Centrolac

Esteban R. Brenes, Carlos Martínez and Caleb A. Pichardo
INCAE Business School, Alajuela, Costa Rica

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Abstract

Purpose – The purpose of this paper is to discuss Centrolac, a Nicaraguan company engaged in processing ultra-pasteurized milk, and provides abundant information for readers to decide on vertical vs horizontal integration to deal with the changing competitive environment. It has been prepared to simplify discussion and knowledge about the competitive field (where to compete); generic cost-leadership and high-perceived-value strategies (how to compete); and the action required to attain positioning (how to implement it).

Design/methodology/approach – The case study is based on primary research conducted in conjunction with the company, including interviews with senior management and a broad document review. Secondary research was also conducted into the relevant environmental, industry and competitor trends and characteristics.

Findings – The case study presents topics of competitive positioning and how current company strategy can have a significant impact on future growth decisions.

Originality/value – This case study is for use in an MBA-level business strategy course with a focus on strategic positioning and growth paths. However, it can also be used for MBA corporate strategy courses in relation to corporate expansion on issues linked to organic growth within the same business (expansion into new dairy products) or vertical integration (integration into dairy-farming).

Keywords Dairy products, Business strategy, Emerging economies, Vertical and horizontal integration

Paper type Case study

Resumen estructurado

Objetivo – Este estudio de caso analiza Centrolac, una empresa nicaragüense dedicada al procesamiento de leche UHT, y proporciona abundante información para que los lectores decidan entre la integración vertical y horizontal para hacer frente al cambiante entorno competitivo. Ha sido elaborado para facilitar la discusión y el conocimiento sobre el campo competitivo (¿dónde compito?); estrategias genéricas de liderazgo en costos y alto valor percibido (¿cómo compito?); y la acción necesaria para alcanzar el posicionamiento (¿cómo lo implemento?).

Diseño/metodología/enfoque – El estudio de caso se basa en investigación primaria realizada en conjunto con la empresa, incluyendo entrevistas con la alta dirección y una amplia revisión de los documentos. También se llevó a cabo investigación segundaria sobre las tendencias y características relevantes del entorno, industria y competencia.

Conclusiones – El estudio de caso presenta temas de posicionamiento competitivo y cómo la estrategia actual de la empresa puede tener un impacto significativo en las futuras decisiones de crecimiento.

Originalidad/valor – Este estudio de caso fue escrito para ser usado en un curso de Estrategia Empresarial a nivel de MBA con un enfoque en posicionamiento estratégico y rutas de crecimiento. Sin embargo, también puede ser utilizado para un curso de MBA en Estrategia Corporativa en relación con la expansión corporativa en temas vinculados con el crecimiento orgánico dentro del mismo negocio (expansión en nuevos productos lácteos) o la integración vertical (integración en la producción lechera).

Palabras clave Productos lácteos, Estrategia de negocio, Economías emergentes, Integración vertical y horizontal

Tipo de papel Trabajo de investigación

One morning, in early January 2014, Centrolac's CEO, Alfredo Lacayo, was checking his firm's results for 2013. Centrolac sales had grown 6.6 percent from the previous year, accounting for a 12.9 percent growth in terms of dollars. However, Alfredo was not happy since he felt that a shortage of high-quality milk had prevented a volume

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increase of up to 20 percent. Centrolac served about a third of the local market for fluid milk, which it shared with two companies that had been in the market for decades, and it had established itself as the ultra-pasteurized (UHT)[1] leader with 80 percent of the market share. In addition, it exported its goods to Guatemala, El Salvador, Costa Rica, and Venezuela.

Two factors were of particular concern to Lacayo. First, high international prices for powdered milk encouraged artisanal cheese producers to collect more liquid milk since producers in neighboring countries were importing milk from Nicaragua instead of importing powdered milk to reconvert and mix with fresh milk to produce cheese. Second, Grupo Lala, from Mexico, was building a facility that would first produce UHT milk and, soon after, other dairy goods. In this context, Lacayo wondered what he should do to deal with competitors and maintain sales growth.

Background

Nicaragua was the largest country in Central America (CA), with 121,428 square kilometers, a tropical climate and central highlands, vast Pacific lowlands devoted to agriculture and animal husbandry, and tropical forests in the Caribbean. In 2013, its population was 7.1 million, and its nominal GDP was US$11.2 billion. Nicaragua's per capita GDP was the second lowest in Latin America; however, analysts expected GDP growth to remain stable at 4.6 percent for the next two years, driven by Foreign Direct Investment (FDI), the growth of agricultural and livestock exports, manufacture, mining, and a steady domestic demand (Economist Intelligence Unit, 2014).

In 2009, Nicaragua had an unemployment rate of 8 percent; 43 percent of the population lived in rural areas, 32 percent of jobs were in agriculture, 42.5 percent of its population lived below the national poverty line, and it ranked second worldwide in terms of nutritional deficiency and third in terms of percentage of malnourished children in CA (UNICEF, 2013) (see Table I). It ranked 109th and 119th in higher education and in technological availability, respectively, in the competitiveness ranking of the World Economic Forum (2014). This gap was evident in business productivity and product quality.

In 2007, Daniel Ortega, of the Sandinista National Liberation Front (FSLN), a socialist party, became president. Mr Ortega was the most popular political figure in the country, with the most recent polls showing a 60 percent approval rate. Despite FSLN's socialist link, the relationship between the government, the private sector, and foreign capital was very good.

