Industrial construction competitiveness. Venezuelan case study

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ABSTRACT

Current global challenges force individuals, companies and countries to reach the best performance levels in order to find and exceed the results planned accordingly for each need. Competitiveness is a mechanism to measure performance, it serves as a benchmark to evaluate what sort of problems are presented to individuals, states and companies and the solutions that can be completed to achieve better results. As construction is one of the most important activities worldwide because of the jobs and revenue it generates, it is essential to identify factors that may help to improve its results. Therefore, this research, conducted through document review and field work in Venezuela's industrial construction company assesses factors affecting the competitive performance of the case study and country in general, understanding that similar problems may have a significant impact on other developing nations. Finally, some strategies are proposed to improve competitiveness and favor sustainable development. Among them competitive policy development, knowledge management, cultural changes and coordinated work between states, individuals, universities and companies.

Keywords: Construction, competitiveness, Venezuela, knowledge management

1. INTRODUCTION

Since the origin of mankind, humans have demonstrated their ability to identify opportunities for better living conditions and transform these opportunities into reality. This capacity gives individuals and organizations the strength to fight, survive and improve. On the same path, today´s challenges force individuals and companies to improve their performance levels as a mechanism to achieve better living conditions and a coherent economic and social development. In such circumstances it is very frequent - especially on academic environments - to face discussions about productivity, competitiveness, entrepreneurship, performance improvement, sustainable development, recycling, sustainable construction, knowledge management and so forth.

This long term and global vision is so valuable that the European Union formulated the goal to become the world's most competitive and dynamic economy based on knowledge, capable to reach sustainable economic growth with more and better jobs and greater social cohesion. (Comisión de las comunicades Europeas, 2003).

However, even with global references and examples existing on international markets, there are still some environments where everyday topics are far from the pursuit of such objectives, especially for some under development countries.

The Venezuelan case, actually notorious because of the differing opinions that analyze national socio-economic performance is one that, contrary to global trends, evidences signs of weakening of its own productive sector, which results alarming given the importance of the basic industries of oil, petrochemical, iron and aluminum as generators of the main country incomes.

Considering the countries need for long term vision and achievement of top performance levels from the different productive sectors, the government as well as the public and private sectors must evaluate what really happens with Venezuelan competitive performance. Is the country actually having an industrial performance not consistent with its potential? Are there indicators for country construction, commercial or industrial sectors that present a

behavior contrary to global trends? If so, what are the limitations that prevent its own actors to develop the maximum potential of the country? How can current trends be changed? How can the countries potential be developed?

Since the solutions must be found looking at the origin of the problem, this research proposes a first attempt to identify some of the main constraints that limit the competitive performance of Venezuelan industry and their impact over productive indicators, in order to create a foundation supporting knowledge so that in the future this can lead the creation of strategies oriented to improve its results. This research is performed through a documental revision and a case study from the construction sector for oil and petrochemical industries.

2. VENEZUELAN COMPETITIVE PERFORMANCE

To talk about competitive performance requires to highlight the importance of competitiveness as basic element that can support companies' survival and success in today's world. Competitiveness, together with innovation, knowledge management, creativity, sustainable development, the preservation of nature, the ecosystem balance and the development of corporate social responsibility, add value to existing processes, develop potential and generate greater prosperity, wealth and employment. (Comisión de las comunidades Europeas, 2003).

The definition of competitiveness is associated with the events and policies that determine the ability to build and preserve an evironment that facilitates the creation of greater value to organizations and prosperity for citizens (Garelli, 2003). The World economic Forum (2010) define it as "The group of institutions, policies and factors that determine the level of productivity of a country".

Understanding that academia present different criteria about its importance and measurement, it is indisputable that competitiveness provides references needed to evaluate the factors that restrict the improvement of performance indicators, which is particularly important for under development countries, Venezuela among them.

To compare competitive performance, the World Economic Forum measures the elements described on Table 1.

Table 1: The 12 pillars of competitiveness

Basic Requirements
Institutions
Infrastructure
Macroeconomic stability
Health and Primary education
Efficiency enhancers
Higher education and training
Goods market efficiency
Labor market efficiency
Financial market sophistication
Technological readiness
Market Size
Innovation and sophistication factors
Business sophistication
Innovation

Source: The global competitiveness report 2008-2009

Due to the lack or accuracy of official recent statistics it is not easy to evaluate Venezuelan competitive performance in reference to such pillars. Despite that limitation, following there are some elements that present a view of country competitive behavior.

