

ASPECTS CONCERNING THE INTANGIBLE RESOURCES IN MACHINES BUILDING INDUSTRY

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ABSTRACT: **Aspects concerning the intangible resources in machines building industry** wishes to highlight aspects of the state of play of the machines building industry within the European economy and taking as an example Siemens, one of the most representative organizations in the industry, to make a brief analysis of the organization in a few more important points. The long-standing presence of this organization in a top position in the market evolves owes its strategy to paying particular attention to intangible resources, achieving and maintaining over time a sustainable competitive advantage.

KEYWORDS: Intangible resources, machine building, nonconventional processes

1. INTRODUCTION

Major changes in the economy, gradually perceived globally in the last century, have been, and will continue to be, based on knowledge – *the knowledge based economy* is the actual society. Information management and the digital revolution have led to an almost incredible transformation of the way business is going. Knowledge becomes the exclusive resource of any firm that definitely determines performance.

Expanding this philosophy, it can be noted that the core concern of firms has become the accumulation and use of knowledge at all levels: technical, technological, economic, social, managerial, and their use in achieving competitive advantage. Under the harsh market competition of large firms, including those in the machinery industry, the advantage gained through the exploitation of knowledge-based resources seems to be ephemeral and migratory. No company can maintain its supremacy over a long period of time, yielding periodically the advantage of competition. The big enemy becomes routine, an aspect that competing firms are constantly trying to overcome.

Considering that "the mission of an organization is the reason to be and to create value for society and expresses its evolution to the ideal state expressed in vision [1], the organizations in the machine building industry set their economic and social objectives so that their fulfillment economic priority: earnings per share, share value, capital efficiency, profit, profit rate, turnover, market share, labor productivity, product and service quality, and social issues: pollution control, cooperation with authorities, wages and working conditions of employees, quality assurance (sustainability, flexibility, price, supplier loyalty) demanded by customers.

Any strategy imagined and implemented needs all these objectives to be achieved and to achieve the proposed performance these objectives must be S (scope), M (measurable), A (acceptable), R (realistic), T (defined over time).

Depending on the scale of these organizations, they build global and / or partial strategies. The stage of development, the needs in the economic context, the position and the number of competitors on the market allow the elaboration of various strategies:

- integrated or independent;
- recovery, consolidation, development;
- privatization, restructuring, management and joint venture;
- innovative, offensive, specialization, diversification, organizational and informational,
- economic and administrative - economic.

Each organization is interested in gaining competitive advantage by pursuing a unique position vis-à-vis the competitors on the market where it evolves, by developing resources and / or decisions on the field approached.

2. CHARACTERISTICS OF INTANGIBLE RESOURCES USED IN THE MACHINE BUILDING INDUSTRY AND IN ADVANCED PROCESSING TECHNOLOGIES, INCLUDING NON-CONVENTIONAL ONES.

Machine building industry - performance position in the European Union economy [2]

A study by Dr. Hans-Gunter Vieweg (Institute for Economic Research in Munich, 2012) shows that the machine-building industry is an important contributor to the EU's GDP and trade balance. This industry specific to developed economies with the ability to create added value and proven performance with regard to export has survived the

global economic crisis although, compared to competitors on the international market, productivity and prices suffered during this period. The machine building industry and advanced processing technologies are an innovation enhancer being a major supplier of equipment and machinery for new investments in many industrial sectors and in the fields of climate change and energy, being the main factor capable of delivering efficient processes and products from the point from the viewpoint of resources and energy. It registered a trade surplus in trade with the rest of the world, the average productivity was much higher than the one of the manufacturing industry (in general), the wage levels being higher in comparison with the average of the manufacturing industry, a faster increase of productivity compared to that of the processing industry as a whole, the contribution to GDP increased despite the precarious economic context of 2009.

The positive contribution of the machine building industry to the EU trade balance has stopped the growth of the deficit (€ 157 billion) created by the manufacturing sector. The decrease of the dependence on the imports of products of the machine-building industry vis-à-vis the imports of other processed products is noted (table 1).

