



*International Food and Agribusiness Management Review*  
Volume 13, Issue 4, 2010

## **A Guatemalan Soycow Cooperative: Is the Whole Greater than the Sum of its Parts?**

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### **Abstract**

The introduction of soycow systems into the developing world is not a new strategy in the fight against malnutrition. Soycows have been placed in diverse locations including VietNam, India, South Africa, Honduras, and Guatemala. The success of these projects is not guaranteed, and often the soycows are not used after the initial supply of soybeans is exhausted. One of the main issues impeding long-term success of the soycow projects is that recipients may possess technical knowledge enabling them to operate the soycow, but generally lack the intangible, human resources that could provide the requisite marketing know-how needed for these projects to survive long-term. This case was developed to foster case-based teaching methods for course instruction while providing a unique context for the examination of managerial decision making.

**Keywords:** Soycow, cooperative, Guatemala

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### **IFAMA Agribusiness Case 13.4A**

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## **Background**

The introduction of soycow systems into developing nations is not a new strategy in the fight against malnutrition. Soycoaws have been placed in diverse locations ranging from VietNam, India, South Africa, Honduras, and Guatemala. Included in the aid package is the processing equipment and operations training, and an initial supply of soybeans. It is expected that a realistic marketing plan will be developed which will ultimately lead to a sustainable business model that delivers soy food products to the local community.

However, the success of these projects is not guaranteed, and often the soycoaws are not used after the initial supply of soybeans is exhausted. Several important factors have been noted which have limited the long-term success of these food aid projects. First, there seems to be a lack of coordination between soycow operators. This can lead to a number of problems such as significant periods of downtime when, for example, mechanical breakdowns cause production to stop. Second, credit constraints on individual firms limit the ability of soycow recipients to purchase the needed soybeans following the initial endowment. Finally, the short-term success of many of these projects may be caused by a lack of marketing skill on the part of soycow recipients. This is due to the fact that many of the recipients do not have business training or backgrounds in market development. Furthermore, in regions such as Latin America, soy products are not an existing component of traditional diets.

The objective of this teaching case is to present a real-world situation faced by the recipients of a development aid package and to introduce several management concepts. The main concept is the difference in organizational forms and the pros and cons of each in this unique situation. One of the main issues that may impede long-term success of the soycow projects is that recipients may possess technical knowledge that would enable them to operate the soycow, but generally lack the intangible, human resources that could provide the requisite marketing expertise to enable these projects to survive long-term. Different organizational forms can be presented and analyzed to highlight the pros and cons of each in terms of capital acquisition, scalability and managerial control.

The case was developed to foster case-based teaching methods as part of course instruction while providing a unique context for examining managerial decision making. The target audiences are juniors, seniors, or first year graduate students in upper-level business management courses. The teaching note is also adaptable for use in senior and graduate level development courses.

## **The Dilemma**

Danny Knutson sat at his desk at the National Soybean Research Lab and thought intently on his last visit to Guatemala. He had just returned from installing a new soycow at Fundaniñas, a small girls' orphanage in Guatemala City. During his stay he worked tirelessly training their staff to operate their new equipment. While overjoyed that this machine would enhance nutrition for the young residents by providing an excellent source of protein, he was concerned this project would be short-lived and thus fall short of providing the intended long-term nutritional and financial benefits. From his experience with similar operations in Guatemala and other parts of the developing world, Danny was well aware of the many issues the orphanage would need to deal

with over the coming months. How would they get soybeans after the donation ran out? What would happen if the equipment broke down and they could not access the necessary replacement parts? Could they really sell the product in the surrounding areas of Guatemala, a market in which soy was not a traditional part of the diet?

It was this last concern that really stuck with Danny. Danny was aware that sources of protein other than soy could also ease the incidence of malnutrition. While dairy cows or goats could also provide the much-needed protein, a relatively high rate of lactose intolerance within the population provides an opportunity for the use of soy products. Furthermore, as an employee of the National Soybean Research Laboratory (NSRL), Danny is acutely aware that his employer is partially funded by the American Soybean Association (ASA) through the soybean checkoff. Furthermore, both Malnutrition Matters and the World Initiative for Soy in Human Health (WISHH) – two of the organizations that support the soycow projects – have ties with ASA and their mission.

The soycow program was created to achieve two main goals: 1) to reduce malnutrition through the use of soy products, and 2) to promote and create new markets for U.S. soybeans. Given these goals and the relationships between the ASA, NSRL, and WISHH, Danny realizes that while there may be other options for combating malnutrition in Guatemala and other locations, he is tasked with trying to figure out how to make the soycows currently in place, and new projects that may be coming on-line in the future, successful and sustainable.