Nicaragua's exports amounted to US$2.4 billion (Banco Central de Nicaragua, 2013). Venezuela had become a significant trading partner, with imports from Nicaragua growing from US$2.1 million in 2005 to US$444.0 million in 2012. This increase took place under the Petrocaribe alliance, through which Venezuela sold oil with concessional, long-term financing with a two-year grace period and an annual 1 percent interest rate to 14 countries in the region. Countries could pay for oil partially with goods and/or services, Nicaragua paid with meat and milk. Analysts agreed that Venezuela's generosity could gradually decline as its economic, social, and political problems increased. At the same time, non-tariff barriers from Central American countries were negatively impacting regional trade (The World Bank, 2014a).

Nicaragua recorded an increase in the diversity of FDI from US$382 million from 22 countries in 2007 to US$1,284 million from 37 in 2012. Venezuela, Panama (mainly by the number of holding companies registered in Nicaragua), USA, Mexico, and Canada were the largest investors (PRONICARAGUA, 2014).

Table I.
Central American countries – social indicators

	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua	Panama
% of population below national poverty line (2009)[a]	21.3%	37.8%	53.7%	58.8%	42.5%	29.8%
% of population living on less than $1.25 per day (2009)[a]	3.1%	9.0%	na	17.9%	na	6.6%
% of rural population (2009)[a]	35.8%	36.2%	50.2%	49.0%	43.0%	25.4%
GDP per capita (2012)[a]	9,386.30	3,789.60	3,330.50	2,322.90	1,753.60	9,534.40
Food deficit (kilocalories) per individual per day (2008)[a]	28	69	198	77	144	66
% of malnourished children under 5 (2011)[b]	5.6%	19.2%	48.0%	29.0%	21.8%	19.1%
Unemployment (% of labor force) (2010)[a]	7.3%	7.0%	3.7%	4.8%	8.0%	6.5%
Employment in agriculture (% of total no. of employees) (2010)[a]	15.0%	20.8%	33.5%	36.0%	32.2%	17.4%
GINI index[a]	50.7 (2009)	48.3 (2009)	55.9 (2006)	57.0 (2009)	40.5 (2005)	51.9 (2010)

Sources: [a]The World Bank (2014b); [b]UNICEF (2013)

The dairy industry

Dairy companies produced goods from milk and whey: fluid, powdered, and condensed milk; cream; cheese; yogurt; ice cream; and butter. In 2014, major companies in the industry included Dean Foods, Dairy Farmers of America and Land O'Lakes from the USA, Danone and Lactalis from France, Fonterra from New Zealand, Koninklijke from the Netherlands, Meiji from Japan, and Nestle from Switzerland. Companies in the dairy industry were willing to adopt new technologies at various links in the value chain, enabling them to achieve more with less. Farmers produced more milk per cow and producers increased process efficiency and reduced operating costs. This focus on efficiency enabled the industry to grow, on average, 4.1 percent per year over the last five years, despite the slow recovery of the global economy after a sharp decline. Industry size was estimated to reach US$494 billion by 2015 (The Association for Packaging and Processing Technologies, 2013).

Worldwide production of whole milk in 2011 was 612 million tons, with the USA (14.5 percent), India (8.7 percent), China (6.0 percent), Brazil (5.2 percent), Russia (5.1 percent), Germany (4.9 percent), France (4.0 percent), and New Zealand (2.9 percent) as the major producers (FAOSTAT, 2014). The largest exporters were New Zealand, Australia, and the USA, while Russia, China, and Mexico were the biggest importers.

A major change in the industry was the introduction of UHT milk in 1970, resulting in increased consumption in countries lacking access to pasteurization technology. Ultra-pasteurization was a sterilization process by which food items underwent high temperatures for short periods of time, resulting in a shelf life of up to six months without refrigeration. UHT milk was increasingly popular in developing economies given deficiencies in the cold chain and the very high costs of refrigerated transportation. In the USA, consumers still preferred traditional pasteurized milk because of its fresh milk flavor.

Market data and expert opinion reinforced some industry trends such as producer mergers, mega-farms, increased general consumption of dairy products and lower consumption of fluid milk. Industry consolidation was aimed at attaining economies of scale and a broader product portfolio to raise barriers to entry and to enhance bargaining power *vis-à-vis* supermarket chains, some of which were already producing private-label milk. Previously, dairy companies had operated in a single facility and produced a single product category; however, over recent years, a significant trend toward producing specialty products such as flavored milk or low-calorie products had emerged. In addition, carbonated-beverage companies were partnering and acquiring dairy companies as a way to bring healthy products into their portfolios. In early 2012, PepsiCo partnered one of the largest dairy companies in Germany to bring Muller yogurt to the US market (Geller, 2013). In June 2012, Coca Cola acquired a stake in Fair Oaks Farm Brands, with which it had reached an earlier agreement to distribute the milk-based protein drink Core Power (Klineman, 2012).

Another trend in the industry was the development of mega-farms. Over 57 percent of the milk produced in the USA came from dairy farms with more than 500 cows. Herds of between 1,000 and 10,000 cows were common. Due to their scale, these mega-farms had access to higher quality animal feed concentrates at competitive prices and automation technologies, leading to higher efficiency levels. These mega-farms made it increasingly difficult for small family farms with little technological sophistication to survive; the number of dairy farms in the USA declined by 61 percent between 1992 and 2012.

