Strategic Alliance in the Sugar Chain: The Case of Crystalsev[1]

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Abstract: The article discusses the case of Crystalsev, a company with sales of US$ 600 million/year, operating in the sugar and alcohol markets (sugar cane chain). Originally built as a marketing company for 7 industrial units (mills) of different groups linked by some family relationships, Crystalsev today operates with the production of 10 companies. Its members already took several benefits. After positioning Crystalsev at the sugar and alcohol markets, the article discusses these benefits and this alternative of chain coordination, a strategic alliance of 7 competitors to build a joint marketing company.

Key words – strategic alliances, sugar chain, vertical coordination, marketing

1 – Problem Statement and Objectives

The sugar cane chain in Brazil is one of the oldest chains, being linked to some of the main historical events of the country. Its numbers are always in the billion spheres. Estimates indicate that more than US$ 12 billion are involved in this chain (US$ 1 billion in the agricultural supplies, US$ 3 billion in farm production, US$ 1,2 billion at the sugar mills, US$ 3 billions in distribution and marketing and US$ 2,8 billion in tax generations - UNICA – Sugar Mills Association).

In the seventies, this chain changed the main focus, from the food sector (production of sugar) to the energy sector (alcohol), with the development of the Brazilian "Proalcool" Program, motivated by the oil crisis. The program stimulated new sugar cane mills and distilleries, with strong governmental incentives were built in order to enhance alcohol production to be used as fuel in cars. By the end of the 80's, more than 90% of the cars produced were totally moved by hydrated alcohol. In 2001, alcohol cars do not reach 1% of new car's sales, but still a large (but declining) fleet is running. Sugar has gotten importance again, counterbalancing alcohol, and reaching equality in terms of sales.

During 1997, PENSA (Agri-Food Business Program of the University of São Paulo) was invited to structure a project of building a joint marketing company, a strategic alliance (joint-venture) for seven large sugar mills, that decided to combine forces in order to reduce transaction costs, join the benefits of selling and buying together and improve chain coordination. In 2001, the company is one of the largest sugar producers in Brazil, also exporting, with sales around US$ 600 million/year. The first objective of this paper is to discuss the environment where Crystalsev operates, the sugar and alcohol markets. The second is to show more about the strategic alliance at that moment (1997), the size,

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structure and capabilities of the new commercial company (Crystalsev) and what were the main strategic recommendations of the project. The last objective is to evaluate what happened to Crystalsev in these 4 years and what were the difficulties of this huge case of strategic alliance in Brazilian agri-food business.