2.1 GENERAL COUNTRY PERFORMANCE. SOME REFERENCES

Explaining countries productive performance must begin by talking about its potential. It's indisputable that Venezuela is one of the largest exporters of crude oil worldwide. In 2007 it occupied the 7th place as a global exporter. Additionally it has one of the largest reserves of oil and natural gas in the world. (EIA, 2009).

The oil and petrochemical sector is recognized as strategic for the country and has accumulated important knowledge, human capital and entrepreneurial skills. (Cámara Petrolera de Venezuela. 2006). Moreover, the country presents a wide biodiversity, rich and fertile lands and a temperate climate that allow several harvests per year for a variety of crops. (Pietrosemoli, 2009). This potential must be kept as reference for the following analysis.

Beyond this potential, on Table 2 there is a compilation of some indicators that present a brief vision of Venezuelan recent productive behavior and problems faced by the country.

Table 2: Venezuelan competitiveness indexes- Summary

Index	Information source	Venezuelan index	Parameters for comparison
General competitiveness	Word Economic Forum. The Global Competitiveness Report, 2009-10.	113	Better of scale: 1. Worse of scale: 133
General competitiveness (for 2009)	IMD Business School. IMD, 2010. Switzerland	57	Better on scale: 1. Worse on scale: 57
Oil production for 2008. Millions of barrels for day.	BP Statistical review of world energy. Full report 2009	2.566	Oil production for 2000. Millions of barrels for day: 3.239.
Worst barriers to the investments on oil & gas exploration and production 2008	Fraser Institute. Global Petroleum Survey 2008	3	Better of scale: 81. Worse of scale: 1.
Number of industries in activity for 2007	Conindustria. La economía venezolana y el sector manufacturero. 2009	7.093	Number of industries in activity for 1999: 11,198
Descrease of investments in Venezuela during 2009	Informe semanal Ecoanalitica. Año 6 N. 4. Semana I Febrero 2010. La inversion se hundio 7,6% en 2009. El Universal 10 Enero 2010	7,6%	Decrease of investments in Venezuela during 2008: 3,3%
Foreign direct investments in Venezuela during 2009	La inversion se hundio 7,6% en 2009. El Universal 10 Enero 2010. (Source CEPAL)	US $ 5.844 millon	Foreing direct investments during 2009: Chile US $ 53.000 million; Colombia US $ 39.000 million; Peru US $ 17.000 million; República Dominicana US $
Expropriation of private companies	Article "Se esta viviendo la degradación de la propiedad privada". El Nacional. Venezuela. 22 de Julio 2009.	165	Expropriation of 165 private companies since 2005 to June 2009
Index of economic freedom	Index of economic freedom 2009	174	Better of scale: 1. Worse of scale: 179
Annual index of good govern	Veneconomía. 01 de Julio 2009	192	Better of scale: 1. Worse of scale: 212
Number of popular protests (public manifestations claiming for labor rights, life quality, basic services, water, roads and safety) from January to August 2009	Provea. Informe de manifestaciones publicas Venezuela. II Cuatrimestre 2009.	2.079	January-December 2008: 1,602 protests.

Source: Pietrosemoli, Licia, 2010. Author's compilation

Another evidence of problems related with the countries competitive performance may be seen on figure 1, where first (blue) columns describes the production increases from 2008 to 2009 for some sectors as food drinks and tobacco, paper and carton, metallic products, chemicals, textiles, other industries, minerals non metallic and glass, basic metallic and wood and furniture, while second (red) columns describe de ones that decreased.

