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**Documento de Trabajo en Ciencias Empresariales Nro. 6
Facultad de Ciencias Económicas
Departamento de Investigación “Francisco Valsecchi”**

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“Santa María de los Buenos Aires”

COMPETITIVENESS AND TECHNOLOGY FOR DECISION MAKING

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INTRODUCTION

It is usually accepted that the exchange rate and the possibility to export are strongly related. This means that the revaluation of the currency of an exporting country regarding to another importing country's currency, leads to a deterioration of the capacity of producers of the exporting country to export goods and services into the destination country; and vice versa, that a devaluation helps to export.

It is also usual, associate easiness to penetrate a market with the concept of competitiveness. That means to say that competitiveness of the local producers of the exporter country worsens or it improves respectively due to the commented changes in the exchange rate. This is not so certain.

Competitiveness of an industry is defined as a capacity: the capacity to defend the market share of the industry in a local market; and to penetrate new external markets, in absence of subsidies or duty barriers that can distort the reading. That plainly means the competitiveness of a sector is strongly determined by intrinsic characteristics of this sector in comparison with similar ones of its direct foreign competitors.

In strict sense the competitiveness of an industry is associated to its scale, localization, productivity, quality, innovation, commitment, image, and others, factors all them decisive for the competitiveness, that are usually *fixed* up or down through other short term based factors, as the exchange rate, the duty rate or other mechanisms - commercial, sanitarium, normative - to mention to the most transparent and healthy ones- or even those implying quotas, local registration, or previous approval, among the more harmful.

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All this is usually also broadly accepted, although working about the intrinsic factors determinant of the competitiveness not always receive – in our opinion - the due attention.

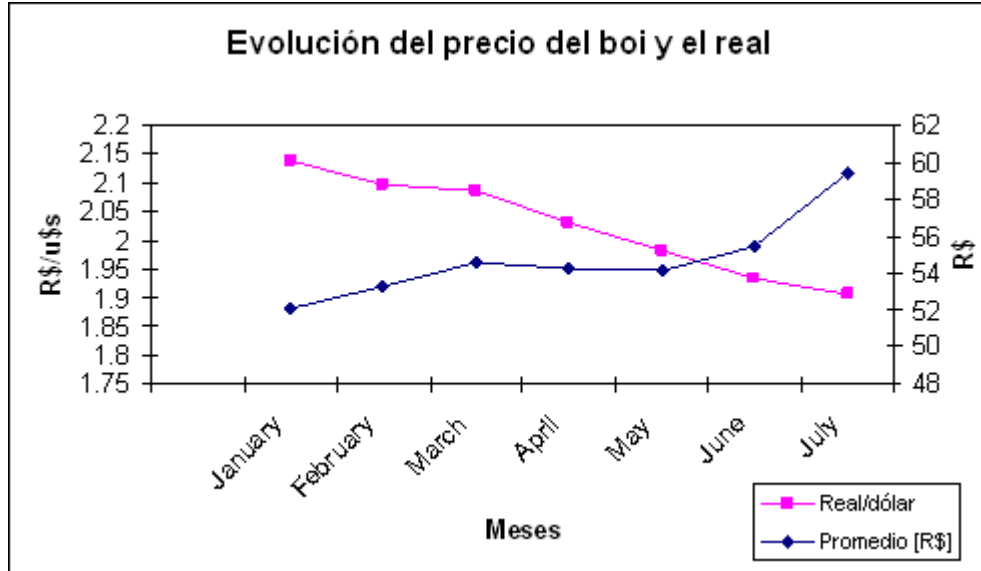
What is fewer accepted is as *soft* technologies – those focused to support the decision making process - can be constituted into a decisive part of the mix of key factors for competitiveness, as it was proved by the Brazilian exporters of bovine meat with the recent but willing adoption of tools for business decision optimization.

BRAZIL LEADS THE PACK...

Very well-known it is the success of the Brazilian producers in the conquest of the growing world markets of bovine meat: thermo processed, in which the Brazilian suppliers showed a primacy of many years, and fresh and frozen cuts, for which the domain is much more recent.

Now then, the conditions for this pre-eminence, far are of those usually associated to the exchange rate or, in this case, to the cost of raw materials.

As you can see in the following graph, both factors are combining negatively to dilute the competitive advantages of Brazilian meat producers.



Many offering features have been and are being explored to recompose the competitive equation. The purchase of plants in Argentina and Uruguay by the main Brazilian players, the acquisition of global scale - as it proves with the purchase of Swift America on the part of Friboi, a small company that bought a giant - and the vertical integration of the producers in industrial nets to exploit a 100% in weight of the slaughtered animals.

