Competitiveness: A match between value drivers and competencies in the Hungarian automotive supply chain

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Abstract

The focal question of the Hungarian economy is how competitive its firms are and as a consequence of this to what extent they are able to join European or even global supply chains. This paper also deals with this focal question and presents a general model of competitiveness. The model presented is a useful instrument for analyzing the internal structure of firm competitiveness and for making in depth inquires concerning its concrete sources. In the centre of interest lays the automotive supply chain especially those small and medium enterprises that have already joined it as second or third tire suppliers. The paper is a summary of my PhD dissertation's research plan. It is based on one hand on literature review on the other hand on the results of a research program made at the Budapest University of Economics and Public Administration. This research program has been conducted in 2003 and had the following title: Company strategy and its effect on supply chain management tools. This research program was qualitative in nature and contained 20 interviews with company managers from all type of member firms along the supply chain: original equipment manufacturers (OEM), first and second tire supplier firms. Although the basic question of this research was not the same as that of this paper I could use the interviews made as a useful asset for refining my conception and hypothesizes.

The choice of global automotive supply chain can be justified by the fact that the automotive industry has shown a very intensive development in Hungary and the neighbour countries. The latest investment decisions made by both the big global OEM's and their integrators prove that this development will continue. The automotive industry has been and probably also will be a determinant factor in the economic development of Hungary.

Keywords: supply chain, competitiveness, automotive industry, value dimensions, capabilities

Introduction

During the last one and a half decade the structure of Hungarian economy has significantly changed. Big multinational companies of the automotive supply chains settled down and opened the possibility for small and medium sized Hungarian firms to join them. Before, under the period of centrally planned economy Hungary had no car manufacturing capacity, although due to the division of labour among the socialist countries Hungarian firms were active in bus production. After 1989-1990 new possibilities has been opened for companies active in vehicle manufacturing to get new orders, build new partnerships and raise their own competitiveness in order to be able to match the global requirement of automotive supply chains. Some of the potential supplier firms could succeed, but a major part of them not. My PhD research program aims at investigating the causes of this success or failure. First I define firm competitiveness and describe its two basic elements: customer value and firm capabilities. I am interested in two basic questions: (1) what are the main sets of customer value dimensions along the automotive supply chains and (2) what combination of supplier firm capabilities has to be developed in order to create these value dimensions. Identifying the competitive sets of value dimensions and the capabilities necessary to create them can help supplier firms to see their development and growth opportunities.

The concept of firm competitiveness and its components

I use the definition of firm competitiveness given by Chikán (2001): Firm competitiveness is the basic capability of perceiving changes in both the external

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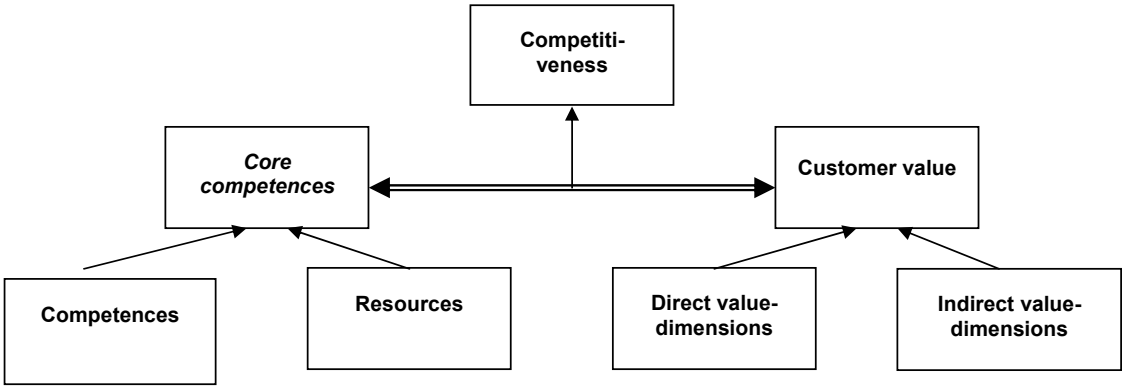
and internal environment and the capability of adapting to these changes in a way that the profit flow generated guarantees the long term operation of the firm. This definition - in accordance with the contingency approach and the evolutionary theory of firms – interprets competitiveness as an ongoing struggle for survival. This capability of survival is one of the most complex phenomena of company's operation.

Firm competitiveness is basically a function of two factors. First, it is determined by the extent a company can identify those value dimensions that are important for their customers. These are the main characteristics of the firm's complex product and service package a customer expects and respects. On the long run a company can be competitive only when it is able to create value for their customers and as a consequence contribute to their competitiveness as well. These value dimensions are the aspects of supplier selection.

