



## Commercial management and competition relationship in industrial and agroindustrial SMEs in Tundama, Colombia

Relación gestión empresarial y competitividad en las Pymes agroindustriales e industriales de la provincia de Tundama, Colombia

Luis Felipe Rodríguez C.<sup>1</sup> and Lilia Teresa Bermúdez C.<sup>2</sup>

### ABSTRACT

The process of freeing trade that has been occurring in the country since the late twentieth century has uncovered a number of weaknesses and threats facing our business organizations these days, in particular for small and medium enterprises (SME). The overall objective of this research is to analyze the relationship between the Commercial Management system and competitiveness of industrial and agroindustrial SMEs in Tundama, Colombia, in order to generate viable recommendations to give these business organizations competitive advantages; the methodology used was based on a descriptive non-experimental methodology design. Notably, the business organizations studied in this research have high transaction costs when accessing input markets and services, which constitute a major obstacle to advancing technology adoption.

**Key words:** agroindustrial, competitiveness, small and medium companies, revenue, management system.

### RESUMEN

El proceso de apertura comercial que viene enfrentando el país desde finales del siglo XX ha puesto al descubierto una serie de debilidades y amenazas que en estos tiempos deben afrontar nuestras organizaciones empresariales y en especial las llamadas Pymes. El objetivo general de esta investigación es el de analizar la relación entre el sistema de gestión empresarial y la competitividad de las Pymes agroindustriales e industriales de la Provincia de Tundama con el propósito de formular recomendaciones viables que generen para estas organizaciones empresariales ventajas competitivas; la metodología utilizada se fundamentó en el uso de un diseño metodológico no experimental, de tipo descriptivo. Se destaca que las organizaciones empresariales objeto de la investigación, presentan elevados costos de transacción cuando acceden a los mercados de insumos y servicios, lo cual se constituye en obstáculo importante para adelantar procesos de adopción tecnológica.

**Palabras clave:** agroindustria, competitividad, pequeña y mediana empresa, rentabilidad, sistema de gestión.

### Introduction

It is important to understand that competitiveness is the biggest challenge that companies must overcome today, particularly SMEs (Portafolio, 2006a). International competition affects, to a lesser extent, companies that have been prepared to receive it; making technological, economic, financial or commercial changes.

Small and medium agribusiness entrepreneurs of Tundama, Colombia must internalize the concept that being competitive means being better than others, which means changes, efforts, perseverance and continuous improvement should be the premises of management in the SMEs of this productive sector.

The SME sector still thinks a lot about the risks of crossing borders, to which is added the low initiative to implement consolidation efforts of a cooperative nature that allows the

identification and use of continuous improvement processes in the manufacture of products and the achievement of cost efficiency, which are determinants of competitiveness.

SMEs in Tundama, like in most of the country, often lack strategic clarity, since the entrepreneur is usually putting out fires and attending emergencies, hence the definition of the business and its competitive advantages are diluted among the immediacy of urgent matters, making the organizations vulnerable to economic changes.

The overall objective of this research focused on the study of the impact of business management on the competitiveness of agroindustrial and industrial SMEs located in Tundama, in order to clarify the characteristics and dimensions affecting competitive performance and propose feasible and viable recommendations to boost its development in this region of Boyacá, Colombia.

Received for publication: 15 December, 2010. Accepted for publication: 29 June, 2012.

<sup>1</sup> Department of Agronomy, Faculty of Agronomy, Universidad Nacional de Colombia. Bogota (Colombia). luisfeliperodriguez@yahoo.com

<sup>2</sup> Sectional Duitama, Universidad Pedagógica y Tecnológica de Colombia. Duitama (Colombia).



In Colombia, businesses with assets that are between 501 and 5,000 statutory minimum salaries or that employ between 10 and 50 workers are considered small; and medium companies have assets between 5,001 and 30,000 statutory minimum wage or employ between 51 and 200 workers (Article 590 of 2000, República de Colombia).

According to Barriga-Manrique (2001), in the area of leadership, more than half of SMEs have difficulties in defining the direction of the company due to the ignorance of instruments that allow the development of a strategic plan and the inadequacy of information systems for making decisions.

From a macroeconomic perspective, competitiveness is defined as the ability of a society to increase its wellbeing in the face of challenges from the global economy and time (Universidad de los Andes and Portafolio Pymes, 2004).

The Competitiveness Council of the United States, quoted by Román-Castillo (2004), defines competitiveness as «the ability to produce goods and services that meet the demand of international markets while allowing American citizens the enjoyment of a better quality of life that is continuously improving over the long term».