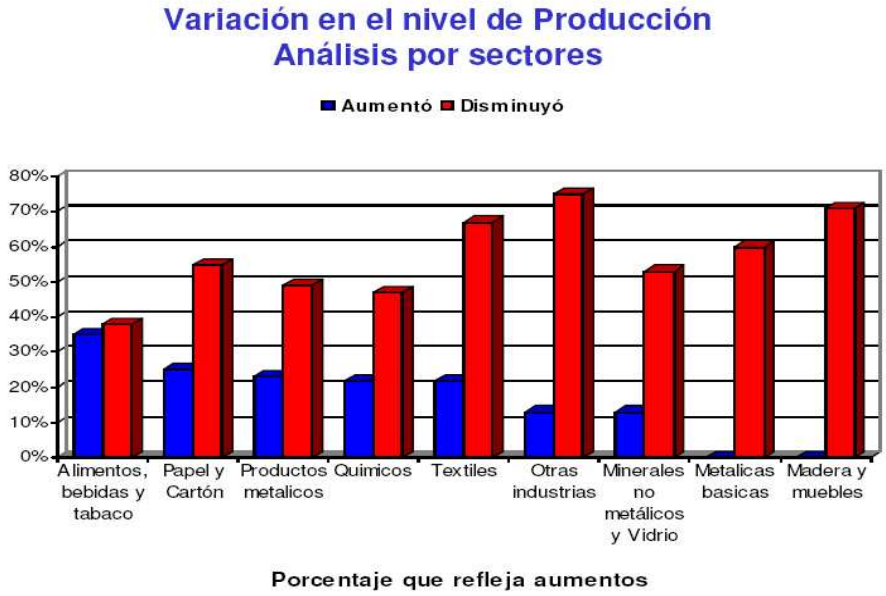

Figure 1: Variation of production levels by sectors. Conindustria. 2009

2.2 FACTORS AFFECTING VENEZUELAN COMPETITIVE PERFORMANCE

According to Conindustria (Confederación Venezolana de Industriales) (2005) Venezuelan companies have to produce and deal with several elements that restrict the competitive performance they can achieve. Table 3 present a summary of such elements.

Table 3: Factors affecting Venezuelan competitiveness performance

Currency exchange criminal law & exchange control
SENIAT fiscal agency actions
Invasions & insecurity
Companies expropriations and co-management threats
PDVSA oil company disarticulation
Public contract direct awards
Minimum wages, Job tenure & social security
Land law
Parallel associations & para-tariff regimes
Massive imports
Social missions & alternative economies
Conditions of access to public resources
Militarization of companies
Loss of Central bank authonomy
Source: Conindustria. 2005. Compilation: Pietrosemoli, 2009

This organization sustain that those factors have evolved on recent years affecting production on the levels presented on Table 4.

Table 4: Impact of limiting factors that prevent to increase production in Venezuela

Factor	2009	2008
Political uncertainty and social	82%	82%
Lack of currency	81%	75%
Lack of suppliers	80%	71%
Low demand	72%	69%
Lack of skilled manpower	61%	58%
Lack of funding	59%	56%
Price Controls	57%	55%
Competition from imported products	52%	51%
Limitation on machinery and equipment	52%	49%
Other	52%	
Lack of access to export market	40%	32%
Source: Conindustria 2009. Compilation Pietrosemoli, 2010		

Although it undeniable growth potential, Venezuela is a country where despite the resources abundance, the industrial sector supplier of goods and services has not achieved the expected competitive levels (Añez, 2005).

This is attributed to factors such as its expansionary fiscal policy, macroeconomic environment, weak institutional environment, discretionary administrative measures, the lack of equity and efficiency in government operations and strategies and high levels of violence and crime. (World Economic Forum, 2010).

Some authors argue that such Venezuelan productive behavior is related with the policy of socialist transformation of the production model, oriented to centralize production activities in strategic sectors such as production of iron, steel, aluminum, in an effort designed to reach the nationalization of the economy (Tal Cual, July, 8, 2009). This policies result contrary to productivity, competitiveness and entrepreneurship, especially since

framed in a whole nationalization effort that in last years has affected food industries, telecommunications, electricity, oil, chemical and petrochemical. (Index of Economic Freedom, 2009).

Other researchers point the Venezuelan industrial behavior has been affected by the changes that occurred in recent years with the oil industry management that has lead to decreased production levels of oil and gas, loss of expertise due to the qualified personnel have left the industry, the low level of development of oil reserves, the amount of inactive wells, the low levels of research in oil and gas exploration, the policies to sale oil at discount or exchange it for goods and services and resource utilization of the oil revenue to develop political or social policies. (Gonzalez, 2009).

The competitive problems affecting Venezuelan industry have worsened since mid 2009 with the expropriations linked to the "Law which reserves to the state the goods and services related to oil activities", as under such law, once declared as public utility, different private sector assets were expropriated, including drilling holes, water, steam or gas injection equipments, docks, boats, barges, tugs and other goods that provided services to the oil sector. (Pietrosemoli, 2009).