The second factor of firm competitiveness is the sum of resources and capabilities that makes a firm able (capable) to create and deliver the identified important value dimensions for the customer. A company can possess a very wide range of resources and capabilities. Those subsets of resources and capabilities have the biggest importance which is fundamental to the firm's performance. Hamel and Prahalad (1993) call these core competences. In Figure 1 the described internal structure of competitiveness is shown.

Figure 1: The two basic components of firm competitiveness (Gelei, 2004)



In the following the two basic elements of firm competitiveness are investigated further. While doing this I discuss some theoretical questions, but the main emphasis is on discovering the concrete value dimensions and the needed core capabilities of suppliers in the automotive supply chain.

Value dimensions in the Hungarian automotive supply chain

A company is competitive when it is able to create and deliver value for its customers. Value is created for the customer when the revenue received from a supplier exceeds the total ownership costs of the product and service package of the given supplier (Chikán – Demeter, 1999).This is a very broad definition that needs to be further detailed. Definition of customer value can be decomposed with the help of *value drivers*. Value drivers are things that are important to customers adding significant value to them (Walters, 2002). Value drivers are building blocks of the complex term value. There are several approaches to describe the content of value and reveal its internal elements. I present here four approaches that are to some extent similar, but in other aspects complementary in nature. These are as follows:

1. Sources of competitiveness (Chikán – Demeter, ed.; 1999);
2. Value dimensions on the transaction, partnership and network level (Mandják– Durrieu, 2000);
3. Direct and indirect value dimensions (Walter et al., 2001);
4. Efficiency, effectiveness and network dimensions of customer value (Möller – Törrönen, 2003).

Literature uses the term *sources of competitiveness* ***(Chikán – Demeter, 1999)*** synonymous to value drivers and usually lists those elements that are useful when capturing the different aspects of customer value. The most often used elements are as follows: price, quality conformance, flexibility, reliability and connected services. These are important value drivers (some authors use the term value dimensions) but some others are missing from this classical list.

As ***Mandják and Durieu (2000)*** point out one can distinguish among several types of value drivers. They distinguish among value drivers on transaction, partnership and network level. The first two types of value drivers are common in nature, because they are the direct consequence of the cooperation between two partners. But they also differ from each other because the time dimension of their creation is different: (1) *Transaction based value drivers* are created in the short run, during the concrete transactions between the partners. These embrace the characteristics of the concrete product and service package of that transaction (Ravald – Grönroos, 1996) and as a consequence are identical with the traditional elements of competitiveness describer above. (2) *Value drivers on the partnership level* are those elements of customer value that can be created only on the long run, after having appropriate number of transactions between partners. (3) *Value drivers on the network level* differ from the previous two because they are the indirect consequence of cooperation between two partners. The source of these value drivers can be found in the given cooperation but the realization of the value necessitates the participation of additional network members.

When looking at business relationships one can distinguish between direct- and indirect business functions (Anderson – Håkansson – Johanson, 1994; Ford at al., 1998). Direct functions describe the immediate cost-and-revenue effects of a supplier relationship for the customer. Indirect functions are more difficult to ascertain, because their impact is realized through linking of the supplier - customer dyad to other actors. ***Walter et al. (2001)*** used this dichotomy for identifying value drivers (they use the term value functions) in a business relationship from the supplier's perspective:

(i) *Direct-value functions* of customer:

- *Profit function*: refers to the relative direct revenue from a customer.
- *Volume function*: refers to the volume of business generated by a customer
- *Safeguard function*: refers to the possibility of guaranteeing a level of business and revenue through contractual arrangements with specific customer.

(ii) *Indirect-value functions* of customer:

- *Innovation function*: refers to the possibility of product and process innovation with a particular customer.
- *Market function*: refers to the possibility of accusing new customers/distributors through the reference impact of a particular customer.
- *Scout function*: refers to the market and other information that can be acquired from the working environment through a particular customer.
- *Access function*: refers to gaining access to relevant other actors in the working environment through a particular customer.

Walter et al. has determined the innovation function as indirect. This interpretation means that the realization of innovation - and its value - is a function of not only two cooperative partners but of other connected network members too. According to the experience of interviews made with the automotive suppliers this description is relevant for the *strategic innovations*, which represent significant progress in product or technology. This description on the other hand is not relevant for those *incremental innovations*, that represent a slow progress usually achieved with the cooperation of the customer and its supplier firm. This type of innovation is very important in the automotive industry and belongs to the group of direct value functions.

Walter et al. have identified the value functions from the perspective of suppliers. ***Möller and Törrönen (2003)*** expanded the validity of this classification. They argued that these value functions can be also discovered, when investigating the value functions of supplier firms. They further distinguish between *effectiveness and efficiency functions*. Effectiveness value functions refer to the suppliers

ability to invent and produce solutions that provide more value to customers than existing offers. Efficiency value functions refer to the ability of supplier to develop internal processes, operations and make possible to gain considerable efficiency gains for the cooperative partners. According to this Möller and Törrönen classify supplier's value functions as shown in Figure 2.