The third trend in the industry was a rise in the consumption of dairy products. Among the reasons for the growth in global demand for dairy products was the increased purchasing power of consumers in countries such as China and India, who demanded more and more protein in their diets. Another reason was a boost in the popularity of products such as yogurt and protein drinks in developed countries, where consumers were progressively demanding healthier foodstuffs in ready-to-eat packages. Despite the growth in consumption of dairy goods, consumption of fluid milk was decreasing. Per capita consumption of fluid milk in the USA in 2000 was 210 liters (USDA, 2014) (55 gallons) a year, while, in 2011, it was 198 liters (52 gallons). Among the factors behind this decline were the high content of fat and lactose in milk and the emergence of substitute products made from soy, rice, and almonds. These drinks were lactose-free, had less fat than skim milk and a shelf life of three months. Lactose intolerant consumers and/or those with healthy lifestyles appreciated all of these attributes.

The dairy industry in CA

Dairy production in CA was one of the most dynamic, significant activities in the region due to biotic factors – such as climate, access to water, and flat topography – that favored milk production on an industrial scale. However, per capita consumption of milk in countries in the region, except for Costa Rica, was below the FAO recommendation of 188 liters (50 gallons) per year (see Figure 1).

Except for El Salvador, all the countries in the region increased their milk production between 2008 and 2012. Costa Rica produced 1,097,427 tons of milk in 2012, followed by Honduras with 997,900, and Nicaragua with 773,281 (see Figure 2). In 2012, 78 percent of Central American exports of dairy products went to countries in the region (Comisión para la Defensa y Promoción de la Competencia, 2013), with Nicaragua being the region's largest exporter of cheese (30,211 tons) and fluid milk (19,038 tons), followed by Costa Rica, with exports of liquid milk (36,152 tons) and powdered milk (16,244 tons). Major importers were Guatemala, with 25,225 tons of liquid milk and 16,588 of powdered milk, and El Salvador, which imported 28,316 tons

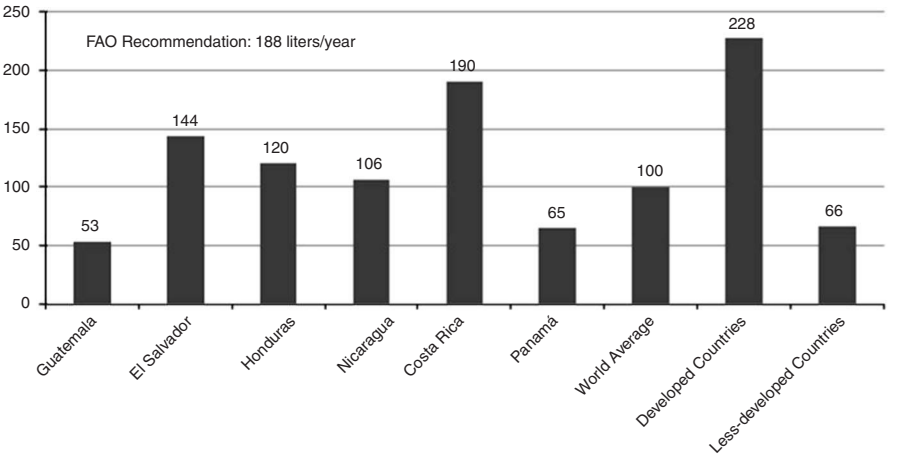
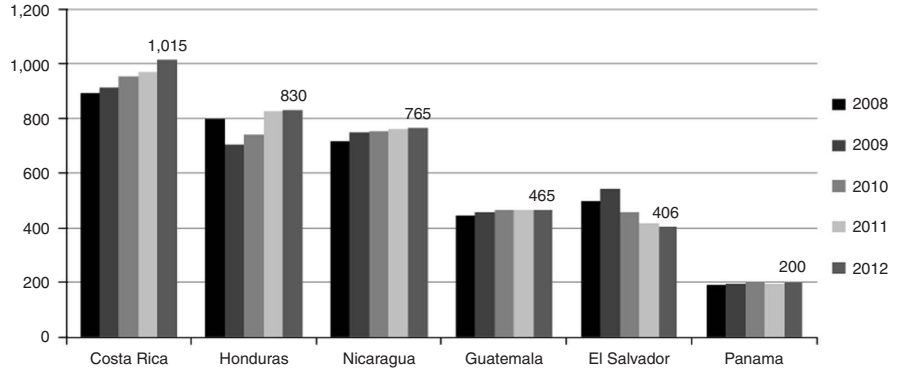


Figure 1.
Per capita milk consumption in Central American countries – 2012 (liters)

Source: FAOSTAT (2014)



Source: FAOSTAT (2014)

Figure 2.
Milk production in Central American countries – 2008-2012 (000s tons)

of cheese (see Table II). The proximity of these countries and the similarity in the buying habits of consumers across the region favored intra-regional trade in dairy products despite the lack of import duty harmonization. Costa Rica and Guatemala were opposites in terms of openness to dairy imports; the former was the most closed country, with an average import duty of 63 percent, and the latter, being a net importer, was the country with the lowest import duty: 15 percent for all items (see Table III). Imports from countries outside the region consisted primarily of USA processed cheese and powdered milk from New Zealand.