Besides oil, Venezuela is facing the general weakening of iron, aluminum and all the basic industries, with labor problems, disputes with suppliers of goods and services, labor protests, stoppages of production lines, decrease in the production of pipes, boilers, valves, cooling and fractionation towers and other resources required for the industrial sector. (Entorno Inteligente. April 22, 2009).

That situation affects the maintenance activities of oil services, the operation of drilling holes, activities to support oil extraction and production of iron, aluminum and related products. Even if no official statistics are available, these problems and arising protests have spread to the automotive, health, education and popular sectors, because of insecurity, lack of work, educational problems or deficiencies of basic services, creating a level of national conflict that together with different policies contraries to productivity and competitiveness, affects the quality of life of people and performance levels of small, medium and large enterprises, weakening country productive infrastructure and limiting national incomes. (Pietrosemoli, 2009).

3. HOW DO PRODUCTIVE SECTOR PERCEIVES ACTUAL CONDITIONS? FIELD WORK RESULTS

Field work was conducted through a questionnaire applied to 78 company employees working in a privately owned industrial construction company in Venezuela (more than 300 workers, levels of sales over US$ 50.000.000 for 2009, more than 40 years of activities) and 12 external advisors. Employees are board of director's members, department's managers, projects managers, resident engineers, project and department supervisors. External advisors work in the financial, taxes, accounting and legal areas. The questionnaires were processed through SPSS version 10.0 and Excel. From 90 questionnaires sent were obtained 56 responses, corresponding to 62,22%. For the research objectives the following results were found.

Table 5: Identify the main constraints affecting the performance of Venezuelan oil and petrochemical industrial construction and the impact of such limitations

Main constraints	Cases Impact N. 1	%
Technical-Constructive	4	7,14%
Contractuals/Relation with clients	11	19,64%
Resources availability	12	21,43%
Labor	7	12,50%
Financial	20	35,71%
Social	0	0,00%
Safety and public order	2	3,57%
Total responses	56	100,00%

Table 6: Determine the frequency with which these limitations occur in the construction of the Venezuelan oil and petrochemical sector

Main constraints	Very Frequent & Frequent N.	%
Technical-Constructive	19	14,96%
Contractuals/Relation with clients	20	15,75%
Resources availability	28	22,05%
Labor	22	17,32%
Financial	25	19,69%
Social	5	3,94%
Safety and public order	8	6,30%
Total responses	127	100,00%

As this is a preliminary research, with field work limited to the vision of one Venezuelan oil and petrochemical construction company and its external advisors, results are not intended to present a total view of competitiveness constraints affecting the country, but just to highlight the existence of some conditions that limit the performance of industrial constructions.

Based on the documental and field research findings, is palpable that despite the abundance of mineral and agricultural resources, Venezuelan productive sector in general, lives an situation characterized by physical and legal insecurity, financial, social, contractual, inflation and labor problems, public policy discretionary, loss of knowledge and high levels of conflicts, which are perceived by some of the actors of the production processes as obstacles that deteriorate national competitiveness and affect quality of life of the population. Those problems are not limited to Venezuela but affect many other countries, especially those under development, so it is important to conclude that there is a lot of work that can be done to reduce such risks.

4. WHAT CAN BE DONE?

With a world economy just recovering from the shock caused by the serious financial crisis of 2008, with some countries on track to recuperation and some not, it becomes increasingly evident the need to resort to

competitiveness as one of the foundations that nations can use to address towards prosperity and long-term improvement. (The Global Competitiveness Report, 2010).

Venezuela is just one of the economies that have to deal with competitiveness performance, so this case may be used as reference to explore different solutions that may be of interests for other under development countries.

As every nation has to establish the strategies that fit for its own needs, this research is not intended to offer a solution to the different goals arising, but to suggest some critical exploration about the different ways to improve each country results and invite actors to keep the path toward sustainable development with ethical and social orientations. Below there are some suggestions for that.

4.1 THE GOLDEN RULES OF COMPETITIVENESS

Table 7 present a summary of what IMD call "The golden rules of competitiveness".