Table 1. Key indicators for the EU-27 foreign trade [2]

Sector	Indicator	2010	Annual average growth rate in %		
			2000-05	2005-08	2008-10
EU-27	Domestic demand ¹⁾ Mech. engineering	374.2	1.4	9.7	-11.0
Extra-EU Trade Total manufacturing	Imports	bn. € 1500.6	3.8	9.9	-0.4
	Exports	bn. € 1343.9	4.8	7.6	3.1
Extra-EU Trade Mechanical Engineering	Imports	bn. € 81.2	-0.1	12.6	-6.2
	Exports	bn. € 200.4	4.3	13.7	-1.8
			2000	2008	2010
Trade balances Manufacturing	Extra-EU ²⁾	bn. €	-142.4	-246.2	-156.7
Trade balances Mechanical Engineering	Extra-EU ²⁾	bn. €	49.4	115.7	119.2
BI Mechanical Engineering ³⁾	Extra-EU	0 = neutral > 0 = advantage < 0 = disadvant.	12.6	27.8	19.8
RCA Mechanical Engineering ⁴⁾	Extra-EU		29.4	35.6	40.9

¹⁾ Production plus imports minus exports; ²⁾ Exports minus imports; ³⁾ Exports specialization: $\ln((X_{ij}/X_{it})/(X_{ir}/X_{tr}))$; ⁴⁾ Revealed Comparative Advantage: $\ln((X_{ij}/M_{ij})/(X_{ir}/M_{ir}))$; Explanations: X: Exports; M: Imports; ij: Mechanical engineering / EU27; ir: Total manufacturing/all competing countries.

Source: Eurostat; national statistical bureaus; Cambridge Econometrics; ifo Institute.

The presence on the export markets stimulated the growth of the markets outside the EU, the improvement of the trade balance of the sector increased from € 49.4 billion in 2000 to € 119.3 billion in 2010 (table 1). Exports grew at an average annual rate of 5.8%, while imports only increased by 2.3%. During the same period, the contribution of the exports of the machine-building industry to the total exports of processed products increased to 15%, despite the fact that the investment goods

industry was more severely affected than other sectors during the 2009 crisis.

On the international market, good results were compared to the big competitors United States of America and Japan. After the problems of 2009, this industry reached the level of gross value added (GVA) for the year 2000, while GVA in the US and Japan decreased by 35%, respectively 57% in 2010. Alone, China managed to keep up step with the EU (Figure I). The employment indicators of that period show that all developed countries suffered job losses (EU - 14%, US - 23% and Japan - 27%).

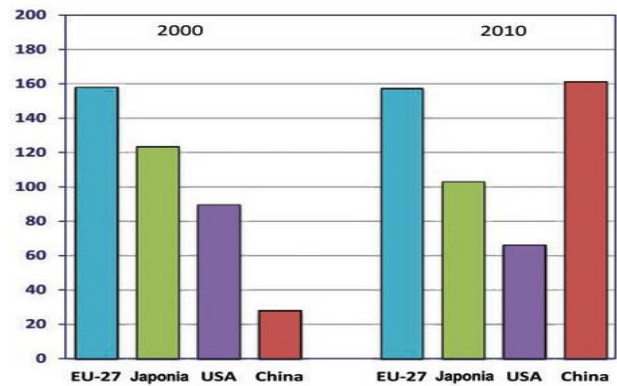


Figure 1. Gross value added [2]

Comparing the similar industries, we notice the deterioration of the price competitiveness in the machine building industry in Europe compared to the USA and Japan. The levels of labor costs are comparable between the EU, the USA and Japan, the productivity of labor in the EU has not had significant increases (fig. 2) [2].