In Table 1 one can see a summary of the presented approaches and their relation to each other.

Table1 summarizes the different value drivers, value functions and shows their relationships to each other. Table 2 contains those value drivers of supplier firms that could have been identified in the Hungarian automotive industry. These results are based on the interviews made in the mentioned research program.

Figure 2: Classification of value drivers (functions) of suppliers (Möller – Törrönen, 2003)

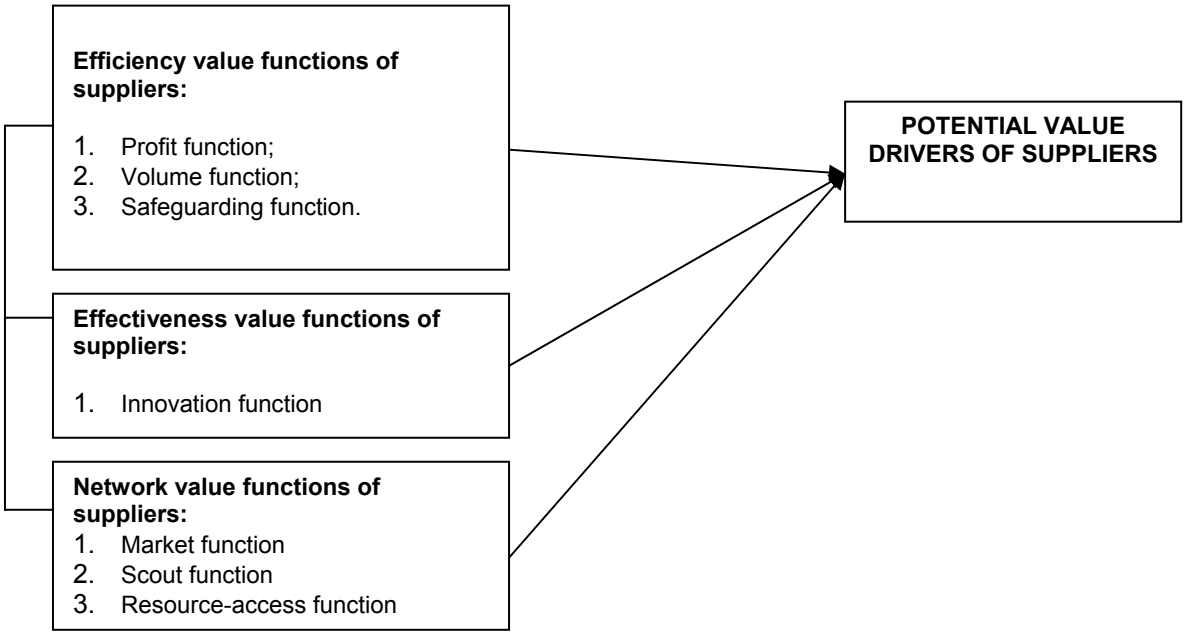


Table 1: Different approaches of supplier firm's value drivers – a comparison (Gelei – Nagy, 2004)

Level of value drivers (Mandják–Durrieu, 2000):	Different interpretation of concrete value drivers			Character of value drivers (Walter et al., 2001)
	Chikán – Demeter, ed., 1999	Möller – Törrönen, 2003	Walter et al., 2001	
Transaction	Price	Efficiency	Profit function Volume function Safeguarding function	Direct
	Quality (conformance)			
	Reliability			
	Connected services	Effectiveness		
	Flexibility			
Partnership			*Innovation function[1] (incremental)*	
Network			Innovation function (strategic) Market function Scout function Resource-access function	Indirect

Table 2: Value drivers of supplier firms in the Hungarian automotive industry (Gelei – Nagy, 2004)

Level of value driver	Character of value driver	Groups of value driver	Concrete value drivers
Transaction	Direct	Efficiency	**Price**
			Quality (conformance)
			Reliability of service level
			Volume function
			Safeguarding function
		Effectiveness	**Connected services**
			Flexibility
Partnership			**Incremental innovation function**
Network	Indirect		**Strategic innovation function**
			Scout function
			Resource-access function

Core competencies in the supply chain of the Hungarian automotive supply chain

Competencies, capabilities of supplier firms in the automotive supply chain have been described variously. ***Simon***'s typology of the supplier firms ***(1989)*** distinguishes between *capacity (or process) based* and *product based suppliers*. Capacity based suppliers sell their capacity on market. With other words they sell their ability to produce products with given specifications. Product based supplier firms have internally developed own products, that they also can produce of course. The difference between the two type of suppliers are made based on their relation to the product produced: whom the design of this product belongs to and who is responsible for it. Two supplier producing the same product may belong to different types. The one having developed the product belongs to the product based type of suppliers. The other one producing on the basis of specifications given from outside belongs to the capacity based type. It is also possible that a firm with wider product range belongs to both types at the same time.