Besides the three main Nicaraguan industrial pasteurizers, major dairy companies in the region included Cooperativa Dos Pinos (Costa Rica), Lácteos de Honduras, S.A. (LACTHOSA), Industrias Lácteas, S.A. (Panama), and Cooperativa Ganadera de Sonsonate (El Salvador). In addition, the Mexican Grupo Lala operated a plant in Guatemala and was building another in Nicaragua to serve the Central American market. At regional level, there was no leading competitor in CA; companies operated at the country level despite exports to other Central American countries by some firms. Table IV shows important characteristics of each one of the major dairy competitors in CA.

The dairy industry in Nicaragua

Nicaragua had great advantages in producing dual-purpose cattle – for beef and dairy – compared to other countries in CA. These included its extension, human resources in rural areas, and areas with flat topography and soils suitable for pasture with immediate access to water sources. Cattle production accounted for 7.5 percent of GDP and 26 percent of total exports of goods (BID-OIRSA, 2012). It had the largest dairy herd in CA but the lowest productivity rate in the region: 7,285 hectograms per cow per year, equal to 1.9 liters/cow per day (see Table V). Milk production in 2012 amounted to 216.3 million gallons, the highest production ever (MAGFOR, 2014). Of these, 133.6 million gallons had been collected, of which, 86 percent was used to produce artisanal cheese. The remaining 14 percent was collected by five industrial producers who bought only milk that passed their quality tests. The milk they rejected was either consumed locally or used to produce artisanal cheese. Although most of the milk was still consumed raw or processed by hand, there was a trend toward an increase in the volume of milk collected by industrial plants (see Table VI).

Table II.
Production, exports, and imports of dairy goods in Central American countries – 2012 (tons)

	Costa Rica			El Salvador			Guatemala			Honduras			Nicaragua			Panama		
	Product	Export	Import	Product	Export	Import	Product	Export	Import	Product	Export	Import	Product	Export	Import	Product	Export	Import
Fluid milk	1,097,427	31,512	951	419,508	0	7,884	473,501	0	25,225	997,900	2,557	3,042	773,281	19,038	1,204	195,980	15	1,254
Powdered milk	21,825	16,244	232	0	177	8,329	1,845	210	16,588	413	355	4,684	7,875	8,242	2,298	12,219	0	3,950
Condensed milk	0	165	4,379	0	0	415	0	0	1,611	0	15	1,081	0	83	435	9,024	327	640
Evaporated milk	0	698	1,861	0	108	1,651	0	16	2,458	0	0	1,142	1,029	1,057	202	19,494	2,077	65
Cheese	12,389	2,279	2,410	2,532	2,056	28,516	6,750	327	12,238	18,651	3,506	7,313	35,276	30,211	724	14,571	1,395	6,678
Butter	6,900	867	128	175	18	404	581	20	2,140	9,100	684	383	615	64	345	53	0	680
Ice cream	na	2,365	3,050	na	3,708	3,935	na	6,873	1,445	na	0	7,034	na	3,075	411	na	0	1,443
Yogurt	na	698	1,861	na	108	1,651	na	16	2,458	na	0	1,142	na	1,057	202	na	2,077	65

Source: FAOSTAT (2014)

Description	Guatemala (%)	El Salvador (%)	Honduras (%)	Nicaragua (%)	Costa Rica (%)
Milk and cream, not concentrated, no added sugar or sweeteners	15	40	35	15	65
Concentrated milk and cream, with added sugar or sweeteners	15	18	19	48	65
Buttermilk, milk and cream, curd, yogurt and other fermented or acidified products	15	40	35	23	65
Butter and other milk fats; dairy spreads	15	27	20	23	65
Cheese and ricotta	15	40	27	33	53
Average	15	33	27	28	63

Note: [a]No data available for Panama
Source: Comisión para la Defensa y Promoción de la Competencia (2013) de Honduras

Table III.
Consolidated data on Central American tariffs on dairy imports[a]

Historically, Nicaraguan milk producers had received the lowest average price in CA, with US$0.38 per liter of milk in 2010, compared to US$0.67; US$0.56, and US$0.45, for producers in Panama, El Salvador, and Costa Rica, respectively (see Table VII). However, exports to Venezuela resulted in increased demand, and, in 2014, industrial producers paid US$0.48 per liter of milk. Industrial producers disliked Grupo Lala's arrival as it led to increased demand and higher prices to be paid to producers.

The three major dairy processors in Nicaragua were Parmalat, Eskimo, and Centrolac. Other competitors included Prolacsa, a subsidiary of Nestlé engaged in producing powdered milk, and Nilac, a Salvadoran-funded company engaged in producing cheese for export.

Parmalat, founded in Italy in 1961, became the world leader in the production of UHT milk, with 140 plants in 26 countries and 36,000 direct employees. In 1998, Parmalat acquired La Perfecta in Nicaragua, a locally owned dairy company which had been part of the market for 30 years. In 2003, Parmalat went bankrupt globally after one of the largest corporate scandals in history. In Nicaragua, Parmalat's subsidiary had borrowed money from two financial institutions and sent it to the parent company. Lafise Financial Group came to the rescue of the then largest gatherer and producer of dairy products in the country, acquiring 49 percent of the Parmalat's Nicaraguan subsidiary for US$5.4 million and the remaining 51 percent in 2009; thus, exerting full control and obtaining the license to continue using the brand through Productos Lácteos de Centroamérica (Álvarez, 2009).