To Bradford (2001), competitiveness can be defined as the ability of a company, an industry or a country to remain in a market and enter new markets due to constant innovation. Importantly, numerous businesses there are SMEs, despite their small market share, have advantages over competing, larger organizations. In these cases, the sources of the competitive advantage are different from production scale and size. The better strategy for them is to focus on a «niche» in which they can become a leader, regardless of absolute size (Porter, 1999).

In Colombia, industrial production activity was able to expand and consolidate from the 1930s until the end of the 1980s as a result of import substitution policies encouraging GDP growth and per capita income with relative internal stability (Ministerio de Comercio Industrial y Turismo, 2008).

As in almost all Colombian SMEs, those in Boyacá share similar characteristics, since they lack the vast majority of strategic planning that would allow them to face the challenges of current markets with stronger possibilities. Small and medium business in Boyacá care about business management activities in the short-term, but without establishing a concrete, coherent and practical plan to achieve permanence in long-term markets. Besides the above, among the most fundamental weaknesses of SMEs in Boyacá is their absence in almost all market studies and

the ignorance or misuse by entrepreneurs of government programs and credit policy options.

Boyacá has been characterized as having a predominantly agricultural tradition, so much so, that 55% of its population is rural, with limited educational opportunities and infrastructure and generally little opportunity to bridge the gap with other departments (Semana, 2011).

In the department of Boyacá, about 80% of the forms of production reported by the regional chambers of commerce are concentrated in the area known as the Central Industrial Corridor of Boyacá, comprising the route between the cities of Sogamoso, Duitama, Paipa and Tunja. A high percentage of these forms of production are in the productive areas of: crafts, publishing, metalworking, furniture and wood, mineral processing, steel and agribusiness; notably most activity is concentrated in the productive areas of metalworking and agribusiness (Cámara de Comercio de Duitama, 2010).

The fundamental problem for competitiveness in Boyacá is the profound disconnect between social, productive, and political actors and the academic institutions, which manifests itself in a precarious organization that impedes the generation and implementation of regional development projects. Private actors have not sufficiently strengthened cooperative sector schemes that would allow them to be dynamic and to transform and promote the socio-economic structure of the region. Moreover, the predominance of small production units (micro and SMEs) is accentuated with low added value, meager technology for production processes and traditional or minimally elaborated organizational structures, compounded by the lack of access to capital resources, preventing the attainment of adequate levels of competition. To improve in this area, Boyacá, in 1999, formulated a competitiveness program carried out by Econometrics SA as supported by the Corporación Colombia Internacional (CCI), which aimed to promote the establishment of a continuous process of development for a group of competitive activities integrated into the national and international markets.

## Methodology and procedure of research

This study employed a descriptive non-experimental methodological design. To achieve this, we used direct observation and collected primary data through the application of a form with a survey applied to the legal representatives of the agroindustrial and industrial SMEs in Tundama, which included the productive branches of auto-parts, construction, smelting, plastic processing and metal mechanics.

The object of the research was established by the agroindustrial and industrial SMEs in Tundama (Boyacá). The municipalities of this province are: Duitama, Belén, Busbanzá, Cerinza, Corrales, Floresta, Paipa, Santa Rosa, and Tutazá.

The two referenced sources of information to carry out this research were:

**Primary.** This source consisted of the managers and owners of the studied SMEs and the staff of institutions such as SENA, Chamber of Commerce and ACOPI, entities with a strong background in these important sectors.

**Secondary.** A literary review of books, journals, the Internet and databases of institutions that advance counseling and consulting programs for these types of organizations.

A structured questionnaire was designed and used for the basic data collection, with multiple choice and some pictures, related to the elements of marketing, finance, production, technology and human resources, aimed at analysis of the studied research units.

Along with the form, a field journal was used to note and clarify issues raised by direct observation in the course of the surveys, the visits to each of the research units and in conversation with the corresponding reporting unit.

The target population for this research consisted of agroindustrial and industrial SMEs in Tundama, consisting of the productive branches in Tab. 1 and amounting to a total of twenty (21) companies. From this group, approximately 55% were sampled, i.e. twelve (12): 6 agroindustrial and 6 industrial SMEs. The above number of companies corresponds to the organizations officially registered with the Cámara de Comercio de Duitama (2010).