The email he just received from a Rotary International representative in Guatemala further highlighted the importance of this issue. According to the email, Rotary was interested in partnering with WISHH to install yet another soycow in Guatemala. However, before this could happen something had to be done to demonstrate the success of the existing soycows.

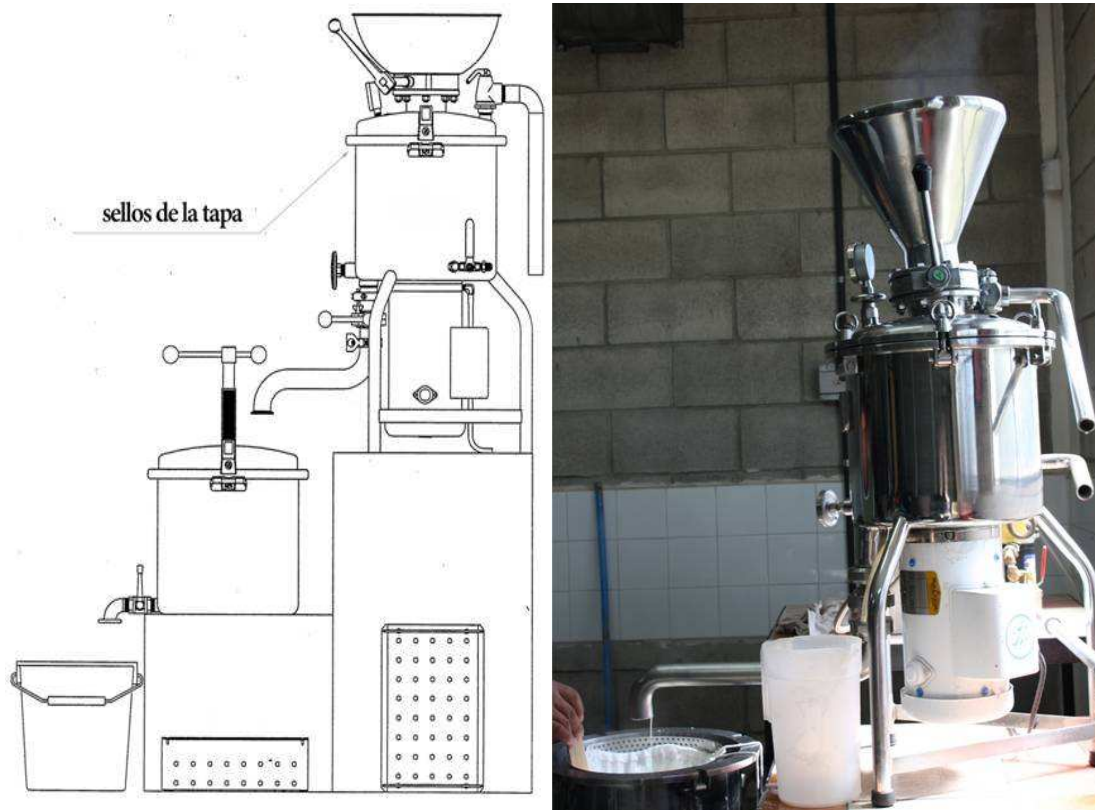
Danny thought about the soycow operations for which he had provided training over the past 3 years. Each operation had achieved varying levels of success, each was equipped with different skill sets, and each faced their own specific challenges. He wondered if a cooperative agreement between these individual operations could solve many of the issues which continued to plague the existing soycow projects?

## **The Soycow**

Malnutrition Matters is a non-profit organization whose mission is the alleviation of malnutrition through the creation of micro-enterprises, primarily in rural areas of developing countries. The objective of these small businesses is two-fold: 1) the improvement of community nutrition, and 2) long-term sustainability to provide jobs and income to members of the community, further leveraging the nutritional benefits. These projects have been co-sponsored by a number of organizations including WISHH, Africare, the World Bank, Alpro, and Rotary International.

The soycow is a small-scale tabletop system that processes soybeans and water into soymilk and a byproduct, referred to as okara, using electric power (see figure 1). The first soycow was installed in India at Child Haven with the help of Prosoya in 1990. Today there are more than 1,000 soycows in over 40 countries helping to alleviate malnutrition and bring about sustainable

microenterprises. In 2009/2010, another 30 projects are designated for installation across the globe. Existing projects have been established in a number of regions throughout Africa, Asia, India, North America, and, more recently, Central America. Project sites are often established in high-need areas in close proximity to schools and hospitals.