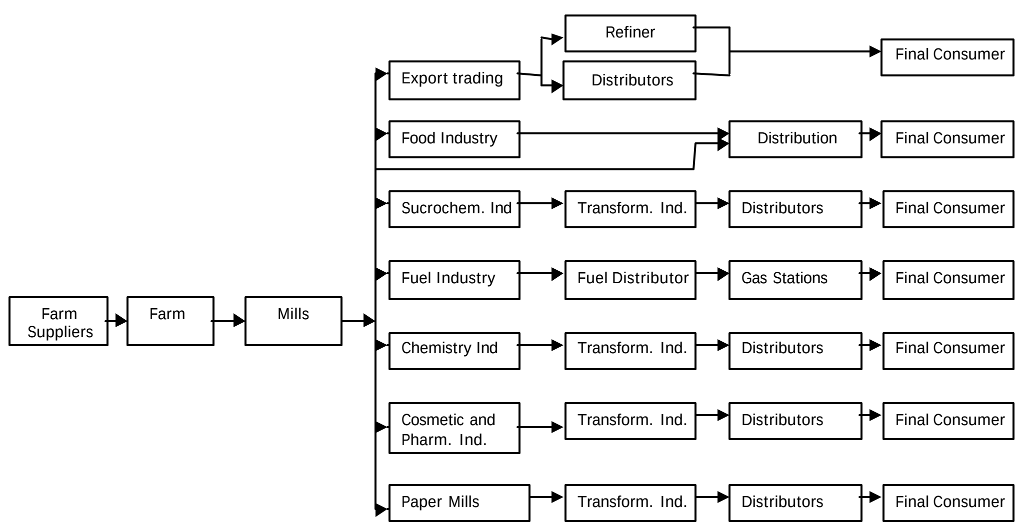
2 - Procedures

The procedures of the project involved 9 months of research inside the seven sugar mills and also inside Crystalsev (the new commercial company) during 1997. A team of 7 researchers from PENSA was responsible for the project, with part time dedication and strong interaction with its executives. Several visits, meetings and workshops were used as methodology. So the company was created and at the end of the project a strategic marketing plan was left to be implemented. The procedures for describing the environment of Crystalsev were done through literature revision and un-structured interviews with specialists.

3 – Sugar Cane Chain and the Changing Environment

In 2000 there were 308 sugar mills in Brazil, which crushed 315 million tons of sugar cane, producing 12 billion liters of alcohol and 15 million tons of sugar. It brought around US$ 2 billions to the country (through) exports and employs directly 1,5 million people. It is a very important industry for the Brazilian economy. Sugar and alcohol are its most important products followed by its by-products as *bagasse*, which can be used to generate energy. Some mills are completely self-sufficient in energy and some are able even to sell the energy surplus to the electrical network, starting a promising market. Other by-products are molasses, cellulose paste and leaven. A summarized description of the sugar cane chain can be seen figure 1.

Figure 1: Sugar Cane Chain



Source: Authors

The following tables show the large shares that Brazil has, either in production or exports (Table 1).

Table 1: The Brazilian Dimension on the World Sugar Market (1000 metric tons)

Year	Production	Share in Prod*	Exports	Share in Exp*
1998/99	18,300	14%	8,750	24%
1999/00	20,100	15%	11,300	29%
2000/01	15,400	12%	6,200	19%

Source: Date are from the USDA. *Share is calculated based on each year's total world production and exports.

Other important sugar producers and exporters can be seen at table 2.

Table 2: Main countries in the Sugar Market in 2000/2001 harvest (1000 metric tons)

Country	Production	Share in Prod.	Exports	Share in Exports
Brazil	15,400	12%	6,200	19%
Eur. Union	17,561	14%	5,150	16%
Thailand	5,600	4%	3,800	12%
Cuba	4,000	3%	3,500	11%
Australia	4,600	4%	3,349	10%
South Africa	2,800	2%	1,450	4%
Guatemala	1,591	1%	1140	3%
Mexico	4,987	4%	540	2%
India	17,803	14%	500	2%
China	8,079	6%	255	1%

Source: Elaborated by the Authors, USDA Data and Projections (Rounded)

Brazil concentrates 60% of the world ethanol production made from sugar cane and has important challenges. It is used in the country as an alternative fuel (to gasoline), being more environmental friendly and renewable. For Brazil sugar cane is important for job generation, and it is a very powerful commodity that can be exported, generating credits for the Brazilian trade balance.

Table 3: Ethanol World Production (1999)

Country	Alcohol Production (billion liters)	Share in Production
Brazil	15,0	60%
USA	6,0	24%
Asia	1,5	6%
Europe	1,3	4%
Africa	1,0	4%
Oceania	0,3	1%

Source: UNICA, World Bank, F.º Licht, LMC International

The main sugar importers can be seen at table 4. These countries have different import policies, but generally what can be said is that it is a very protected sector, like most of the agricultural sectors, significantly at the European Union, United States and Japan. Others are liberalized, however have great import quantity fluctuations, like Russian sugar market.