The method of primary data collection was carried out according to the following activities:

**Selection of SME samples for research:** For this study, stratified random sampling was used. Of the twelve (12) company research units, four SMEs (two agro and two industrial) were selected for a case study to determine the economic and financial returns for the measurement of competitiveness.

**Survey:** A questionnaire with open and closed questions designed for this study was used.

**Direct observation:** was used to identify and characterize the processes and events related to this research.

The data was processed was using Microsoft Excel® statistical tools, specifically percentages and averages, in order to facilitate the organization and systematization of the data into tables, followed by analysis and interpretation.

In the context of data analysis and results, it is worth noting the measurement of competitiveness. Several authors agree that improved competitiveness expressions can be determined by calculating performance indicators, principally returns (Tenkate, 1994).

A primary approximation of the specific measure of a company's competitiveness is established based on economic performance, allowing calculation of two key parameters: economic and financial returns. Both are necessary because they complement the information on different company factors. While economic returns reflect the company's operational efficiency, financial returns show how this translates into benefits for shareholders or owners (Biasca, 2001).

The profitability of the company is measured by the rate of return on assets, or the relationship between net income and total assets (liabilities + equity). According to Román-Castillo (2004), the calculation formula is:

TABLE 1. Grouping of agroindustrial and industrial SMEs in Tundama by production branch.

Sector	Production branch	Population		Sample	
		Companies	%	Companies	%
Agro-Industrial	Dairy and bakeries	7	33.33	6	50
	Auto-parts	6	28.57	2	
	Construction	4	19.05	1	
Industrial	Casting	1	4.76	1	50
	Plastic transformation	1	4.76	1	
	Metalworking	2	9.52	1	
	Total	21	100.0	12	100

Source: Cámara de Comercio de Duitama.

$$Re = \frac{\pi}{A} = \frac{\pi}{D+E} \quad (1)$$

$$A = D+E$$

Where:

Re = Return on assets

$\pi$  = Net Income

A = Total assets

D = Total liabilities

E = Equity

The financial return, important to shareholders or owners, of the company is the relationship between net income and equity. Its calculation formula is:

$$Re = \frac{\pi}{A} \quad (2)$$

Rf = Financial returns

$\pi$  = Net income

E = Equity

## Analysis and discussion of results

### Profile of agroindustrial and industrial SMEs as competitive actors

It is important to summarize the most important aspects that favor the operability of industrial and agroindustrial SMEs located in Tundama as leaders in competitiveness due to their agility and organizational flexibility making them suitable to meet local, regional and national demand. And so, SMEs constitute a complement to this large industry, since they supply elements that the companies do not produce or, if they do produce them, have prices that are quite high. Agroindustrial and industrial SMEs can be easily adapted to different geographic locations, helping to avoid the concentration of production characteristic in large industry, and thus help boost regional development. Agroindustrial and industrial SMEs are organizations that facilitate the acquisition of experience and therefore promote the practical training of those who are doing business or thinking of doing so, and therefore, have been the starting point for creating businesses with a higher level of competitiveness, which provide better opportunities in the labor market.

In general, it is evident that agroindustrial and industrial SMEs constitute a socio-economic value to the province's economy and therefore for the Department of Boyacá. It is worth noting that the majority of SMEs that are located in the province have an economic activity that revolves around dairy.

Agroindustrial and industrial SMEs in Tundama have in the range of less than eleven (11) contract workers, in addition, it should be noted that there are companies that do not hire workers, as the owners, and in some cases the partners, perform all the activities of the company.

In agroindustrial and industrial SMEs, decisions are made in most cases based on intuition, experience and historical data, making it easy to understand that they do not rely on a prediction model, with which technical decisions can be made. It is well worth noting that agroindustrial and industrial SMEs have the potential to generate short-term employment, because their activities are in areas of production that require low-skilled labor and simple technology.

The efficient allocation of resources in business is vital to the growth and development of the same, however, it should be noted that the financial problems affecting the development of agroindustrial and industrial SMEs in Tundama are generated by variables such as the potential improper calculation of income and expense, non-use of financial tools and lack of working capital.

**Market failures include:** the projection of demand to match supply, lack of adequate budgets, low production, the absence of market research and in several cases, lack of knowledge of the behavior and performance of competition. Production process shortcomings are highlighted, such as the lack of programming and control and the low productivity of production factors.

Partnerships and limited liability companies predominate in agroindustrial and industrial SMEs in Tundama. The first corresponds to small family businesses, which includes a plurality of at least two members and an indefinite maximum. The second is for small businesses with a minimum of two members and a maximum of 25.

