ENSURING COMPETITIVE ADVANTAGE IN SMES IN THE CONSTRUCTION INDUSTRY IN ROMANIA THROUGH TECHNOLOGICAL INNOVATION

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Abstract: During the current construction firms operating in a competitive environment internally and externally powerful. Confrontation between markets is particularly harsh, and that competition should be seen in its actual size, since only in this way will be able to take all necessary measures to ensure security and development of firms. To remain competitive in a globalized economy, it is essential for firms to invest in research, development and innovation. This is the best strategy to overcome the crisis. This paper describes some important links between the competitive advantage and technological innovation. I will focus not on specific technologies or how to drive research and development, but the means to recognize and exploit the competitive significance that involves technological innovation.

JEL classification: M10, M21, O32

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1. INTRODUCTION

Competitive advantage is central point to the performance of a firm on competitive markets. But after several decades of vigorous expansion and prosperity, many companies have lost sight of competitive advantage in their struggle for growth and diversification. Today, the importance of competitive advantage can hardly be underestimated.

By assign achieve competitive advantage by a firm of superior products or services from a consumer point of view significantly compared to similar offerings of most competitors (Nicolescu, Verboncu, 1999).

SMEs in the construction industry in Romania is facing slower growth and competitive pressure forces them to seek permanent solutions that allow a better market position, a policy that is the essential condition for the existence of the company.

Beginning with the second half of 2008, on background of crisis, the construction industry was also strongly affected by changes. Managers in construction and real estate market players look with prudence and concern the future also, they are have revised growth forecasts for the coming years.

It is clear to everyone that has slowed the growth of construction sector and the continuing downturn in 2011.

Therefore, to survive in the marketplace and resist to competing firms, construction companies must have at one stage to another more strategic action, improve or adapt their strategy to start.

Consider that technological innovation is one of the main driving forces of competition. It is also a great equalizing factor, eroding the competitive advantage of firms even better fortified and propelling them to others. Many large companies today have developed through technological innovations that have been able to exploit them. Of all the things that can change the rules of competition, technological innovation are among the most prominent.

Innovation can be achieved by converting new knowledge into economic and social benefits as a result of complex interactions between multiple actors within a system consisting of an environment (local, national, regional) that contains companies, institutes research funders, and networks that they all come into contact.

Any business requires a large number of technologies. Everything that a business requires a certain type of technology, even if it seemed that one or more of the dominant technologies or production process. A technology is important for competition only if significantly affect the advantage of firm or sector structure.

2. ANALYSIS OF THE COMPETITIVE ADVANTAGES OF SMES IN THE CONSTRUCTION INDUSTRY

Given that the competitive advantage that firms and create it for the market makes a decisive performance and their functionality is particularly important in highlighting the main competitive advantages that the makers of SMEs have to believe that their competition. According to survey results (Nicolescu, 2010), 51.45% of entrepreneurs indicated as competitive advantage-value ratio, 49.09% - Quality of products / services; 31.78% - the lower price of products / services; 17.10% - quality employees, 9.76% - company reputation, 6.67% - the distribution channels used, 5.45% - after-sales services to customers; 3.43% - the quality management practices; 2.36% - relations with the political environment and economically, and only 1.82% indicated that the main competitive advantage in innovation.

It appears that most SMEs are oriented differentiation through quality of products / services provided and / or to their marketing at prices more affordable for customers. But lately, have appeared more and more external factors that require innovation like: the urgent need to develop or even maintain market position of the firm, market demand to diversify production, competition, the obligation to align at regulations required by government, legislation, social demands. Therefore we must pay special attention innovation, most notably technology, which has an important role in developing the productive forces of society and gain competitive advantage.

Analyzing SMEs, on activity sector shows the following (see Table 1):

- regarding the relationship between price and quality of products / services provided, the highest percentage is recorded for transport companies (62.34%) and lowest by construction enterprises (43.96%);

- competitiveness, generated by distribution channels used, was recorded in highest proportion of firms operating in the construction industry (8.79%);

- the highest percentage on the competitive advantage of after-sales service is registered in construction businesses (6.59%) and lowest by transport companies (1.30%);

- quality of employees has been shown in higher proportion in the service companies (22.54%) and lower in construction companies (6.59%);

- relationships with political and economic environment represent a competitive advantage in a bigger measure for construction companies (4.40%) and lowest for those in transport (1.30%);

- if we consider the company's reputation, is observed a higher percentage for companies in the construction sector (12.09%) and smaller for firms in carriers sector (5.19%).