Table 4: The Main Sugar Imports (in 1000 metric tons)

	1998/99	1999/00	2000/01

1	Russia	5,400	5,170	3,820
2	European Union	1,867	1,905	1,835
4	United States	1,655	1,491	1,624
3	Indonesia	1,702	1,949	1,600
5	Japan	1,542	1,573	1,600
6	Korea	1,403	1,440	1,460
7	Malaysia	1,186	1,280	1,310
8	Canada	1,110	1.130	1,170
	Total	34,469	35,519	33,243

Fonte: USDA

The *advantages of Brazilian sugar cane chain* are related to large size and scale, productivity, labor usage, technology dominance, alcohol distribution network, high nationalization level, energy creation, by-products industrialization (in several sectors, like orange juice production, wood, paper, plastic, energy co-generation, and others), environment protection. These reasons are bringing large external investments and consolidation is in course.

The *opportunities regarding to sugar* are related to the high competitiveness of sugar and cane production in Brazil, technology creation, attractiveness of growing international markets for end-user sugar and for industrial uses of sugar, lowering barriers, organic markets, differentiation and value added sugar. R*egarding to alcohol, opportunities* are high oil (petroleum) prices, alcohol is one of the least costly renewable fuels in the world, the growing importance of environment (alcohol can be used as an additive to gasoline and diesel), and opening of international alcohol markets.

Several problems have to be addressed. The image of this industry in Brazil is improving, but it isn't seen with the advantages it has, since millers used to be seen as protected entrepreneurs, and also with large incentives from governors in the past. Governmental policies are not so clear, sugar millers also don't have large international experience, and trading companies are necessary to perform exports. The harvesting workforce is not qualified and mechanization is bringing problems of reallocation of this workforce. Several family owned groups and family management is present. Information systems have a lot to improve, and also management techniques. At last, several mills have financial problems which reduces strategy amplitudes.

Regarding to international sugar and alcohol markets, a common sense among exporters is that market has a lot of problems, opportunistic actions, huge changes in the uncontrollable variables (national currencies) and success is strongly related to price performance and flow capacity.

4 – Crystalsev – Building a New Company in 1997

> *"A joint venture is a particular type of strategic alliance in which two ore more firms create and jointly own a new independent organization. The new organization may be staffed and operated by employees of one or more parent firms , or staffed independently... Alliances, and the joint venture fall somewhere between arm's length market transactions and full vertical integration"* (Besanko et al, 1999, p. 185)

In 1997, the sugar and alcohol market was passing through great changes with important implications to the millers' competitiveness. The challenge at that time was the need for a positioning reinforcement of seven sugar mills. They would found a nucleon to market products, clearly gaining scale and bargaining power, enhancing financial and managerial capabilities and incorporating other natural benefits from strategic alliances. Crystalsev was created as an alternative arrangement to mergers and acquisitions in this very competitive and not concentrated chain. It acts like as a facilitator between the sugar millers and their suppliers and clients (see Figure 1).

Among their clients are the main food industries in the country (segmented in beverage carbonated industry, chocolate industry, ice-cream industry, candy industry, powder beverage industry, conserve industry, juice industry, dairy industry, gelatin and jam industry). Another important channel is the large fuel distributors. Vast majority of exports are done through large trading companies.

The seven sugar mills are responsible for crushing 6% of Brazilian sugar cane production (over 19 million tons of sugar cane). It produces around 1,2 million thousand metric tons of sugar (8% of the Brazilian production) and also it is able to produce over 900 million liters of alcohol, what represents about 6% of the total production. The dimension of the production of each mill and their location can be seen at table 5.

Table 5: Data on each of the seven mills (1999/00)

Mill	City - State	Sugar Cane Production (thousand tons)	Sugar production (thousand tons)	Alcohol Production (thousand litters)
Santa Elisa	Sertãozinho / São Paulo	7,000	460	300,000
Vale do Rosário	Morro Agudo / São Paulo	5,000	300	227,000
MB	Morro Agudo / São Paulo	2,000	138	122,000
Moema	Orindiúva / São Paulo	2,000	160	117,000
Mandu	Guaíra / São Paulo	1,500	74	87,000
Jardest	Jardinópolis / São Paulo	900	63	55,000
Pioneiros	Sud Menucci / São Paulo	867	63	57,000
Total		**19, 267**	**1,258**	**965,000**