The economic activity of agroindustrial SMEs is linked to the manufacturing and processing of commodities for human consumption (meat, dairy, bakery, beverage and confectionery), leading to the conclusion that they are production companies whose business involves handling, preservation and industrial processing of raw materials from agricultural and livestock subsectors.



In general, very few SMEs have established an organizational structure with most operating within a seemingly organized but inadequate structure.

Finally, one of the daily problems faced by the management of agroindustrial and industrial SMEs is the setting of prices, i.e. fixing the price at which to sell.

Among the administrative shortcomings of these companies are: informality in organization and administration, unskilled staff, concentrated functions, poor planning and organization in different areas, to name a few.

The financial problems affecting the development of agroindustrial and industrial SMEs are a result of poor allocation or inappropriate handling of company resources by the entrepreneur, among these are: inaccuracies in the calculations of revenues and expenditures, working capital deficiency, low assets and poor accounting and financial systems. Therefore, it is difficult to calculate and plan for the financial needs, and calculation of the equilibrium point is hindered, for both monetary and physical units. Failures in marketing hinge on: the absence of market research, non-existent sales budgets, poor calculation in projecting sales, inadequate pricing and little standardization of products.

**The demand and the market as dynamic factors for competitiveness**

The characteristics of local demand are an important factor in the dynamics of competitiveness for the productive branches of the agroindustrial and industrial SMEs in Tundama.

The response observed in small and medium organizations to undertake continuous, permanent improvement of products and services to meet the demands of their customers is well known. For example, entrepreneurs implement quality control practices designed to ensure good quality products that meet the demands of buyers. In this regard, Tab. 2 shows the factors around which both agroindustrial and industrial SMEs have focused their concern to offer their products to the consumer market, seeking to strengthen their position in the regional context. As shown in the table, the factors at the top of the hierarchy are the quality and design of the product. It is also noted that low prices

is a notable factor for both agroindustrial and industrial SMEs, 56 and 50% respectively.

**Management of technology and competitiveness**

Technology is a very sensitive issue for SMEs. SME entrepreneurs do not know where to start or what tools to use as far as technology is concerned. Proof of this is the low level of systematization, poor access and use of the Internet and the use of specialized software specifically as it relates to accounting – finance, lack of harmony with the reality of SMEs nationwide, which is based on the results of a recent study by the Agencia de Conectividad (Dane, 2009), revealing that only 39% of Colombian SMEs have a computer, and only 23% of these computers have Internet access and only 17% of these organizations have systematized their accounts. The role of technology as an enabler of business is indisputable, helping companies become more productive and efficient, allowing quick solutions and facilitating decision-making and implementation of innovation processes.

However, many entrepreneurs ignore the issue of technology, especially small and medium ones, since it is difficult to see its impact on productivity and ROI. However, in the case of agroindustrial SMEs in Tundama, there are some important initiatives aimed at acquiring technology to be equal with the national context. This is illustrated in Tab. 3, where we present the main objectives in the area of production and operations, notably, the acquisition or improvement of existing technology, as one of the fundamental objectives. Thus, for 34% of agroindustrial SMEs and 50% of industrial SMEs, this objective is absolutely important, while for 44 and 50% of those companies surveyed respectively, it is very important.

**Management of human resources and competitiveness**

Importantly, in organizations oriented under competitive processes, the work unit is constituted by the team, human capital compensation is based on the results of this and the organizational culture, rather than being oriented in conflict as in traditional companies, is collaborative. (Portafolio, 2006b) It is worth noting that the performance differentiator in SME competitiveness is highly dependent, among other things, on the staff, through

**TABLE 2.** Advantages offered to customers in products from industrial and agroindustrial SMEs in Tundama.

Sector	Quality %	Low prices %	Distribution %	Design %	Form %	Service%	Other %	Which?
Agro-Industrial	67	56	33	67	11	11	11	Innovation
Industrial	100	50		100			100	Security innovation

**TABLE 3.** Valuation of the importance of the production and operation objectives of agroindustrial and industrial SMEs in Tundama.