Parmalat served over 12,000 points of sale per day through its own sales force. Its products included pasteurized and UHT milk in 450 and 900 ml plastic bags, cheese, butter, yogurt in a variety of flavors, ethnic Nicaraguan drinks (cocoa and gourd seed), and Santal orange juice, the leader in its category, in 900 and 400 ml cartons and 1,000 ml aseptic packaging.

Eskimo, founded in 1942 as a small family-run ice cream business, was the largest producer of ice cream and popsicles in Nicaragua. In 1952, it introduced a street-cart distribution system, which became very popular; in fact, Nicaraguans used the word "eskimo" as a generic name for ice cream. In 1975, the company signed a contract with Sodima from France to produce and distribute Yoplait yogurt. This agreement ended in 2007 when Mexico's Sigma Alimentos began marketing the brand in CA. Eskimo

Table IV. Competitors in the Central American regional

Topic	Cooperativa Dos Pinos R.L.	LACTHOSA	Industrias Lácteas, S.A.	Cooperativa Ganadera de Sonsonate	Grupo Industrial Lala
Country and year of incorporation	Costa Rica, cooperative created in 1948	Honduras, 1992	Panama, 1956 bought by FEMSA (Coca Cola) in 2011	El Salvador, 1955	Mexico, 1949 in Torreon
Sales per year	US$762 million Brenes (2013)	Over US$100 million IndiCARSE (2014)	US$140.9 million for 2010 FEMSA (2011)	na	Over US $2billion Grupo Assa (2014)
Production capacity	1.2 million liters per day	600, 000 liters per day (San Pedro Sula Plant) La Tribuna (2015)	na	125,000 liters of milk per day	na
Number of employees	4,300 employees throughout CA	2,500	1,800	2,980	31,000
Products, brands and market conditions	Over 600-product portfolio of milk and dairy products (only 42% of its total sales was fluid milk), two main brands and present in 14 countries. Strong market leader in Costa Rica	More than 150 products, seven brands and present in 3 countries. Strong market leader in Honduras Revista Summa (2013)	Five product categories under the Estrella Azul brand name. Milk, juices and flavored drinks, dairy products, ice creams and food service. Strong market leader in Panama	Over 14 products including milk, juices and flavored drinks, dairy products and ice cream, under the Salud Brand. Strong market leader in El Salvador Salud (2015)	Milk, juices and flavored drinks, dairy products and ice cream, 6 brand names and present in CA. Market leader in Mexico (45.8% MS) (Arteaga, 2013) but facing strong domestic competition
Processing plants	3 in Costa Rica (UHT and pasteurized) and a milk dehydration plant 1 in Guatemala 1 in Panama (recently bought for US$86 million and called Planta Nevada)	6 in Honduras and one in Guatemala (UHT and pasteurized) Citrus processing plant with over 80,000 tons capacity In 2001, opened a milk dehydration plant LACTHOSA (2015)	3 in the Chiriquí province (the largest milk-producing region) (UHT and pasteurized)	1 in Sonsonate (UHT and pasteurized)	16 in Mexico and one in Guatemala (UHT and pasteurized)

(*continued*)

Topic	Cooperativa Dos Pinos R.L.	LACTHOSA	Industrias Lácteas, S.A.	Cooperativa Ganadera de Sonsonate	Grupo Industrial Lala
Collection centers and distribution system	18 collection and 11 distribution centers in Costa Rica. Its own distribution network in Guatemala, Nicaragua, and Panama. In Honduras, its ice cream line was distributed through LACTHOSA	95 CRELES (milk collection and cooling centers). Its own distribution networks in Honduras, Salvador and Guatemala catering for over 500 routes	Its own distribution network in Panama City, Chiriquí, Colón, and Changuinola	Its own distribution network focussed on three distribution centers catering to 9,000 points of sale	161 distribution centers in Mexico and CA that serve over 500,000 points of sale
Expansion plans	Expansion plans to acquire a brand/plant in Nicaragua and Dominica Republic	na	na	na	Initial Public Offering (IPO) on the Mexican Stock Exchange amounting to 14,055 million pesos (US $1 = 13.06 Mexican Pesos), plans to invest US$400 million in logistics and infrastructure, looking for M&A opportunities and is building a new processing plant in Nicaragua (first stage 200,000 liters per day, second stage dairy products) La Prensa (2013).

Source: Authors' own based on public sources

Table IV.

continued to market yogurt under its own brand name and entered the liquid milk market in 2008.

Eskimo products included ice cream in one gallon, half gallon, half liter, one liter, eight ounce, and three ounce packages; popsicles in a variety of flavors; fruit-flavored jellies; traditional and drinking yogurt; whole, semi-skimmed, skimmed and lactose-free milk in one liter Tetra Brik packages; whole and semi-skimmed UHT milk in 900 ml plastic bags; flavored milk in UHT 450 ml bags; pasteurized, flavored milk in 115 ml plastic bags; chocolate milk in 473 and 250 ml bottles; locally made sour cream; butter; cheese; orange juice in several different packages and fruit-flavored drinks. Eskimo had an ice cream parlor network selling mainly sorbets at shopping centers in major cities in the country, and its own distribution system to serve local supermarkets, convenience stores and grocery stores. It exported ice cream and yogurt to Costa Rica, Honduras, and El Salvador. Eskimo's network also included dealers who owned Eskimo agencies and a cart network selling products all over the city.