Strategic alliances should always be carefully managed. The implementation phase is crucial, and once it has been well done, the chance for success increases considerably. PENSA, in order to help the seven mills to successfully form this new commercial company, structured a project that covered the following aspects:

- Definition of Crystalsev's mission
- Establishment of the integration level between the units
- Design of contracts and societal structure
- Definition of rights of ownership (as brand)
- Definition of each parts' responsibilities
- Establish a basic business strategy
- Delimit a distribution coverage
- Design organizational structure
- Build a marketing mix strategy
- Evaluation of the production potential of the nucleon
- Define infra-structure and quality policies
- Define financial aspects

To form the strategic alliance, a method was suggested by PENSA that included the aspects showed above. The method was composed of five steps: definition of corporate planning of the partners and objectives; the decision for the alliance need; partners' selection; decision of the ideal alliance format, and finally; the negotiation and implementation process. These five steps will be commented and the main aspects of each will be highlighted, in order to revive the situation in 1997.

Partners' Corporate Planning: In this phase the strategies of each partner (of the seven sugar mills) have to be clear to engage in an alliance. Synthetically, each partner has to know about the markets to be focused and the specific products to them, what the main managerial tools are, and the ways to keep the product's competitiveness in those markets. What could be seen at Crystalsev was that these strategies were not clearly defined. The decision for the creation of the alliance was based more on historical and family ties than strategic issues. These could be seen as a potential area for conflicts, once each unit could undertake independent strategies conflicting with the ones of Crystalsev and competition within the group could exist. Some decisions that could result in conflicts were on the issues related to whose product to sell after a client's request to Crystalsev. Which new markets to enter, new products to launch, improvement and investments in different production capacity, different services offered to clients, new alliances, among others.

The Need to Form an Alliance: The need to form an alliance must be present in each partner, and it has to be the reason for the new business. At Crystalsev, it could not be seen that there was consensus among all the partners about the need for an alliance. Some believed it was the main strategy for survival, and others thought it as an opportunity to strengthen its commercial activities and political power. A very positive point is that, although the need for the alliance was divergent to the partners, the benefits that would come from it consisted of a consensus.

Partners Selection: The partners' selection occurred naturally for historical reasons. This characteristic can be an advantage if the company's management is extremely professional, avoiding any extra-business interference and enjoying the friendship and trust typical of a familiar group. However, what could be seen in the company was somewhat a lack of professionalism. Personal interference and vanity from many sides was strongly present throughout 1997.

Decision for the Ideal Format for the Alliance: There are many possibilities of formats and contracts to join enterprises with common objectives. In a very simple manner, the alliances can be split up in three groups: long-term oriented alliances, short-term oriented alliances, and diffuse alliances. Before mentioning which was the more suitable for Crystalsev, it is worth to categorize them.

a. Long-term oriented alliances: less risky because they pursue clear and discussed objectives. They demand more managerial care and need to be managed considering the partners' strategic changes. Transparency is of fundamental importance.

b. Short-term oriented alliances: They generally pursue a more specific goal therefore offer greater risk for the participants. The today's partners can become well-informed and strong competitors of tomorrow.

c. Diffuse alliances: These are built slowly, in a disorganized and without planning way. These alliances can or cannot be successful, and they should not be considered strategic priorities for none of the partners.

For Crystalsev, the alliance was essentially a long-term oriented one. The creation model of an independent company and the capital structure seemed to be adequate for this type of alliance.

The Negotiation and Implementation Process: It was clear that the Crystalsev's short-term strategy was the organization of a marketing strategy that enhance efficacy on the partners' commercialization process. Its mission statement was "Commercialize as efficient as possible sugar, alcohol and its by-products at the internal and international markets, as well as to rise diversification alternatives to the founders".