Sector	Objetives	Importance			
		Completely important %	Very important %	Important %	Slightly important %
Agro-Industrial	Increasing productivity	78	22		
	Acquiring technology (improving existing)	34	44	22	
	Increasing process efficiency	33	67		
	Reducing waste	56	22	22	
	Improving quality	67	22		11
	New production lines	22	44	34	
Industrial	Increasing productivity	50	50		
	Acquiring technology (improving existing)	50	50		
	Increasing process efficiency	50	50		
	Reducing waste	50			
	Improving quality	100			
	New production lines	100			

whose performance, high productivity and excellent production quality are possible. Hitherto, in agroindustrial and industrial SMEs, human management processes have been strengthened through links with the objectives of the organization, in order to provide a suitable organizational climate that is expressed at a level of competitiveness that ensures the sustainability of these companies.

All the above is subject to staff development initiatives and meeting the basic needs of workers as human beings.

Within the said framework, the relationship of human resources and competitiveness stands out, particularly as regards the type of training offered in agroindustrial and industrial SMEs, highlighted by the offering of short courses as the most used training and where, as illustrated in Tab. 4, conferences and seminars are also common.

### Financial management and competitiveness

One of the major problems facing agroindustrial and industrial SMEs in the financial context, which certainly slows competitiveness, is related to the information for the financial management system of these organizations, which is rather poor and limited and normally constitutes a bottleneck in accessing credit.

A common obstacle that both agroindustrial and industrial SMEs have is access to funding, notably the form in which their projects are presented to financial

intermediaries (banks). Very often, a good SME, which has financial and market position, presents an investment project but is denied simply because it was not presented properly. It is also vital that these organizations manage a transparent accounting system that creates a trusting relationship with lenders.

As illustrated in Tab. 5, among the various factors that constitute bottlenecks for good competitive performance of these two types of SMEs, there are financial factors such as the difficulty of access to investment capital and high internal costs, which in turn, constitute the active problems (cause) most relevant to generating significant problems in other areas of administration.

For the specific case of the mentioned problems, the most prominent one is the obstacles and difficulties that SMEs have to face in the financial sector for the provision of credit. Thus, for 89% and 100% of agroindustrial and industrial SMEs respectively, it constitutes a major obstacle to the smooth running of the organization in terms of its competitiveness. With respect to high domestic costs, this problem is more prominent for agroindustrial SMEs, constituting an obstacle for 56%.

### Environmental management and competitiveness

In the context of modern business management, environmental management is now recognized as an important factor of competitiveness. Of course, this fact cannot be

**TABLE 4.** Type of training offered to workers by Agroindustrial and Industrial SMEs in Tundama.

Sector	Conference %	Short courses %	Seminars %
Agroindustrial	89	100	33
Industrial	50	100	50

**TABLE 5.** Effect of the main management factors on the competitive performance of agroindustrial and industrial SMEs in Tundama.

Management factors	Level	No obstacle		Some obstacle		Major obstacle	
		AI%	I%	AI%	I%	AI%	I%
Competition		11		44		45	100
Excessive government regulation		33		22		45	100
Depressed market		33	50	33	50	34	
Labor relations		100	100				
Skill levels of the workforce		56	50	44	50		
Modernization needs		11		22	50	67	50
Access to capital or financial resources		11				89	100
Internal costs		22	100	56		22	
Quality		22	50	44	50	34	
Time cycle for production		11	50	89	50		
Customer care and satisfaction		33	100	56		11	

ignored when it comes to the management of agroindustrial and industrial SMEs in Tundama, in order to make these units competitive organizations. In the past, environmental management was perceived as an item of expense in the statement of income of the company and was therefore unattractive to business. This situation changed when entrepreneurs found that there are also opportunities for business improvement in this area. The responsibility to achieve good environmental performance is now clear to all. And so, agroindustrial and industrial SMEs in Tundama have begun to strengthen this management system, which was largely neglected by these organizations in the past.

Undoubtedly, agroindustrial and industrial SMEs have been increasing their responsibility to protect the environment, through training their employees on environmental issues and also becoming aware of the existing relevant legislation. As shown in Tab. 6, 78% and 50% of agroindustrial and industrial SMEs respectively know the purpose and

content of ISO 14000. Regarding its implementation, the same table states that 50% of industrial SMEs are striving for full application, while 78% of agroindustrial SMEs do so partially.

### Measuring sme competitiveness

Often, when we talk about competitiveness, we refer to the ability to compete at the level of production costs, i.e. it is assumed that the producer who has the lowest cost in turn has the highest position; providing the lowest price and conquering the market.