**Figure 1.** Diagram and Image of a Soycow Production System

Soy milk can be consumed directly or flavored to taste; the milk can also be further processed into other soy-based food products such as tofu, yogurt, or ice cream. The okara also has many uses as a food product and nutritional supplement. For example, okara can be used in many types of baked goods (i.e. breads, cakes) or as a meat extender in a variety of dishes. The soy cow has a production capacity of about 40L of soy milk per hour. The production process includes the grinding, cooking, and filtering of pre-soaked soybeans to produce the soy milk beverage and okara byproduct. In addition to electric power, a clean production area, basic cleaning supplies, and a clean water supply are additional requirements of the processing system. An alternative production system is also available – referred to as the Vita Goat – which is powered manually. The grinding process is powered through a pedaling system similar to a bicycle, while heat for the cooking process is provided directly by fire.

The soy cow serves as an example of the type of microenterprise projects sponsored by Malnutrition Matters. The nutritional benefits of the soy cow projects are important and obvious, especially in areas in which malnutrition and protein deficiencies are problematic. However, the sustainability component of the mission for these microenterprises has been more difficult to achieve on a consistent basis. The standard aid package associated with the projects includes an

endowment of the processing equipment, roughly a year's supply of soybeans, and the technical training required to operate the system. While general guides to business planning are available through *Malnutrition Matters* (2009, 2006), the business side of operations – a critical component of ensuring sustainability – is largely left up to the individuals receiving the donation.

Numerous business and marketing constraints need to be considered. In many regions, soy is not a traditional component of the local diet. Thus, individual operations are faced with issues related to the introduction and marketing of a new product. Research is generally required to develop recipes aligned with local tastes and preferences. Some forms of marketing and advertising may be needed to establish a customer base. Diligent record-keeping and accounting practices are necessary to identify production costs and ensure profitability. Proper distribution to the public may entail licensing as it pertains to sanitary requirements for food products. Finally, developing a profitable pricing scheme requires information related to both marketing and operations. These problems are exacerbated by the lack of basic business training and, in most developing areas, the difficulty in gaining access to credit.

## **Examples of Soycow Economics**

Soycows have been installed globally over the years often with limited or short-term success. An overview of two of the larger regional project initiatives in Vietnam and India are provided below to serve as examples of successful projects in other parts of the world.

### *Vietnam*

Over the past few years, NSRL, WISHH and the U.S.-Vietnam Foundation have collaborated to establish FaifoSoy, a microenterprise in Da Nang, Vietnam. FaifoSoy projects use the soycow system to produce soymilk, tofu and a variety of baked goods utilizing the okara byproduct. The first organization was located in a wet market and has been successful in establishing retail sales while also donating a portion of their production within the community. The success of the first project has led to plans for opening a second branch of FaifoSoy on nearby Cham Island.

FaifoSoy has subsidized contracts with 13 schools in the Da Nang area to supply soy products to a total of 4,061 children. Currently, 55% of FaifoSoy employees are women from economically marginalized families in rural areas. FaifoSoy is unique in that rather than receiving the equipment as a donation, they asked for marketing training workshops to be offered in Vietnam. As part of the agreement to receive these services, FaifoSoy is required to donate a small portion of their production to schools in the community (Tamimie 2010).

### *India*

Bharat Integrated Social Welfare Agency (BISWA) is a Nongovernmental Organization (NGO) in India that was established as a philanthropic organization in 1994. The promotion of Self Help Groups (SHGs), extending micro-finance, encouraging microenterprise development, ensuring social justice for the disabled, socio-economic rehabilitation of leprosy cured persons, and the creation of alternative avenues for livelihood for the poor have been core to their mission

([www.biswa.org/en/about](http://www.biswa.org/en/about)). Over the years, BISWA has incorporated various means and methods to achieve desirable results in pursuance of these objectives.

In 2005, BISWA initiated a series of Vita Goat projects in Orissa, India. Loans were provided to several SHGs comprised mainly of women to finance 75 % of initial capital costs associated with the Vita Goat system. To establish an initial revenue stream, the SHGs worked together to secure a government contract to provide fortified soymilk as part of an existing midday meal program. The SHGs now also sell tofu and okara in open markets to generate extra income. The SHGs are responsible for covering all of their production costs including rent, labor, inputs, product transportation and delivery (which is done by bicycle), and loan repayment. Each Vita Goat can serve up to 1,000 children per day, and the current system requires no refrigeration or packaging (Jansson, Boros, and Scates 2009).