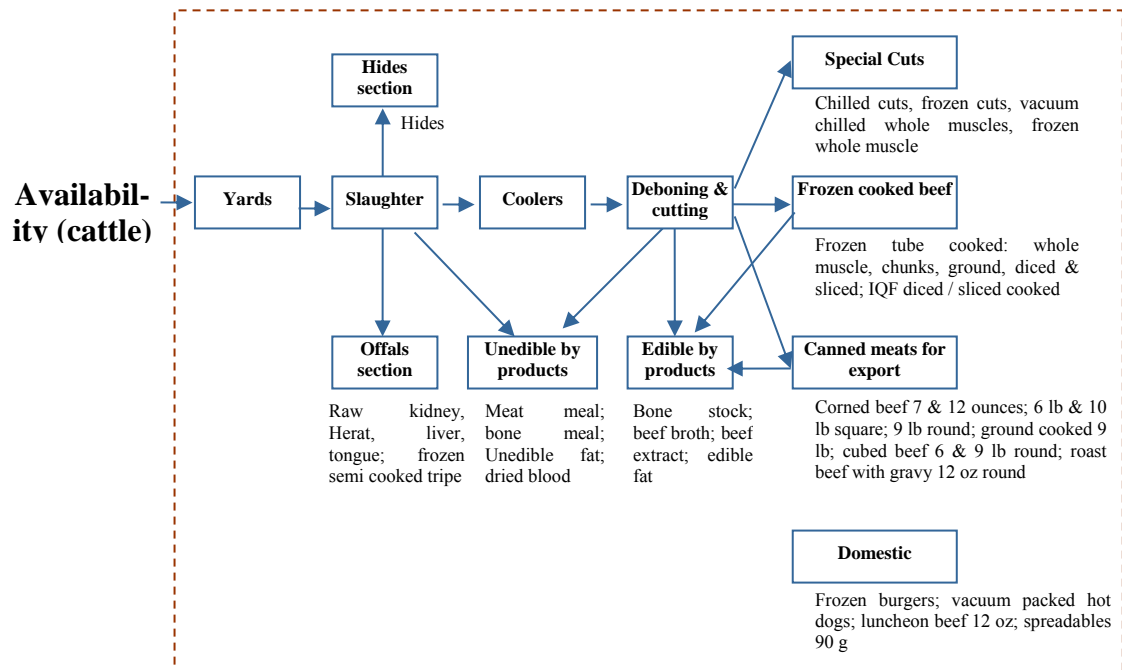
But also of the technology to manage this huge accumulation of capacity of a complexity without precedents.

A simplified graph is shown below, representing the process of an integrated plant of bovine meat:



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To figure out about complexity of the decision making for this type of plants, just say that the person in charge of carrying out the production plan should try simultaneously with:

- 10 types of animals (quality, weight, gender...)
- 50 types of muscles
- 3000 options of as cutting the muscles
- 180 cooled or frozen cuts
- 50 destinations (markets)
- 60 sub-products

Among the main restrictions that limit the decisor's degrees of freedom, we found:

- Demand restrictions
- Availability of animals for type
- Production capacity in each production stage
- Quotas that affect the demand (Hilton, Campbell...)
- Yields

That formidable combination of variables and constrains make the optimization of this process as a really inaccessible task for a human being, and only soluble through the use of a computer, provided the problem can be translated for its interpretation by a machine.

But the single representation of the complexity of the process in the language of a computer is a challenge due to the enormous complication of possible routes for the different groups of muscles, muscles, cuts, by-products and finished products.

The introduction of capacity constrains is also a complex problem because the dependence of the processes capacity with the mix of products, destination markets, regulations, and other technical and commercial matters.

And if this is complex with one or few plants of industrialization, much more it is in the case of the main Brazilian competitors with dozens of plants in several countries as scope of the optimization problem.

Empresa	Plantas de Faena Brasil	Plantas de Proceso Brasil	Plantas de Faena Resto del Mundo	Plantas de Proceso Resto del Mundo
Friboi	25	12	57	14
Bertín	23	6	4	N/D
Marfrig	14	6	12	N/D

To optimize this profit equation implies to represent - modelize - and to solve a problem of millions of variables and constrains. But who can make it, will have a formidable competitive advantage; not only to respond to the variable conditions of the market but to influence in it, capitalizing the huge economic power and production capacity accumulated in these years.

Responding to this intrinsic attractiveness during the last year, two of the companies mentioned above have invested a relevant amount of money and time in the adoption of mathematical optimization tools for business planning and programming of the production of their plants.

They are already harvesting the success in the form of plans of optimized profitability that respect all the constrains and provide an additional economic contribution from 3 to 5% over revenues, meaning to duplicate the usual earnings in the industry.

Other Brazilian players are already jumping into the process of technology and knowledge adoption. And other will follow them, in other geographies and industrial sectors - to *dismantle* milk, or pigs or chickens is essentially a similar problem from a computer point of view. Because there is anything like improved economic benefit to create global trends.



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TO IMPORT... TECHNOLOGY, TO BE ABLE TO EXPORT MEAT

As in other cases of success, the origin of the adopted technology was not local. Brazil only put the vocation for the excellence, maybe as flotation log to affront a loss of competitive advantages that was threatening to toss the investment made along these years. The applied technology comes from.... Argentina!!

The computer tools used to solve the problem were available in the market for many years. But the representation of the meat production problem in all its complexity doesn't have similar precedents. It was just three years ago that Swift Argentina - later on acquired by Friboi - decided to develop, with the support of a local consultant firm, a model that represent Rosario's plant and its decisions making process for slaughtering, refilling of main cuts and industrialization of sub-products. This model scopes a plant of slaughtering and six industrial downstream processes, with a few thousands of variables and restrictions. In just a few months, under the formidable combination of managerial leadership, creativity and business knowledge, the model was developed and begun to be used to support business decision.

Unfortunately and when model scope was already enlarged to include a second plant of the group, the company and the whole meat producing sector was engulfed by a relationship crisis with the Government, and the survival of the company got more closely related with the permission-of-export for an additional container that with the optimization of its business decision process.

The entrance of the Brazilians players into the Argentinean marketplace put them in contact with this innovative technology, that they didn't doubt to take home. Today the tool is already helping them to fight competition worldwide, included the Argentinean meat producers. And what about the first Argentinean entrees? ¡Tudo bom!, focused in the unlocking of another container from the Ministry of Economy.



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