Table V.
Dairy cattle herd size and productivity per cow in Central American countries – 2012

	Dairy cattle[a]	Annual productivity (hectograms/cow)[a]	Daily productivity (liters/cow)[b]
Costa Rica	705,000	14,392.1	3.8
El Salvador	300,000	13,536.8	3.6
Guatemala	635,000	7,322.8	1.9
Honduras	605,000	13,719.0	3.6
Nicaragua	1,050,000	7,285.7	1.9
Panama	164,000	12,195.1	3.2

Sources: [a]FAO; [b]estimation based on FAO data, assuming 1.032 g/ml milk density and milking 365 days per year

Table VI.
Milk collected by pasteurizing and artisanal plants in 2009-2013 (gallon 000s)

	2009	2010	2011	2012
Collection from pasteurizing plants	19,794	22,840	20,409	18,747
Collection from artisanal plants	78,359	90,308	98,169	114,662
Total milk collected	98,153	113,148	118,578	133,409

Source: MAGFOR (2014)

Table VII.
Price to producer per liter of milk (USD)

	2005	2006	2007	2008	2009	2010	2011	Average
Guatemala	na	na	na	na	na	na	na	na
Panama	0.68	0.96	0.40	0.47	0.92	0.67	0.65	0.68
El Salvador	0.33	0.40	0.44	0.48	0.53	0.56	0.50	0.46
Costa Rica	na	na	0.33	0.43	0.41	0.45	0.46	0.42
Honduras	0.36	0.38	0.40	0.41	na	na	na	0.39
Nicaragua	0.25	0.25	0.26	0.34	0.39	0.38	na	0.31

Source: Estimation based on FAO data (USD/ton), assuming 1.032 g/ml milk density

Centrolac

Centrolac (Lácteos Centroamericanos, S.A.) was founded in 2007. Since its inception, it had positioned itself as an innovative company by building the first UHT plant. The company was founded by Nicaraguan investors under the vision of Alfredo Lacayo, who started the company from scratch with the support of consultants with experience in managing ultra-pasteurization plants. Lacayo saw an opportunity to process UHT milk in a country with large herds, raw milk at competitive prices in relation to those in neighboring countries, low per capita consumption of milk, and opportunities to enhance productivity in the milk sector.

The company aimed to produce and market world-class dairy products – both locally and internationally – manufactured with cutting-edge technology to ensure safety and to foster local development; promoting efficiency, profitability, sustainability, and competitiveness of meat and milk producers, and serving as a key means to enhance the nutritional status of the population.

Since its origin, Centrolac had implemented an awareness, training, and support program for the dairy-farming sector to help it produce higher quality milk, suitable for the export market. In line with this, Centrolac participated in "Inclusive Business Development," an Inter-American Development Bank (IADB) program incorporating small BOP producers into the value chain of leading companies. Under this program, Centrolac paid small producers based on the quality of their milk, not on the season of the year, as was the practice in Nicaragua. In this way, Centrolac promoted poverty reduction in a sustainable, cost-effective fashion and created a win-win scenario mutually favorable to both the company and the communities.

Equipment and infrastructure

Centrolac had the largest UHT milk processing plant in Nicaragua, with capacity for 400,000 liters per day and 180,000 liters per day in the packing process, even though it processed only 130,000 liters per day. All plant equipment and packaging were from Tetra Pak, the world leader in equipment and packaging for the food industry.

In addition to UHT and packaging equipment, Centrolac had Tetra Pak centrifugal separation equipment to help reduce the amount of bacteria in the milk prior to ultra-pasteurization. This technology brought the fresh milk that Centrolac used as raw material close to the quality levels of milk produced in Costa Rica, reducing the temperature levels required in the UHT process and helping to maintain the original fresh milk flavor, an attribute highly valued by consumers.

The efficiency levels of Centrolac's equipment were similar to those from developed countries. The company had energy-efficient milk storage tanks. Besides helping to cut costs, process efficiency allowed Centrolac to diminish its environmental impact. For example, a dairy plant consumed, on average, 12 liters of water per liter of processed milk, while Centrolac consumed 0.9 liters. In addition, Centrolac had a sewage plant, allowing it to process and return over 90 percent of the water used to the aquifer.

Centrolac had a fleet of tank trucks to collect milk at eight different collection centers throughout the country. These centers were owned by cooperatives working with Centrolac under the IADB program. In addition, Centrolac provided technical assistance and financial support to 160 small producers to enhance productivity and improve milk quality. In some cases, Centrolac had partially funded collection centers at a cost of US$140,000 under an agreement from producers to make partial payments through bill discounts. Centrolac also had a quality-control laboratory with

cutting-edge equipment and a highly qualified team that constantly monitored the entire process, from milk reception to distribution.

Products

Centrolac processed a variety of types of UHT milk in aseptic packaging, including whole milk, semi-skimmed, skimmed, and lactose-free. Packaging included 1,000 ml Tetra Brik, 900 ml Tetra Wedge, and 473 ml Tetra Fino, the latter being an aseptic bag-shaped package used exclusively for whole milk. Centrolac was the first producer worldwide to adopt the 900 ml Tetra Wedge package, which, as a result of its shape, required less material and had greater point of sale visibility (see Figure 3). Centrolac also produced flavored milk (chocolate, vanilla, strawberry, and banana-strawberry) in 250 ml Tetra Brik and 150 ml Tetra Classic packages, the latter being an innovative triangular package. The milk product line was marketed under the Centrolac brand, a name chosen as a result of the need for a trademark not registered in any Central American country. However, market research revealed that this brand intimidated consumers, who described it as having formal attributes that did not mean much to them.