Key factors for success of these projects include the early efforts to provide marketing training in Vietnam, and securing the meal program contract in India. The projects in India have also benefited from the strong network of cooperation across the SHGs and their local community partner BISWA. Furthermore, these businesses had an advantage in marketing their products within their communities since soy products are already familiar and established components of the diets in both Vietnam and India.

## **Malnutrition in Guatemala**

Situated geographically between Mexico, Belize, Honduras and El Salvador, Guatemala is not similarly situated on the malnutrition spectrum as it has the highest levels of malnutrition in the region. Using a cross-sectional study of 106 countries de Onis, Frongillo and Blossner (2000) found that malnutrition has declined across the globe in the 20-year-period from 1980 to 2000. Central America, however, has not seen marked improvement over the same time span.

Malnutrition is caused by inadequate sources (type as well as amount) of food which results in the body not being able to fully utilize the caloric intake (WHO). Malnutrition has been a serious issue facing leaders and policy makers in the recent past (Marini and Gragnolati 2003) and continues to pose serious problems in many regions. In 2002, WHO reported that 54.3% of children under five-years of age were stunted and 17.7% of children under five-years of age were underweight for their age.

In Guatemala, recent events suggest cause for growing concern. In 2009, the World Health Organization found that 46% of children under five have some degree of malnutrition stemming from a lack of protein. In indigenous areas, this rate approaches 80% (Leowenberg 2009). The presence of prolonged drought in the country and the incidence of several deaths attributed to malnutrition led President Alvaro Colom to declare a “state of public calamity” on September 8, 2009, which allowed the government to purchase food supplies for malnourished children (Valladares 2009).

Within the Guatemalan economy, agriculture still plays a vital role. Agriculture accounts for roughly 21% of GDP, while an estimated 50% of the population works in the agricultural sector (CIA). Major agricultural crops include sugarcane, corn, bananas, coffee and beans; the main

types of livestock production include cattle, sheep, pigs and chickens. While the presence of livestock production may suggest access to protein for Guatemalan producers, some choose to sell their production to earn a living rather than utilizing the production for their own consumption. This often leads to a diet that lacks adequate amounts of protein. This shortfall has been exacerbated by the recent drought that has reduced crop yields for many producers in the region (Nybo 2009).

## **Why Soy Foods?**

Soy provides numerous nutritional benefits including a high protein and iron content, and offers a wide variety of derived foods, including soymilk, tofu, textured soy protein (tsp) and okara. These foods can be consumed directly, as with soymilk and tofu, or used as ingredients or meat extenders in recipes (i.e. okara and tsp). Okara can also be added to breads to increase the fiber content.

In Guatemala, alternative protein sources are available through dairy products and meat from livestock. However, both meat and dairy products are relatively expensive if purchased by retail. While, some poor rural households may own or have access to livestock for a portion of their protein needs, these alternatives are not nearly as feasible for poor households in urban areas.

Soy products are imported and available at many retail locations in Guatemala. However, they typically cost much more than alternative sources of protein. For example, the price of imported soymilk is two to three times the price for an equivalent amount of dairy milk. In contrast, the prices charged for soymilk and other soy foods produced by the existing soybean operations is much lower than those for imported soy, and competitive with the prices of domestic dairy products.