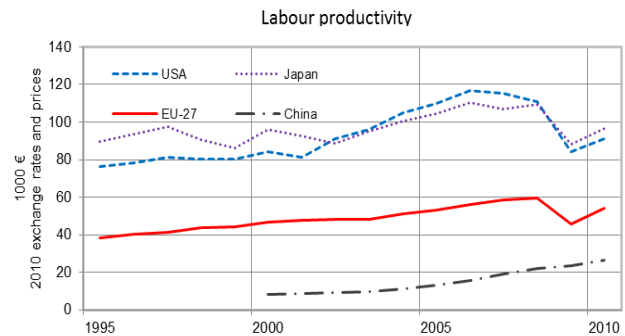


Figure 2. Labour productivity [2]

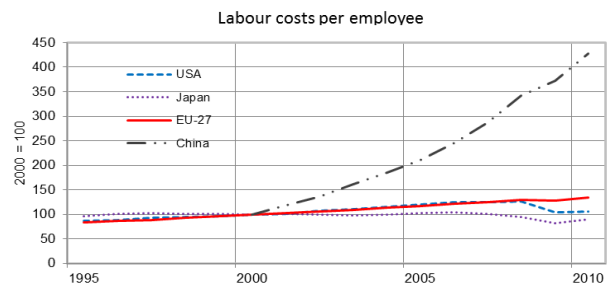


Figure 3. Labour costs per employee [2]

In order not to fail in the face of the new global challenges the car construction industry needs a consistent European strategy in terms of production, industrial.

The advance on the competitive market was due, according to the study, to the increase of exports to the developed states during the period 2000-2010. Thus, of the total imports into the car construction industry, those from the EU were: 34.2% in the US, 37.2% in China and 22% in Japan. In these states there is a commercial surplus due to a higher degree of specialization. The European machine-building industry is characterized by a division of sophisticated intra- and inter-industrial work, which encourages specialization.

Europe has performed as a world leader in high quality manufacturing technologies and end products through:

- the attention paid to the links with both the processing, electrical and electronic engineering industries, as well as with the client industries and their specific needs,

3. EXAMPLES OF GOOD PRACTICES FOR OBTAINING SCA THROUGH THE INTANGIBLE RESOURCES OF ORGANIZATIONS IN THE MACHINE BUILDING INDUSTRY.

An example of envy on the world market is the Siemens conglomerate, whose presence in top positions does not leave the competitors indifferent. Working in large areas, he has intense concerns with the development of the machine-building industry and advanced technologies, including unconventional ones, building his development strategies respecting the phrase "The essence of the strategy is to choose what not to do." [4] told us at the same time we are forgetting that a company's strategy depends on the market. It is a diversified company, being present in 5 main industries: Energy, Industry, Health, Consumer Products and Infrastructure and cities and still in 7 less important industries [5]. Siemens wants to create a broad portfolio, to satisfy every client along the spectrum. As they say: "We meet the needs of people with different interests, from different cultures, with different goals and requirements" [5,6].

Referring to raw materials, most of them are widely available, however, the company's internal technology is quite high, continuing to create products with high durability, for about 25 years [7], with a strong emphasis on quality, durability and productivity Demand remains high, buyers preferring to consider quality. The market on which it operates is characterized by a small number of suppliers and a small number of buyers, so Siemens

- vast industrial infrastructure,
- suppliers of high technology parts and components

The machine building industry is specific to the developed economies. The European machine-building industry is characterized by a division of sophisticated intra- and inter-industrial work, which encourages specialization.

Among the most popular approaches or strategic modalities in the machine building industry are: privatization, re-technology, redesign of the management system, diversification of production, assimilation of new products, computerization, entry into new markets, formation of joint ventures with a foreign partner, specialization in production, profiling and re-profiling the company, combining production, modernizing the organization, computerizing activities, etc. In all these aspects, the role and participation of intangible resources has become vital.

does not focus on costs, but rather on applicability, quality and service.

Applying the model of the five forces [8] that take into account the interaction between: the bargaining power of suppliers and customers, the threat of new entrants and substitute products and the rivalry within the industry, it is found that Siemens is active in the sectors in which the power of the buyers is relatively high. Not many competitors like Siemens, but rather a large group of customers, e.g. governments and other large companies. In contrast, the bargaining power of suppliers of raw materials and semi-finished goods is low. Moreover, because the technologies are sophisticated and the capital requirements for most industries are quite high, the conditions for participation are high. The danger of entering other companies is moderate, they are attracted by the huge profits but require huge capital to enter the market [9].