In addition, Centrolac produced a whey-and-vegetable-oil-based drink under the brand name Matilde, developed in conjunction with a US laboratory after testing for two years. This drink was 30 percent cheaper than milk and was less susceptible to raw milk price fluctuations, which made it an alternative for lower-income consumers. Since it was not formally designated as milk, it could be produced from reconstituted milk

Notes: (a) Whole, skimmed, semi-skimmed and lactose-free milk in 1,000 ml Tetra Brik package; (b) Whole, skimmed, semi-skimmed and lactose-free milk in 900 ml Tetra Wedge package; (c) Matilde Formula: 1,000 ml Tetra Brik, 900 ml Tetra Wedge, 474 ml Tetra Fino; (d) Tetra Fino; (e) Fruit-flavored drinks: 150 ml and 250 ml package

Source: Centrolac (2014)

Figure 3.
Centrolac product line

and fat extracted from the skim and semi-skimmed milk. Lacayo's view of this product follows: "Matilde was produced because milk will become inaccessible to a large segment of the population as a result of price increases […] This is a top-quality, low-cholesterol, highly nutritious, tasty, and very accessible drink […] Matilde is a non-intimidating brand name and consumers associate [it] with a good granny preparing a milk-and-cinnamon drink for you."

In 2013, Centrolac launched a line of fruit-flavored drinks (apple, grape, pear, and fruit punch) sold in two different types of aseptic packaging (150 ml Tetra Classic and 250 ml Tetra Brik) with the brand name "Fruttifrizz."

Market

Centrolac's market share in Nicaragua was similar to that of its competitors (Eskimo and Parmalat) in the fluid milk category, but it was the leader in UHT milk (80 percent market share). Centrolac's penetration in the modern channel (supermarkets) was higher than in the traditional channel (wholesale and grocery stores). Lacayo explained: "First of all, the traditional channel tends to first sell Eskimo and Parmalat goods due to short shelf life and a need for refrigeration, and then offer Centrolac goods as a result of their long shelf life. Second, competitors have larger product portfolios. Third, if pasteurized milk sours, you can still turn it into sour milk, something you cannot do with UHT milk. If pasteurized milk spoils people will say "It just spoiled," but if that happens to one of our products they will say "Centrolac is not good" […].

Centrolac marketed its products at Wal-Mart with direct deliveries to its centralized distribution center, as well as at other supermarket chains, convenience, and grocery stores reached through Compañía Cervecera de Nicaragua (CCN), which distributed all Centrolac products except drinks. Since CCN had a product line similar to "Fruttifrizz," this meant that another mass consumption distributor marketed that product. Centrolac's shelf prices were lower than those of most of its competitors in different categories (see Table VIII).

Centrolac marketed its goods locally (50 percent), exports to C.A. accounted for 25 percent, and the remaining 25 percent were exported to Venezuela. In July 2007, the company entered its first international partnership with CENDIS, a Guatemalan distributor with 40 years of experience, serving 30,000 points of sale. This was a milestone for the Nicaraguan dairy industry, as it marked the first time that fluid milk was sent to the Guatemalan market. In addition, Centrolac products were sold by Distribuidora Detallista Total in Costa Rica and by DIZAC in El Salvador. Centrolac began to export whole UHT milk to Venezuela in 2008 through an agreement between

	Centrolac	Eskimo	Parmalat	Dos Pinos
Flavored milk – UHT 250 ml	10.25	10.50	9.95[b]	11.75
Whole milk – UHT 1,000 ml	25.50	26.00	21.25	31.50
Skimmed milk – UHT 1,000 ml	24.50	25.00	–	30.50
Semi-skimmed milk – UHT 1,000 ml	24.50	25.00	–	30.50
Lactose-free milk – UHT 1,000 ml	27.00	27.50	–	33.00
Matilde – UHT 1,000 ml	19.50	–	–	–

Notes: [a]Córdobas/USD exchange rate: 25.3487; [b]200 ml carton

Sources: Authors' own based on visits to supermarkets. Taken from Banco Central de Nicaragua (2014)

Table VIII.
Consumer prices in modern channel (Córdobas)[a]

Alba Alimentos de Nicaragua and the Venezuelan Corporación de Abastecimiento y Servicios Agrícolas, both state-owned companies. Centrolac and Parmalat equally shared a 24,000 ton per year export quota (Martínez, 2012).

Company culture and organization

Centrolac had 214 employees most of them in the field helping farmers to enhance milk quality and to improve productivity. The entire ultra-pasteurization process was automated, requiring only two workers to monitor equipment indicators. The packing process was also automated.

Corporate culture was geared toward efficiency and quality, which trickled down to milk producers working with Centrolac. Several small producers had begun to look at their tasks with business insight, and they felt committed to enhancing productivity as a means to improve their income. Centrolac's stringent quality controls were changing producer culture, and producers felt inspired to maintain quality in order to get higher prices. In addition to price incentives, Centrolac implemented another policy to promote quality: individual producers' milk was sampled at the collection center and analyzed by Centrolac's quality technicians. If it did not meet the company's standards, the entire tank truck was refused, and the producer was held accountable not only for his/her own milk but for that of all other producers that had been negatively affected.