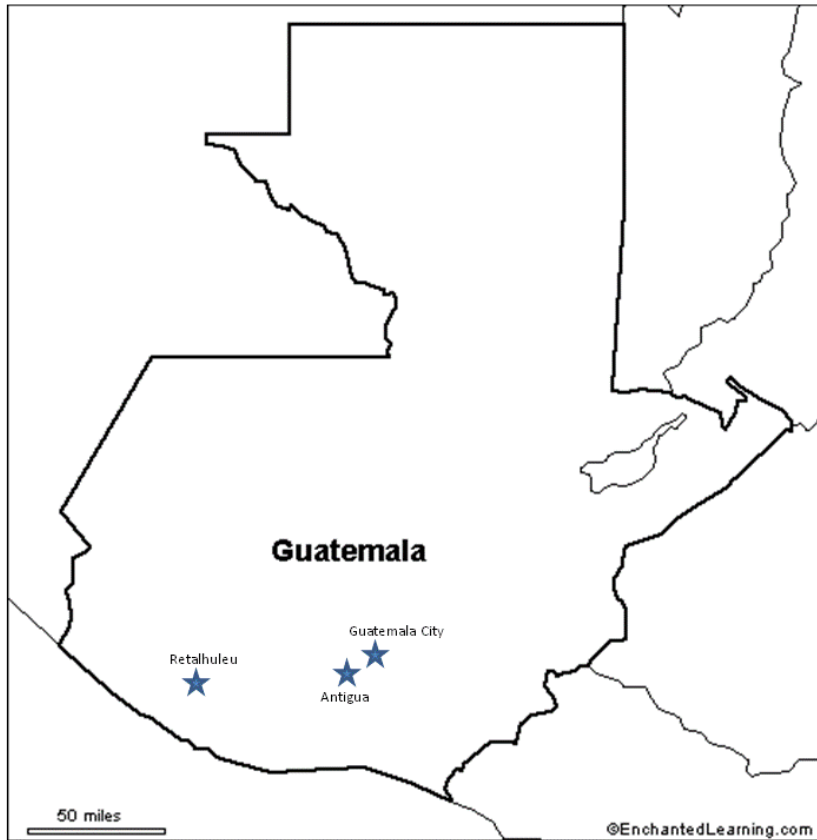
Additionally, lactose intolerance is prevalent throughout many developing regions and soymilk provides a lactose-free alternative to dairy products. Furthermore the production methods of such foods are environmentally friendly as the processes use little water and electricity, and the amount of waste can be very minimal.

## **Soybeans in Guatemala**

There are three soybean operations in Guatemala donated under the Rotary International and WISSH agreement. Two of the operations are located in Guatemala City, while the third is located in Antigua. A fourth soybean operation is located in Retalhuleu, but was not established under the standard Rotary-WISSH agreement. The geographic locations of the operations are depicted in figure 2, and shows that all four of the Guatemalan soybean operations are located relatively close to one another in the south-central region of the country.

The standard aid package includes the soybean equipment, pictured in figure 1, which is valued at \$6,500 to \$8,000. Once the soybean equipment donation is in place, the facilities receive technical and operational training through the National Soybean Research Lab (NSRL) at the University of Illinois. Danny Knutson serves as the Program Coordinator for the soybean projects and travels to each site presenting one-on-one training for the soybean operators. WISSH

coordinates and organizes the soybean donation, which is typically one container of soybeans from U.S. based producers. Once the donated soybeans have run out, the organizations must begin to purchase soybeans from the world or domestic markets.



**Figure 2.** Locations of Soycow Operations in Guatemala

The issue of procuring soybeans is one of the largest hurdles faced by the individual soycow operations. While soybeans can be imported at a cheaper unit price than can be obtained locally, an entire 40 foot container of soybeans, approximately 1,000 bushels, is sufficient to serve the needs of three to four individual soycow operations for an entire year. The transportation and storage needs for a container of soybeans are limiting factors, as most sites are not equipped to handle such large volumes.

An additional three to four soycows have been installed in Guatemala, in most cases through donations from U.S. based Rotary clubs. These donations are facilitated outside the WISSH–Rotary International relationship. In these cases the equipment is donated, but recipients must purchase the required soybeans.

The following subsections provide descriptions of four of the existing soycows in Guatemala. Each project is associated with an organization with unique missions and varying uses for the soycow. Additionally, each organization differs in the amount of experience and success they have had thus far with their soycows. Table 1 provides a summary of the four organizations,



while tables 2 and 3 outline existing pricing schemes and the basic recipes being used by the organizations, respectively.

**Table 1.** Summary of the Soycow Operations

	<b>Primary Mission</b>	<b>Organizational Structure</b>	<b>Soycow Experience</b>	<b>Potential Strengths</b>	<b>Potential Weaknesses</b>
Fundaniñas	Rescuing and housing at-risk girls	Non-profit	3 months	Market access: nearby open market, relationship with area orphanages and daycares; Influential political relationships	Lack of experience and business training; potential loss of trained operator;
Centro de Artes	Education through training programs with specific trade foci	For-profit	2 years	Education training and backgrounds; Current marketing opportunities; Multiple trained staff	Educational programs and backgrounds of staff do not include business
Hospital	Affordable health care for the poor	Non-profit	2 years	Backgrounds in health and nutrition; Nutrition research	Lack of business training; Lack of trained staff; Equipment failures
CECYPSA	Education and housing of children in the community	For-profit	3 years	Existing and successful soy business model; Multiple trained staff; Marketing opportunities in surrounding communities	Organizational structure; Logistical issues in serving larger market area

*Fundaniñas*

Fundaniñas is an orphanage located in Guatemala City. Their mission is to rescue young girls who are at risk of living on the streets of Guatemala and provide them with a home, offer education, a family environment and a future. Support from a well-connected and wealthy benefactor, Maria Lopez, allows them access to financial and professional resources both domestically and abroad. While her strong involvement with Rotary almost certainly helped Fundaniñas receive their soycow in September 2009, the benefits of the project being located at the orphanage are plenty.