Each partner entered with 100% of its sugar and alcohol production. At the long-term, this activity could be expanded to more products, logistics, quality management, lobby, and so on. The method of sharing results was simple and objective. The sales return was given to who sold the product. The open question at that time was how to allocate orders in a situation of supply higher than demand. That needed to be better defined. An organizational structure was proposed. The informal character of the management, the need for a working agenda defining responsibilities for each manager, and the need for professionalism were the main aspects at this issue. Remaining questions were related to hold up the agreement and leave the alliance, and about the control systems and how the alliance would be evaluated.

5 – Crystalsev – The Main Advantages and Disadvantages

The *main advantages* that Crystalsev could offer *to its clients* were regularity of supply. Any client could trust Crystalsev once it represented a larger production power, from different units, this could also motivate more long-term relationships with important clients. For focusing on commercial activities, it could offer also a differentiate logistics and dealing procedures. Thinking of its clients' needs, Crystalsev could generate more quality and product pattern options and could be more flexible in negotiations and contract's establishment. Since the company had 7 locations (industrial units), distribution process was more convenient to some clients. Finally, Crystalsev could also offer financial services, exploring the groups' financial power.

The *main advantages* to the *partners* in forming the alliance were related to scale, production optimization, specialization, new image and positioning among clients and among sugar cane chain agents, more capacity to differentiate, professional management, more stable operations, the opportunity to reduce costs to deal with suppliers. This could be done through the establishment of a unique commercial policy for buying, and management of a wide array of suppliers previously registered (including suppliers of fertilizers, crop defense, machines, services – transportation, harvest, and others). This would enhance the bargaining power of each partner, provide a more efficient logistic, make possible a reduction on managerial costs, standardize supplies, and generate more possibilities to design long-term contracts with suppliers. Also costs of commercial structures and staff could be reduced, since marketing was going to be done by Crystalsev.

The *additional costs for the founders* were the transaction costs and the great effort needed to maintain the relationship and management of the business. Moreover, if there was no reduction in the managerial and operational structures, double costs could exist.

The *disadvantages of creating Crystalsev* were not clear (not easy to see). The main disadvantages perceived were the risks of the reputation of the seven original companies if the new one failed. Important losses could exist in terms of image with clients, government, banks and others. With clients there was a particular danger because once an important client was sent to Crystalsev, the original mill would lose direct contact.

The *critical success factors* were first the need for loyalty of the seven mills to Crystalsev, as well as trust and ethics between the partners. The individuality would have to be overcome at the Crystalsev's management. Crystalsev's strategy had to be delimited, clearly defined, and also they should be coherent with the seven mill's strategy. Communication among the seven partners and with the market was a critical success factor. Strategic planning for the company itself was fundamental.

To be successful, Crystalsev needed to have management skills to perform the activities it was supposed to perform, it had to be able to build a good image at the market, and finally it had to be able to manage and harmonize synergies in production and logistics. The marketing plan suggested several actions regarding marketing research (needs of clients) development of a marketing information system, marketing channels (reduce intermediaries), product development (homogeneity) and communications (direct actions to food and beverage industry).

6 - Crystalsev Today and Final Comments

The most different aspect found in Crystalsev is that the company now has 10 partners. Besides the traditional 7 mills, 3 other companies join Crystalsev (but these three don't have participation). Crystalsev, 4 years later, still has homework relating to professional management and families interference. This interference brings some conflicts that also demand time and efforts to solve.

Environmental changes in these two markets (sugar and alcohol) are so dramatic that this takes a large amount of management time. "Mined field" was the term used by the main executive to refer to sugar and alcohol markets. These environmental changes, in exchange rates, internal policies (alcohol amount added to gasoline) bring lot of instability and conflicts. The decisions under these circumstances are difficult, and to reach a consensus even more.

One of the most valuable skills of the alliance in 2001 is the joint planning. This adds value to company in negotiations and facilities to deliver products. But prices and production flows during the year are the most important decisions. With the specialization of production units in kinds of sugar, and with location specificity, Crystalsev is developing a group of loyal clients for each of the seven mills. After 4 years, there is a very nice recognition to the brand name Crystalsev in the market.