Table 1. Differentiation of competitive advantage of SMEs by field of activity

Competitive Advantage	SME-s by activity sectors (%)					
	Industry	Constructions	Trade	Tourism	Transport	Services
The low price of products/ services	30.27	26.37	35.01	42.02	32.47	24.76
Quality of products/ services	48.66	51.65	48.85	37.82	61.04	51.75
Price-quality **ratio**	49.04	43.96	51.78	52.94	62.34	49.21
Distribution channels used	6.51	8.79	5.87	7.56	1.30	4.76
Post-sales **customer services**	6.13	6.59	6.50	2.52	1.30	5.08
Quality of employees	8.81	6.59	15.51	20.17	12.99	22.54
Relationship with political and economic environment	1.53	4.40	1.47	1.68	1.30	2.54
Quality of applied management	6.51	3.30	2.31	3.36	3.90	3.81
Company reputation	10.34	12.09	8.18	5.88	5.19	9.52
Innovation capacity	2.68	1.10	1.26	0.00	0.00	3.81

Source: White Book on SMEs in Romania 2010

As shown in Table 1, the lowest percentage in terms of competitive advantage to companies in the construction sector it is innovation that represents a rate of 1.10%. But, I consider that in this difficult period, having a competitive advantage based on technological innovation by firms in the constructions sector is an important trump.

3. MOTIVATION OF TECHNOLOGICAL INNOVATION IN CONSTRUCTION INDUSTRIES

SMEs in the construction industry in Romania are facing competition from increasingly powerful and are therefore forced to try all possible alternatives in order to surpass the competition and gain a market advantage.

In my opinion, the main source for obtaining competitive advantage is technological innovation. This is the way to reduce labor costs, energy costs and raw materials. Do not forget that the differentiation strategy is based, practically always, by an element of innovation.

In the construction sector the main motivations of innovation in this field are of great importance, as follows:

• *introduce new technical regulations* (Leonardo Da Vinci-Proiect pilot RO/98/2/06169/PI/11C/FPC, 2000) and product requirements in November referred to, which translates into an urgent requirement to improve performance products aimed at that the level of stringency required.

Harmonization of regulations is done mainly through two ways: European standards and European technical approvals respectively.

Their application brings that work to improve performance of products for the new requirements will be met.

Between technical regulations followed by technological innovations can be listed those on energy conservation, pollution, fire protection, security facilities etc.

• *Computer technology* offers a huge potential to deal effectively and timely to the large amount of information that is used to deal effectively and timely to the large amount of information is used and is produced in a construction project, the planning and design stage to the construction and maintenance during use, and the resultant structure. The organization, format and presentation of such material are changing along with the widespread use and further development of digital information quickly replacing the traditional method of collecting records, plans and documentation on paper.

Thus, software packages offer the possibility to increase the speed, efficiency and accuracy of work. Applications in modern electronics and information technology have progressed and expanded continuously in all sectors of the construction industry. International tests aimed at developing ways to improve the circulation of information in the construction and to make proposals for the organization, management and use of all relevant information in this area.

• *The attitude of manufacturers of materials and technical means.* Their objective is to increase or even to preserve their share of a market and, if possible, to "conquer" new markets. To meet this requirement the manufacturer needs to increase productivity while reducing the cost and improve performance. In this context, technological innovation is a consequence of their struggle for survival in the field of competition and not to create a competitive advantage in the death of the entire construction sector. Manufacturers are oriented primarily on internal resources for technology development.

• *Application of new technologies in construction.* Among the major objectives of European construction in the area include research and development through work-development a foundation to encourage scientific and technological: transnational coordination and cooperation, creating a system to share complementary skills, the application of technological innovations leading to division technological risk.

Robotic construction has other characteristics than the industry primarily because it introduces predominant improving of working conditions and then only to increase productivity.