**Table 2.** Summary of Soymilk Sale Prices

Size	Location	Price (Quetzal)
1 liter	Centro de Artes	6.00
1 liter	CECYPSA	6.00
1 liter	Pharmacy	8.00
500 ml	Centro de Artes	3.00
500 ml	CECYPSA	3.50
500 ml	Pharmacy	5.00
250 ml	Centro de Artes	1.75
250 ml	CECYPSA	2.00
250 ml	Pharmacy	3.00

**Source:** Personal interview data

**Note:** As of February 2010, the Guatemalan exchange rate was approximately 8.30 quetzal per U.S. dollar.

**Table 3.** Basic Soymilk Recipes and Mass Balance

Location	Soybeans (lbs.)	Soymilk (L)	Okara (lbs.)
Fundaniñas	2.2	12	3
Centro de Artes	3	14	3.5
Hermano Pedro	2.2	18	3
CECYPSA	4	14	4.5

**Source:** Personal interview data

Their soycow serves a population of approximately 30 girls who represent a captive market for the nutritional benefits from soymilk. Using soymilk to feed the girls may also provide long term cost savings as the soymilk is substituted for fresh milk or the more common alternative, powdered milk. While they are now producing a soymilk recipe that the girls like, their soycow operation is still very new and its capacity is currently under utilized as they are only producing for the needs of the orphanage. Even if Fundaniñas used soy products to feed the girls every day, they lack sufficient scale to utilize machine capacity to its fullest. Thus, while they may realize cost savings on in-house nutritional units, in the long term they will continue to have excess capacity on the capital invested if they do not expand to serve a larger population.

Anxious to see the success of their new machine, Maria is proposing they develop a strategy to sell soymilk within the surrounding community. She believes this will enable them to earn revenue and continue purchasing soybeans after the donation period has ended. Fundaniñas' location in Guatemala City gives them access to a large urban area for marketing the product. They are also situated next door to a small traditional indoor market selling fruits and vegetables, clothing, and household items. Additional opportunities to utilize excess capacity include servicing other orphanages in nearby regions and possibly selling to nearby daycares. Maria already has already established relationships with many of these organizations.

One concern Maria must resolve before moving forward with this project is the difficulty they are having in determining a profitable pricing scheme for the soymilk. Their costs have been difficult to pinpoint due to the anticipated donation of soybeans. While waiting for the donated beans to arrive, they have been buying soybeans in a local market for six quetzals<sup>1</sup> per pound. Furthermore, a packaging and delivery system for the soymilk has not been determined. Record keeping thus far has been minimal, so it has been difficult to document the operation's cost structure.

Finally, there is still uncertainty with respect to who would handle the business component of operations. Fundaniñas has a capable soycow operator, but he is the only person on staff with the requisite technical training and he does not have a background in business. Additionally, the operator was recently offered another job, so Fundaniñas may soon be left without staff trained in operating the soycow. The uncertainty of the operation's future is the main factor affecting his decision to leave the orphanage.

### *Centro de Artes*

Centro de Artes aspires to become the regional training center for soycows in Guatemala. As a vocational training school in Guatemala City, they offer training programs in areas of traditional handicrafts such as painting, mosaics, and sewing. Additional course offerings include computer training, baking and cooking, and cosmetology. Tuition fees are 35 quetzals per month with roughly 800 graduates per year from the various training programs. Current projects include the construction of a new building to meet growing demand for their new program where students can study to become electricians.

Centro de Artes received their soycow in 2008, with the intent to serve as a training facility for all the soycow operations in Guatemala. The school currently produces several batches of soymilk weekly, which is flavored and packaged by hand into 1 liter, 500 ml and 250 ml single serving plastic containers, pictured in figure 3. The okara by-product is either utilized within the baking and cooking programs or sold to local farmers for 1 quetzal per pound. Available soymilk flavors include plain, vanilla, chocolate, and strawberry. When packaged and refrigerated, the soymilk has a shelf life of approximately three weeks. The market for their soymilk includes the students and a standing monthly order from a local priest who purchases 100 liters per month to give to area children. The training center charges 6 quetzal per liter, 3 quetzals for the 500 ml size, and 1.75 quetzals for the 250 ml bottle of soymilk.