Growth options

In 2013, Centrolac faced a dearth of quality milk suitable for processing, which prevented it from meeting the growing external market demand. Although its sales were of around US$40 million, implying a nearly 4 percent growth over the previous year, Lacayo thought that the milk shortage prevented sales from increasing by up to 20 percent. He thought that this shortage could worsen as a result of increased milk collection by artisanal cheese producers: higher prices for powdered milk increased the demand for cheese as neighboring countries, instead of importing powdered milk to reconvert and mix with fresh milk to produce cheese, were importing more cheese from Nicaragua.

In addition to the shortage of high-quality milk, two factors in the environment concerned Lacayo: the new facility being built in Nicaragua by the Mexican firm Lala, and a potential partnership between Dos Pinos and a local competitor. Both factors could potentially increase the demand for quality milk, leading to a significant rise in the price paid to producers. In this context, Lacayo was pondering at least two options for growth and wondered about other potential means to attain it.

The first was vertical integration to produce fresh milk. In January 2014, Centrolac was paying milk producers US$0.48 per liter. The cost to reconstitute powdered milk was about US$0.56 per liter. Although some producers kept complaining that the prices paid by the pasteurizers did not meet production costs, Lacayo thought that with productivity levels matching those of Costa Rican producers, he could attain an effective cost of US$0.18 per liter, excluding the opportunity cost for the land.

Although the industry standard was forward vertical integration (with producer cooperatives entering processing), there was a recent example of backward vertical integration. In 2012, the German firm Müller bought Robert Wiseman Dairies (RWD) for £279.5 million. RWD collected and processed 33 percent of fluid milk in the UK. Müller was the yogurt leader in the UK but was threatened by the growth of Dannon Activia. Following the acquisition and in order to buttress its growth plan, Müller-Wiseman announced a rise in the price paid to all producers, except for those

aligned with supermarket chains programs. Two years later, Müller consolidated its leadership position in the yogurt category and tripled turnover in the UK (The Institute of Grocery Distribution, 2014).

To produce 10 percent of the milk it required, Centrolac had to invest US$ 4.4 million to acquire land, milking equipment, and Holstein cattle producing 16 liters per cow, per day. Although fully aware of the advantages resulting from vertical integration, Lacayo wondered how this would impact Centrolac's relationship with small farmers supplying milk to the company, what new strategic skills should be developed, and what could happen to milk prices if exports to Venezuela declined.

The second option was to expand the firm's portfolio with new dairy products, particularly processed cheese and yogurt, which could be made using Tetra Pak technology. In 2008, Tetra Pak created its Cheese and Powder Systems division with a complete line of equipment to process different cheese types, such as cheddar, Swiss, cottage, pasta filata, and feta cheese. All of these were quite different from the cheese types usually consumed in CA and, therefore, would be aimed mainly at foreign markets. Furthermore, Tetra Pak, in addition to equipment to process yogurt, also had packages such as Tetra Top and Tetra Prisma, already being used by producers of drinking yogurt (see Figure 4). Either line would require investments of close to US$3 million. Even with access to cutting-edge technology and packaging, Lacayo wondered whether Centrolac might achieve a competitive advantage in producing these goods and whether there was a large enough market to justify the investment; he also wondered about the advantages and disadvantages of a creating a broader portfolio.

One more option he had considered was to emphasize the Costa Rican market due to high shelf prices there (see Table IX). However, he wondered about the impact on the local market share, and about brand strength in a market dominated by Dos Pinos.

Notes: (a) Tetra top; (b) tetra prisma

Figure 4.
Yogurt Tetra Pak packaging

	Dos Pinos
Flavored milk – UHT 250ml	385
Whole milk – UHT 1,000 ml	845
Skimmed milk – UHT 1,000 ml	805
Semi-skimmed milk – UHT 1,000 ml	785
Lactose-free milk – UHT 1,000 ml	895
Milk formula – UHT 1,000 ml	825

Note: [a]CRC/US$ exchange rates. Buy rate: CRC 534, 04. Sell rate: 545, 51
Sources: Authors' own based on visits to supermarkets. Banco Central de Costa Rica (2014)

Table IX.
Shelf price for dos pinos products – Costa Rica (colones)[a]

Note

1. Ultra high temperature or ultra-pasteurization: a thermal process used to diminish microorganisms in food items such as milk or juice. Unlike traditional pasteurization, ultra-pasteurization applies more heat in less time.

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About the authors

Professor Esteban R. Brenes is the Steve Aronson Chair Professor in Strategy and Agribusiness at the INCAE Business School in Alajuela, Costa Rica. Professor Brenes holds a PhD from the University of Florida. His research has appeared in international journals. In addition to his academic work, he is a Consultant in business and corporate strategy, mergers and acquisitions, new-venture development, and family business management. He sits on the boards of several regional companies. Professor Esteban R. Brenes is the corresponding author and can be contacted at: esteban.brenes@incae.edu

Carlos Martínez is pursuing a PhD in Management at the University of St Gallen and graduated from INCAE Business School in Managua, Nicaragua. He has been an external consultant for the Steve Aronson Chair of Strategy and Agribusiness.

Caleb A. Pichardo is graduated as an Economist from the Universidad Nacional in Heredia, Costa Rica. He has been a Research Assistant for the Steve Aronson Chair of Strategy and Agribusiness at the INCAE Business School.