Intelligent building provides an environment sensitive, efficient and friendly with the organization can achieve business goals. Space and technology company are building tools that contribute to it. Intelligent buildings market is growing by passing through three stages of integration and from a collection of innovative technologies:

- building automation as is the integration of communications systems and automation of business administration;

- integrated communication with the computer, in which all communication systems and automation of business administration;

- building integrated with the computer, where all systems are fully integrated into a unified whole;

- complex architectural requirements. The concept of innovation for an architect has a different meaning than an engineer or a construction products

manufacturer. He takes on the relationship between old and new buildings as well as the conversion of existing buildings by optimizing the junction assemblies (Leonardo Da Vinci-Proiect pilot RO/98/2/06169/PI/11C/FPC, 2000).

A feature arising from imposing historical and ecological criteria, the latter having implications for inter alia the type of construction materials to be used. This creates the ban on some materials: aluminum, plastics are not biodegradable, some timber, etc.

Architects must take into account their creative design, inter alia, by:

•integrating the planning, volumetric, typology;

•construction qualities: durability, performance, price / quality ratio;

•quality of space (environment, costs, maintenance, volumes, aesthetics).

4. TECHNOLOGICAL INNOVATION – THE SOURCE OF COMPETITIVE ADVANTAGE

The eternal struggle competitive activity in any sector or industry is a competition for the benefits. Firms aim to create and maintain strategic advantage is achieved. For this, the strategy of SMEs in the construction industry should move towards creating new advantages, leading to increased customer satisfaction and the asymmetry of competitors. Doing so, may extend the advantage, simultaneous with reducing or eliminating the benefits for competitors.

The investigations carried out, I found that the success of SMEs in the global economy today is due to their innovative capacity and the flexibility they exhibit permanently.

Although investment in innovation is risky SMEs in the construction industry in Romania are willing to risk much dreaming to get a higher rate of profitability. So many businessmen and managers have increasingly begun to apply the concept of "risk and reward". Risks materialize later in the development of markets by introducing new products or improved products, improved organizational processes and business-specific technology. Obviously most advantaged firms are at the forefront of technical progress, which have become a technological advance that allows them to obtain as price or who fail to make products demanded by the market, but competition is unable to realize. Technical progress is one of the main drivers of competition. And the company uses technical progress to increase its competitiveness.

Construction companies in Romania are facing competition from increasingly powerful and are therefore forced to engage in an effort to adapt, restructure or innovation to improve especially the cost and quality.

Initiated by a firm technological innovation will lead to sustainable competitive advantage in the following conditions (Porter, 2001):

• technological innovation itself reduces cost or enhances differentiation, and the company's technological leadership is sustainable. A technological change increases the competitive advantage if it leads to lower costs or differentiation and may be protected against imitation.

• technological change driving forces moving cost or uniqueness in favor of the company. Change the value a business technology, product or change in ways that affect the value of an activity can influence the forces driving the cost or uniqueness of the activity. Therefore, even if technological change is imitated, it will lead to a competitive advantage for the company if the driving forces pushing the cost to operate the company's favor. For example, a new assembly process is more sensitive to scale

effects than the previous process will be beneficial to companies with large market share which places it first, even if competitors eventually come to adopt the technology.

• Introduce as a developer of technological change translates into valuable and innovative First, in addition to those inherent in the technology introduced. Even if an innovation is imitated, as originator introduction may lead to a variety of innovative first possible specific advantages in terms of cost or differentiation, which remain after the technological advance of the initiator disappeared.

• Technological change improves overall industry structure. A technological change likely to improve overall industry structure is appropriate even when it can be easily copied.

Technological innovation can be: the effect of destroying radical accumulation of experience and improvement (without complete change of technology).

When asked whether it is better to seek an emerging technology or to improve a mature technology is not easily answered. Emerging technologies are most promising and research productivity is very high in their case. The major risk is the uncertainty as to their actual performance. Psychologically, it is hard to break up a technology that is well known that for years in a row, you got good results. Sometimes, the technology "old" back dramatically. To be fully involved in the acquisition of technology and competitive advantage, a company must first know exactly what technology is and especially how they respond to the objectives which it has proposed.

Technological innovation must take into account a number of factors considered successful Figure 1 each have their importance.