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<sup>1</sup> The Quetzal is the Guatemalan currency. As of February 2010, the exchange rate was approximately 8.30 quetzal per U.S. dollar.



**Figure 3.** Plastic Containers Used for Soymilk Packaging at Centro de Artes and CECYPSA

The center has adequate space for soycow training for small to medium sized groups, and two members of their staff are trained to operate the soycow. Furthermore their culinary curriculum gives Centro de Artes the opportunity to experiment with okara and soymilk as baking ingredients. Foods currently produced include cakes, tortillas, and breads. Because of their existing curriculums, the development of a soycow training and product development curriculums or workshops is a natural fit for Centro de Artes.

The biggest problems facing the staff are to accurately determine and document their cost of production, and procurement of inputs. The soybeans currently utilized by the training center were donated, and they have not yet identified an alternative local source for this necessary input. The training center staff estimates that their soybean supply will be exhausted within the next few months. Therefore, if they hope to continue to serve their existing customers while also expanding their market, identifying a local source for soybeans is critical. In addition, their pricing scheme will need to be readdressed to ensure continued profitability once they begin purchasing soybeans.

#### *Hermano Pedro*

Obra Sociales del Santo Hermano Pedro (Hermano Pedro) is a hospital which has been serving the local community in Antigua for more than 25 years. Currently, the hospital has the capability to treat and accommodate more than 230 patients. They serve a diverse clientele with patients ranging from children to the elderly; some are severely handicapped while others have been abandoned by their families who are too poor to afford their care. Nearly all patients suffer from malnutrition as either a primary or secondary condition. Patients are charged based on an

assessment of their financial ability to pay for services rendered. The hospital is able to provide outpatient care, mainly in family practice and surgery, and specifically in treating children with cleft palates through reconstructive surgery. The hospital relies heavily on professional medical staff volunteers, mainly from U.S., European, and Canadian doctors who come for one to three week periods to perform specialized surgeries. Volunteers include 31 medical groups from four different countries, making a difference in the lives of over 100,000 people and performing over 6,000 surgeries per year.

In 2008, Hermano Pedro received a soycow from Rotary International along with technical training and a donation of a container of U.S. soybeans. Because of their large facilities they are able to store the container of soybeans on site. They typically produce three batches per day, and run the cow two days each week. Each batch produces 18 liters of soymilk using one kilogram of soybeans. The hospital's nutritionist has performed a number of recipe trials to analyze nutrition and taste of the soymilk. Since many of the patients do not like the flavor of the unflavored soymilk, corn or oats are added to mask the "beany" flavor.

The hospital provides free meals not only to its patients but also to their families, staff and the community. They serve an average of 1,300 meals each day. The addition of the soycow to the hospital means that they can better tackle the issue of malnutrition with many of their patients. The addition of the soycow also provided significant cost savings for the hospital, with estimates of 50,000 quetzals saved over a six-month period by substituting the soymilk for powdered dairy milk, and the use of the okara in the foods they prepare and provide as part of their meal program.

The hospital is not without experience of diversification, as operational funds are in constant need. Several years ago they opened a small clothing store inside the hospital. The inventory is based on donations, mainly from international church organizations. Though sold at very low prices to accommodate their patients and families financial situations, the income generated is used to fund a variety of projects for the hospital.

Despite the significant nutritional benefits and cost savings generated internally, some members of the hospital staff have been contemplating selling additional soymilk to customers within the community. Compared with the other types of services provided, selling soymilk poses several different challenges for Hermano Pedro. First, the hospital has been struggling with mechanical issues with their soycow equipment. Lack of access to even simple spare parts led to a six month period with no production. Second, their status as a charitable organization limits their ability to aggressively market and sell products for profit within the local community.

Once the inventory of donated soybeans is depleted, the hospital will need to identify an alternative source for additional soybeans. Additionally, they will need to generate sufficient monies to fund the purchase of soybeans. If they wish to continuing producing soymilk, the hospital is faced with either documenting the internal costs savings generated by the soycow to justify the use of funds from their budget, or developing a profitable external market for soymilk sales.

