efforts on relevant issues. Research customer needs both regional and socio-demographic approach to be valuable.
Match Strategy: Successful OEMs and suppliers combine their R & D strategies, from an early stage and very closely with those targets OEM or supplier partner.
Focus on Skills: The best innovators combine skills with their R & D strategies. OEMs and larger providers with a wide range of products must continuously recalibrate their strategic skills to the remit and objectives of R & D.
Strategic partners: With their increasing complexity of R & D networks are an essential success factor. Currently, most of the OEMs forming such networks. In the future will increase collaboration between supplier-supplier and provider-institution.
Focusing on investment: R & D should be independent of current business needs. In the past, short-term changes in R & D often led to long-term problems of the past and catching with R & D, proved often be extremely expensive.
Focusing on trend: Building on mega-trends contribute significantly to the soundness of investments in R & D, so these trends are highly predictable. The interpretation of these trends regarding the business model of a company's own is a main challenge for automotive companies.
Focusing on cost: Innovation leaders always emphasize cost, R & D on an effective and efficient. Whether it is a single component or a whole machine, reducing unit costs is central to their innovation.
Strategy: Top performers concentrate on innovations for the market needs. Processes that this capacity are common understanding of objectives for innovation in society and the quality standard.
Employee involvement: Companies that involve people at all levels in R & D are much more successful. The key in terms of employee involvement and motivates easy communication, so preventing the presentation of ideas but is efficient and transparent for received ideas.

REFERENCES

[1]. Aigle T, Marz L. „*Automobilität und Innovation,* Versuch einer interdisziplinären Systematisierung" Discussion Paper SP III, Wissenschaftszentrum Berlin für Sozialforschung (WZB), pp.102, 2007;
[2] .Beise, M., Cleff, T.: *„Assessing the Lead Market Potential of Countries for Innovation Projects*", Research Institute for Economics and Business Administration, September, Kobe University, ISI Discussion Paper Series, No. 142, 2003;
[3]. Bradford B. Marion S. and Bill W. „*The automotive industry's accelerating leadership gap"*, The Korn / Ferry Institute, pp.256, 2008;
[4]. Christoph Huss, Ivan Hodac „*The Automotive Industry R&D Challenges of the Future*", pp.8, 2008;
[5]. Cleff T., Heneric O., Licht G., Lutz S., Sofka W.,Spielkamp A. and Urban W.: „*The European automotive industry: competitiveness, challenges and future strategies*", European Competitiveness Report, Commission Staff working document SEC 1397, Chapter 4, (2004);
[6] Isac Nicoleta „*Perspectives for development and innovation in automotive industry*" Anale. Seria Ştiinţe Economice. Timişoara ,Vol.XVI/2010 ISSN 1582-6333, pp.165-169, 2010;
[7]. Oliver H., Georg L., Wolfgang S. "Challenges and Opportunities for the European Automotive Industry" ZEW Economic Studies, Europe's Automotive Industry on the Move, ISI, DOI: 10.1007/3-7908-1644-2_6 SpringerLink , volume 32, pp.140-145, 2005;

[8]. Oliver W.: *A comptehensive study on innovation in the automotive industry"* CAR INOVATION , pp.19, 2008;
[9]. Patrick L., Jean-Jacques P., Terry W., Christian W., „*Comprehensive Analysis of the Evolution of the European Automotive industry"* - Executive Summary – pp.4, April 2008;
[10]. Mercer Management Consulting and Fraunhofer Institute – *Introduction to fast 2015 study – future automotive industry structure in 2015"*, pp.19-30, november 2005;
[11]. Sanjay R., Benjamin S., Kalman G., „*Automotive 2020 – Clarity beyond the chaos*" IBM Institute for Business Value, Somers NY 10589, USA, pp. 8, august 2008;