While it is true that according to several authors that in determining the competitiveness of an enterprise based primarily on financial indicators such as profitability, shortcomings are seen, it is perhaps through this procedure that one can estimate business competitiveness, with a significant level of objectivity. As detailed in Tab. 7, the prior knowledge of the current investment, the various compo-

**TABLE 6.** Knowledge and application of ISO 14000 in agroindustrial and industrial SMEs in Tundama.

Sector	Yes %	No %	Application	
			Total %	Partial %
Agroindustrial	78	22		78
Industrial	50	50	50	

**TABLE 7.** Calculation of economic and financial returns as an estimate of the competitiveness of four case studies for Agroindustrial and Industrial SMEs in Tundama.

Sector	Trade-name	Current assets	Total assets	Total liabilities	Equity	Profits before taxes	Economic returns	Financial returns
Agro-industrial	Industria de Alimentos Lirroyaz Ltda.	700,000,000	851,949,000	412,779,000	439,170,000	80,788,000	9.783%	18.296%
	Industria Gran Panzote	20,000,000	223,592,000	166,563,000	57,029,000	5,312,000	2.376%	9.315%
Industrial	Espumas Moldeadas Espumol	800,000,000	1,900,000,000	850,000,000	1,050,000,000	80,000,000	4.211%	7.619%
	Autobuses AGA de Colombia Ltda.	1,000,000,000	3,832,789,000	1,627,050,000	2,205,739,000	377,858,000	9.859%	17.131%

nents of the balance sheet (total assets, total liabilities and equity) and the income before taxes allow the calculation of economic and financial returns, which are very telling in terms of the competitiveness of the four case studies of the studied agroindustrial and industrial SMEs (two for each activity).

It is worth pointing out that the analysis of competitiveness based on economic-financial results must be complemented by the calculation of the percentage share of the SME in the market and its evolution over time, which gives an idea of its global acceptance as a business unit offering specific products and/or services (Ibañez and Caro, 2001).

## Conclusions

An adequate funding policy for agroindustrial and industrial SMEs is decisive to prevent their high failure rate. Banks prefer to lend to large companies, with interest rates lower than those that are applied to SMEs.

Small and medium businesses should develop plans to improve the productivity and competitiveness of their organizations, contributing to a balanced development of business in the province and the department.

Success in both the domestic and international markets for agroindustrial and industrial SMEs depends on the formulation of plans with the purpose of improving and strengthening competitiveness.

A good business dynamic, accompanied by investment in human capital, infrastructure, technological innovation and institutional redesign are some of the most important factors that support plans for improving the productivity and competitiveness of SMEs in Tundama.

Associations are the most viable option for agroindustrial and industrial SMEs to become more competitive and triumphant over the challenges imposed by economic integration.

## Literature cited

- Barriga-Manrique, E. 2001. Construcción de un indicador macro-económico de capacidades competitivas. Universidad EAFIT, Medellín, Colombia.
- Biasca, R. 2001. ¿Somos competitivos? Editorial Granica, Buenos Aires.
- Bradford, C. 2001. El Nuevo paradigma de la competitividad sistemática. OCNE, Paris.
- Cámara de Comercio de Duitama. 2010. Información empresarial. Duitama, Colombia.
- Dane. 2009. Encuesta anual manufacturera de comercio y de servicios. In: [http://www.dane.gov.co/index.php?option=com\\_content&view=article&id=96&Itemid=59](http://www.dane.gov.co/index.php?option=com_content&view=article&id=96&Itemid=59); consulted, July, 2012.
- Ibañez, C. and J.T. Caro. 2001. Algunas teorías e instrumentos para el análisis de la competitividad. IICA, Bogota.
- Ministerio de Comercio, Industria y Turismo. 2008. Las Pymes en Colombia. In: <http://www.mincomercio.gov.co>; consulted: July, 2012.
- Portafolio. 2006a. El gran libro de las Pymes. Casa Editorial del Tiempo, Bogota.
- Portafolio. 2006b. Caja de herramientas para Pymes. Casa Editorial del Tiempo. Bogota.
- Porter. M. 1999. Ventaja competitiva. CECSA, Mexico DF.
- República de Colombia. Ley 590 de 2000. Bogota.
- Román-Castillo, R. 2004. Teorías y mediciones de la competitividad: una perspectiva. Universidad Distrital de Caldas; Editoriales Universitarias de Colombia; ASEUC, Bogota.
- Semana. 2011. El gran Boyacá. Publicaciones Semana, Bogota.
- Tenkate, A. 1994. Un indicador de competitividad. CIDE, Mexico DF.
- Universidad de los Andes and Portafolio PYMES. 2004. Gestión para la competitividad, Casa Editorial El Tiempo, Bogota.