Haffmans and van Weele (2003) add a third type of supplier to Simon's typology: the *module or system based suppliers*. The development of this type of supplies is due to the changes taking place in the structure of automotive supply chains. During ther last decade OEM have been focused on core activities (such as design, motor production etc.) and outsourced all other activities. The intensive outsourcing efforts have led to the increased number of supplier firms an OEM has to manage cooperation with. This has enhanced the task of coordination considerably. In order to simplify the internal structure of the supply chain and the coordination the so called firs tire suppliers are asked to deliver complete units instead of single components. First tire (or module) suppliers represent a link between OEM's and second tire suppliers reducing the number of relations among them and simplifying the management of the whole supply chain.

Haffmans and van Weele describe the main activities of the three defined supplier types. These are the following:

- Capacity (or process) based suppliers: offering specialized production capacity to process materials according to customer specification;
- Product based suppliers: supplying one's owns parts – developing, producing and marketing parts or products;

- Module or system based suppliers: coordinating suppliers - purchasing and sales with all logistics actions and composing the most suitable parts into modules.

Müller-Stewens and Gocke (1995) uses the same typology. While describing the different type of suppliers in the automotive industry they take a capability approach and describe the following core competencies of supplier firms:

1) Production capacity;
2) Innovations competences;
3) System competence: coordination, montage and logistics competences.

According to the experiences made during the normative research program the typologies found in the literature can further developed. As already mentioned the innovation activity made by suppliers can be twofold: Strategic innovations are those, when a supplier is able to develop its own product and sell it to customers. A number of suppliers carry out this type of innovations. Others carry out the so called incremental innovation that means continuous adaptation to the changing needs of the customer. Adaptive innovators usually start as capacity based suppliers. While producing products to the given specifications these suppliers may develop substantial knowledge concerning both product and production technology and are able to make significant step by step innovations. These *adaptive suppliers* represent a fourth type of the classification. Table 3 shows the different approaches in classifying supplier firms in the automotive supply chain.

Table 3: Different approaches in classifying supplier firms in the automotive supply chain (Gelei, 2004)

Author	**Type 1**	**Type 2**	**Type 3**	**Type 4**
Simon, 1989	Capacity based			Product based
Haffmans and van Weele (2003)	Capacity based	Module or system based suppliers		Product based
Müller-Stewens and Gocke (1995)	Production competence	System-competence		Innovation competence
This paper	***Capacity based***	***System based***	***Adaptivity based***	***Innovation based***

In this paper I have presented a model of firm competitiveness and analyzed the two basic element of it: value dimensions and competencies. While discussing these issues I focused on supplier firms of the Hungarian automotive industry. I tried to discover those concrete value drivers that are relevant for Hungarian suppliers. I also tried to capture the core competencies of suppliers that make them capable to deliver these value dimensions. The next question to be investigated is what type of concrete resources and capabilities construct the core competencies identified. This is from both strategic and operational perspective very important since having an understanding of the internal structure of core competences is necessary to make reasonable decisions concerning further investment and development. Answering this question needs additional research. In the following I summarized my hypotheses (Table 4).

Conclusion

Supplier types defined in this paper represent different sets of customer value dimensions and capabilities coherent with them. Naturally a concrete firm can combine different identified types in its operation. My PhD work aims at testing these hypotheses concerning both the existence of the different types of suppliers and their internal customer value - necessary capabilities structure. I hope that the results of this research program will lead to useful results from practical and also theoretical point of view.

Table 4: Type of suppliers and their specific characteristics

Type of suppliers	**Capacity based**	**System based**	**Adaptivity based**	**Innovation based**
Product – service offering	Capacity	Supplier network	Product and technology knowledge	Innovation
Main value drivers	Price, Volume, Quality, Reliability, Flexibility, Safeguards, Connected services	Scout and resource-access dimension	Incremental innovation	Strategic innovation
Core competences	Production	System competence: coordination and logistics competences	Incremental innovation	Strategic innovation competence
Main resources	Cheap labor, technology	Highly trained and experienced buyers, Information system	Highly trained labor	Highly trained R+D employee and R+D technology
Main capabilities	Smooth material flow Effective technology application	Effective supplier base management Good coordination and problem solving capabilities	Good interpretation of customer expectation, effective and flexible production capability	Good interpretation of market and technology development trend and ability to develop and maintain strategic partnerships
Type of partnership	Short run market transaction	Medium run cooperation	Medium run cooperation	Long run strategic partnerships
Power	Increasing			

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