Table 7: The golden rules of competitiveness

1. Create a stable and predictable legislative environment.
2. Work on a flexible and resilient economic structure.
3. Invest in traditional and technological infrastructure.
4. Promote private savings and domestic investment.
5. Develop aggressiveness on the international markets as well as the attractiveness for foreign direct investment.
6. Quality, speed and transparency in government and administration.
7. Balance between wage levels, productivity and taxation.
8. Preserve the social fabric, reducing wage disparity and strengthening the middle class.
9. Invest heavily in education, especially at the secondary level and in the long-life training training of the labor force.
10. Balance the economies to ensure substantial wealth creation, while preserving the value systems that citizens desire.

Source: Garelli, S. 2003. The Competitiveness of Nations. IMD

Those rules can be seen as a guideline to what conditions need to be improved or reinforced on each country in order to get better results for each productive sector.

4.2 COMPETITIVE POLICIES FOR DEVELOPING COUNTRIES

Complementing the earlier idea, to achieve competitiveness some elements are required to support an adequate performance of individuals and organizations, with mechanisms to ensure prompt attention to business, standards, policies, training and general conditions to strengthen small and medium entrepreneurs. (Comisión de las Comunidades Europeas, 2003).

Due to their internal realities, the policies of developed countries do not allow to face the particular challenges of developing countries, requiring new competitive policies, oriented to offer goods and value added services. Such new policies should be based on a multilateral approach, including issues as corporate governance, corporate management, labor laws, institutional structures, and knowledge. (Singh, 2002).

The development of these new policies must come from the social underpinnings, history and national values, in support of achieving its goals of sustainability. (Garelli 2003).

4.3 KNOWLEDGE MANAGEMENT. KEY ELEMENT TO SUPPORT COMPETITIVE PERFORMANCE OF CONSTRUCTION COMPANIES

Takeuchi and Nonaka (2004) describe knowledge management as the continuous process of creation and transmission of new knowledge throughout the organization. This allows the incorporation of new products, services and technologies that facilitate organizational change and to face the new challenges presented by the environment. Thanks to knowledge management, using tools and technologies, individuals and organizations can create and share explicit and tacit knowledge that facilitate the growth of the organization and improve decision timely. (del Moral, et al., 2007).

Because of the jobs and growth it creates, and due to the importance of the services offered to communities, the construction is one of the most representative industrial sectors worldwide. For this industry, the value of knowledge management transcends all its activities, facilitating innovation, knowledge transfer, maximizing intellectual capital, providing answers to customer requirements, increasing effectiveness and efficiency, thus allowing offering products with higher added value and reducing levels of uncertainty. This permit performance improvement processes and supports competitiveness. (Kamara, et al., 2002), (Egbu, et al., 2004).

To obtain these benefits, construction companies need the production, dissemination and use of these intangible resources (Anumba et al., 2005), (Egbu et al., 2004), using databases, technologies, tools, strategies, best practices and encouraging research, especially for the sharing of knowledge aimed at achieving sustainable construction. (CIB, 2002).

As one of the major competitive policies necessary for developing countries in general and for industrial construction companies, it is suggested to initiate actions by governments, individuals, universities and organizations to provide appropriate knowledge management as a strategy that may lead to deep changes in management in order to achieve sustainable development with high social content.

As well as for construction, knowledge management benefits all the different productive sectors, so must be referenced as one of the most important strategies for competitiveness improvements worldwide.

5. CONCLUSIONS

Actual research confirms the existence of some technical, financial, social or contractual elements that constrain the performance of industrial construction and the different productive sectors in Venezuela. Such elements are perceived by productive actors as barriers that confine performance improvements. This situation is potentially extensive to other countries, affecting their competitive levels.

In order to reverse the negative trends affecting countries in terms of competitiveness, it's required to initiate a cultural change that recognizes that sustainable development must be based on ethical foundations, principles and values, investments, employment, researches and knowledge's oriented to improve performance levels for single citizens, states and small, medium and large enterprises.

This requires developing competitive policies with long-term view, learn from past mistakes and make joint efforts between governments, academic sector, companies and society. .

To reach the goal of sustainability and competitiveness it is needed a stable, democratic and constitutional legal framework, that permits a balance between the state, enterprises and individuals encouraging investment, appreciation and use of knowledge and intangible assets, recognize the work and individual and collective effort as a source of upward social mobility. This combination of factors may cooperate in order to strengthen the productive and competitive attitude.

So all the productive actors must be aware of their individual responsibilities and act proactively and timely in order to cooperate with such global goals.

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