In sugar, there are only a few markets (Japan, Canada and others) that exporters can trust. The other markets have several opportunistic actions. Crystalsev still uses trading companies fore exports, since risks are high in some importing countries (exchange rates, political instability and others). Several specificities related to product flows happen. Since it has high volume and low added value, harbor operations and international freights must be very competitive. But indeed there are plans to advance in the chain.

Crystalsev is an interesting example of strategic alliance among competitors. Its members have taken several benefits since the beginning of the company. Its operation takes place in a highly competitive environment, and Crystalsev is one of the world's cost leaders in sugar and alcohol. Although, it's main markets are protected by several kinds of policies, like the North American market, and the European Union market (supplied by sugar coming from beet, with not competitive costs). If commercial agreements or free trade zones (like ALCA or Mercosul/European Union) take part in the future, Crystalsev will be one of the world's major *sugar and alcohol* supplier. But for that, increase in professionalism and marketing orientation will be needed.

7 - Bibliography

ACP SUGAR GROUP Web Site (African, Caribbean and Pacific Sugar Producer Countries)

F. O. LICHT, *International Sugar and Sweetener Report*, 1999 - Washinghton USA, 63 p.

BESANKO, D. et al. *Economics of Strategy* – Wiley, 1999, 644p.

HANNAH, A. C. & SPENCE. *The International Sugar Trade,* Published in Association with International Sugar Organisation, 1997 John Wiley & Sons, Inc. London, England. 245 pg..

INTERNATIONAL SUGAR ORGANIZATION (ISO) Reports. London, England. 104 pg.

JOHNSON, G. & SCHOLES, K.. *Exploring Corporate Strategy.* Prentice Hall, 4th. Edition, 1997, 866 p..

RABOBANK INTERNATIONAL *The World of Sugar and Sweeteners,* October 1999. Holanda, 135pg..

STERN, L. & EL-ANSARY, A. I. & COUGHLAN, A. *Marketing Channels.* Prentice Hall, 5th. edition, 1996, 576 p..

THE INTERNATIONAL POLICY COUNCIL - *Sugar Policy in the Post-Uruguay Round Era*, 1995, 78p.

USDA Web Site (United States Department of Agriculture)

AMORIM, H.V. *Proálcool: réquiem.* Jornal de Piracicaba, 3/8/96.

BIAGI FILHO, M. *Políticas para o setor sucroalcooleiro*. Palestra apresentada no Seminário Qualidade e Produtividade na Virada do Milênio. 17 pg., 17/7/97.

CARON, D. *Novas tecnologias para a indústria sucroalcooleira*. Preços Agrícolas, Novembro 1996, p13-16.

CARVALHO, L.C.C. *Mercado nacional e internacional do açúcar e do álcool.* AIAA. Palestra apresentada no PENSA/FEA/USP, em 24 de Abril de 1997.

FNP CONSULTORIA E COMÉRCIO. Agrianual 2000. p. 164 – 185. Proálcool 25

HOMEM DE MELLO, F., FONSECA, E.G. da*. Proálcool, Energia e Transportes*. Fipe/Pioneira. São Paulo, 1981.

JORNAL DA CANA. Várias notícias.

NOONAN, C – Export Marketing – Butterworth Heinemmann, 1999, 601 p.

SHIKIDA, P.F.A. *Modernização da Agroindústria Canavieira durante o Proálcool: Uma Abordagem Exploratória através da Análise Fatorial.* Revista Economia & Empresa, v.3 (n.1) p.20-33. São Paulo, 1996.

ZYLBERSZTAJN, D 1995. *"Estruturas de Governança e Coordenação do Agribusiness*: *Uma aplicação da Nova Economia das Instituições"*. Tese de Livre Docência apresentada no Departamento de Administração da Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo, 238 pg.