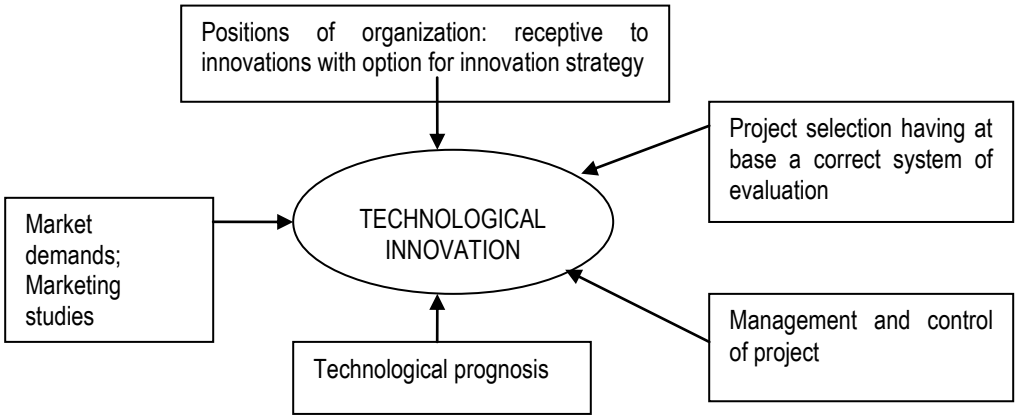

Figure 1. The success factors for technological innovation

Source: Leonardo Da Vinci Pilot Project RO/98/2/06169/PI/11C/FPC, 2000

I consider necessary to develop two of these factors that often are not given due attention: "Marine Technology" deals with the evolution of technologies and products.

Such technological forecasting: detecting requirements, pressures, capacities, results, integrating them in terms of need, indicating the likely level of financial support for certain research and development programs, made possible innovations forecast the shape and time scale.

Technological forecasting techniques can be technical "operation" based on an extension of the past through the present into the future. They start at the present moment, taking into account the dynamics of progress that brought us the current

position and look forward. Another technique is the "standardization" that starts from the future.

The degree of detail, time horizon, nature of the decision, the cost are some of the factors affecting the choice survey forecasting.

"Project selection" requires using a valuation technique that usually involves either a checklist of assessment criteria to be developed on: strategic objectives, political and corporate values, criteria related to marketing, research and development criteria, criteria financial criteria of production, or a system based on performance indices in which each factor is given a share - according to its importance, and each level of assessment is given a value.

I think that an enterprise to cope with very rapid changes facing must follow everything that could interest or affect it. Currently, the amount of information facing the firm is enormous, both in size in absolute terms and as diversity or number of points where it can and should be harvested.

It is a interest list for several actions to overcome any obstacles in the way of innovation: technological development perspective, the research priority orientation towards innovation, development of initial and continuous training, fostering student and research, facilitating awareness of the beneficial effects of innovation, improve innovation financing, installation of favorable taxation policy innovation, intellectual property and industrial promotion, simplification of administration in a legal and regulatory environment favorable.

5. CONCLUSIONS

It is important to identifying opportunities generated by the current period of crisis: rethinking management system, business development or shift to more profitable areas of activity, gaining advantages as a result of weaker competition and lower prices of equipment or raw materials, access funding programs, preferably with external funds, so to be achieved that infusion much needed of capital so necessary today.

These are some of the existing real ways in which the Romanian society even in a slower rhythm can effectively mitigate the impact of the current economic crisis.

It should be noted that ensuring competitive advantage for SMEs in the construction industry in Romania through technological innovation is useful, only if have affect on competitors. Not every innovation is strategically beneficial, sometimes innovation worsening the competitive position of business. High technology does not guarantee profitability. Indeed, many high-tech industries are less profitable than some branches „with inferior technology" because of their unfavorable structure.

Any company may be able to anticipate change and innovate at time to qualify for competitive advantage. However, there will always be uncertainty when we have in sight the technology. The uncertainty about future technological developments is one of the main reasons that cause a company to use evolution scenarios at sartorial level, when they consider strategic options.

Do not forget that an innovation that enhances a competitive advantage of a company, can reach, eventually, to undermine the structure of sector, when innovation is imitated by other competitors.

Sitting technological innovation to the rank of main resource in construction firm, which is adopting as strategy, it will succeed in creating an overall advantage over competitors by increasing the competence, requires implicitly to increased cooperation

between universities, research centers and companies because this is one of the main ways of access to new technology.

The conclusion is that good economic results are obtained only if the activities related to new technology are launched at opportune moment.

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