## **CECYPSA**

Centro Ecumenico do Capacitacion y Promocion San Antonio (CECYPSA) is a private non-profit organization operated by a group of Catholic nuns in Retalhuleu. Retalhuleu is approximately five hours, by car, to the west of Guatemala City. The facility was built using donations from foreign organizations and a Spanish priest, and houses 50 to 60 students each year in its dormitory facilities. The students, who range in age from 12 to 25 years, pay 400 quetzals per month in tuition to cover the costs of housing and related services. While living at CECYPSA the students receive two meals per day, tutoring services, and religion courses in the evenings while attending local schools during the day. On the weekends and during holiday periods, students are allowed to travel home to be with their families.

In addition to the dormitory, CECYPSA also offers basic practical courses to members of the community, focusing mainly on women. Available courses include training in cosmetology, cooking and baking, natural medicine, computers, and sewing. CECYPSA has always been a self-sustaining enterprise and receives no outside funding from individuals or the Catholic Church. They produce many of their own food needs onsite, including fruit, tilapia and goats. Excess production is sold within the community. Other funding comes from fundraising events such as raffles.

After learning of the soy-cow projects, the CECYPSA staff spent seven years requesting the installation of a soy-cow from Rotary International. Finally, after submitting a prepared budget and business plan, their request was granted by a Hawaiian Rotary group. As a result, CECYPSA is not part of the Rotary International-WISSH agreement and therefore have not received donated soybeans. This, however, has not hindered their success with the soy-cow.

CECYPSA produces soymilk two to three times per week, using a recipe that uses 4 pounds of soybeans to produce 14 liters of milk. CECYPSA contracts soybeans locally and stores them at a nearby facility, paying 270 quetzals for a 100 pound bag. When their supplies run low they re-order, utilizing a just-in-time inventory control system for the soybeans. Four staff members are trained to operate the cow, with two individuals operating the cow during production and packaging.

CECYPSA retains roughly 25 % of the soymilk they produce for use internally, and provide the remaining 75 % to the community in exchange for donations. Their soymilk is available in four different flavors - plain, vanilla, chocolate, and strawberry - and in three different sizes which are packaged in plastic containers similar to those used at the training center. A single liter can be obtained for a donation of six quetzals, a half liter for 3.50 quetzals, and 250 ml for two quetzals. They also distribute their milk through a local pharmacy, which adds a small markup to the prices they charge. Their target market is the local elderly, who purchase the milk because of the general health and nutritional benefits. To develop this market, the nuns provided small samples to the community and advertised through word-of-mouth, announcements on a catholic radio station, and posters at local churches.

In addition to the soymilk, they utilize all of the okara produced by adding it to tortillas and breads which are baked on site and served to the students and staff. Attempts to market baked

goods with okara within the community have been made in the past, but with little success, attributed, at least partially, to dishonesty on the part of their salesman.

CECYPSA has an opportunity to further expand their market through serving ten surrounding communities. Each of these communities is within 14 km or about 30 minutes by car, and hold regular traditional markets. CECYPSA does have access to one or more trucks for transportation, but not the portable refrigeration that would be required to consistently deliver a safe product. In addition to this transportation and logistics issue, their inability to officially sell products because of their not-for-profit status is another limitation to further expansion.

## **Idea for Cooperative Formation**

After some serious reflection, Danny realized that forming a cooperative between the individual soycow facilities might provide an opportunity for the operations to work together and leverage current resources and capabilities. He thought of how the orphanage could benefit from communicating with an already established project like CECYPSA. Or how the hospital's lengthy shut down could have been avoided through the sharing of spare parts across operations. The potential benefits from cooperation and communication seemed endless.

However, Danny also knew that the creation of a formal cooperative would take some work and might be too complex of a solution for the problems facing the soycow businesses. Furthermore, the creation of a formal cooperative could potentially introduce new challenges that are often associated with that type of organizational structure, such as the free-rider problem (Cook and Iliopoulos 2000).

How would they organize the governance of the cooperative and how could they ensure success? How might each individual operation benefit from such an alliance so as to encourage each to sufficiently contribute? Furthermore, what aspects of the business operations would the cooperative agreement address? For example, the soycows could form a marketing cooperative to focus on improving sales and developing markets for their products. As an alternative, organizing more like a supply cooperative would shift focus towards more efficient procurement of inputs.

Maybe a cooperative business structure was not the answer to solving the problems of the soycow businesses. Still, Danny was convinced that the operations could benefit by working together and communicating about both successful and unsuccessful experiences related to the soycow project. Was there a simpler way to encourage some level of teamwork, collaboration, and support within the system?

More importantly, how should Danny communicate his idea about forming a cooperative or enhancing communication among the existing projects to Rotary and WISHH? The email he had received earlier was requesting a reply as soon as possible. He needs to find a solution to this problem, and quickly.

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