The very low bargaining power of suppliers is due to the substantial presence of suppliers of raw materials and semi-finished products [6,9].

The threat of substitutes is low to moderate, although there are traditional substitutes (oil, coal, steam and nuclear power) that could in fact represent a moderate to high threat. Government policies on renewable energy reduce the threat from low to moderate [6, 18].

The machine-building industry and advanced processing technologies are constantly present in Siemens products, especially in the renewable energy sector, a growing industry of over \$ 280 billion [10] and consists of hydro, wind, solar and

biomass energy. Here Siemens meets competitors like General Electric, Vesta and Chinese companies. The internal vision of Siemens is represented by resources and capabilities. The company is known for "gründlichkeit" (rigor) in Germany, for expensive products such as turbines. But there are also buyers who buy products from China. An important resource of Siemens is the allocation of a huge amount for research and development [11]. An important asset of Siemens is the transformation of the R&D budget into innovative products for growing markets. Siemens brand management has the reputation of being a dominant and global company. Using IT management systems alongside other systems and values, it ensures that the world thinks of quality when hearing the name Siemens. In addition, Siemens continues to refine procedures to remain on the market [5].

In addition, if Siemens is facing an economic downturn, it can generate cash through a sale and leaseback construction because it owns all the buildings and land [12].

Table 2.VRIO Siemens (Values, Rarity, Imitability and Organization)

Resource/ Capability	Valuable	Rare	Inimitability	Organized	Result
Gründlichkeit	Yes	No	No	No	Competitive parity
R&D	Yes	Yes	Yes	Yes	Sustained Competitive Advantage
Landowners	Yes	Yes	No	Yes	Temporary competitive advantage
Brand Management	Yes	Yes/No	Yes	Yes/No	Temporary / unexploited competitive advantage

Institutional environments can have three pressure points on organizations in the car manufacturing industry and implicitly Siemens: coercive, mimetic and normative. Constraints become positive through appropriate policy. Thus, interested governments can become big investors. The pressure of the camouflage forces is reduced as the copiers cannot reach the quality of the original. Normative forces refer to the quality of the highly professional workforce in the case of Siemens [13, 14]. In addition, Siemens invests a lot in training and re-education and in accepting new graduates who come up with new ideas.

For the management of explicit and tacit knowledge [15] Siemens has developed a complete knowledge program [16], which stores as much information about consumers, suppliers, markets, competitors and employees. The existing department of knowledge conducts various field studies, in order to know what others know. In this way, Siemens tries to expand and map explicit knowledge [16, 17], tries

to make explicit tacit knowledge, by writing long procedures and manuals, focusing on groups and brainstorming sessions, both indoors. , knowing the important tacit knowledge outside the company [16].

Conclusions

Siemens addresses a differentiation strategy in accordance with the three generic strategies, pursuing a pure differentiation of the industries in which it evolves, has reduced the barriers of entry, the machine building industry performing with advanced and unconventional processing technologies. Is recommended:

- extending the control and increasing the attention of the organization, to react faster to changes in the market or to make the business units autonomous.
- renouncing unprofitable segments

4. CONCLUSIONS

The machine building industry is one of the most important industrial branches of the world. The volume and structure of this branch constitute the most obvious index in characterizing the industrial power of a country. The active role played throughout the economy is evidenced by the support provided by its products. It influences the development of other industrial sectors and contributes to the essential modification of the structure of the national economy or of particular regions. The car manufacturing industry has the largest share of industrial production in developed countries (30-45%), it comprises 30% of the workforce involved in industry worldwide.

Companies in the machine building industry are successful and maintain their leadership positions by giving priority to unconventional technologies and building modern, efficient organizational cultures based on:

- mechanisms for control and prevention against mistakes, encouraging evolution.
- dynamic internal organization the objectives and expected results define the roles of the employees, their ability and skill.
- ways of communication in both directions (from top to bottom and from bottom to top), so that the creative potential of the employees and the optimization ideas can be known and used
- grabbing and retaining creative geniuses and efficient and dedicated employees, encouraging talents.

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