Sub-Saharan Africa • Mauritania

Tiviski Dairy: Africa’s First Camel Milk Dairy Improves Livelihoods for Semi-Nomadic Herders in Mauritania

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Sector • Dairy
Enterprise Class • Local SME
Summary

Founded in Mauritania in 1987 by entrepreneur Nancy Abeiderrahmane, Tiviski is Africa’s first camel milk dairy, which also now processes cow and goat milk mostly for domestic consumption. Tiviski sources all of its milk from semi-nomadic subsistence herders, enabling them to earn incomes from their livestock. The availability of fresh camel milk and other milk products has replaced products imported from Europe, helping to improve the country’s economy.

Background and Context of Mauritania

Mauritania is an arid desert nation where most of the country’s three million inhabitants live as nomadic livestock herders (keeping camels, sheep, goats and cows). After gaining independence from France in 1960, Mauritania experienced a number of severe droughts between 1970 and 1979. During this time the capital city, Nouakchott, grew from a population of 100,000 to one million as life as a subsistence livestock herder grew increasingly precarious.

Sahelian countries such as Mauritania, livestock herding is essentially a nomadic activity, especially with camels that can browse low-density pasture by covering longer distances than other animals. Overall livestock density is low, owing to sparse desert pasture conditions. There are no farms or fences in the country and, before the establishment of Tiviski, no milking equipment or fresh milk storage facilities.

The displacement of people from traditional pasture areas to urban centres was generally not associated with significant increases in urban-based manufacturing or other economic opportunities in the cities.

Although nomadic families have had a long tradition of drinking milk from their camels and other livestock, before the arrival of Tiviski, there was no packaged or processed fresh milk or fresh milk products available in Nouakchott’s grocery stores and small shops. The only milk that was available previously was powdered or ultra high temperature (UHT) milk imported from Europe and elsewhere. Although Mauritanians generally consumed, on average, one half of a litre of milk per person per day, the increasing number of people who lived in urban areas had to either buy it from friends with livestock or purchase imported milk.
Nancy Abeiderrahmane’s Opportunity

In the late 1960s, Nancy Abeiderrahmane, who came from a British background, was studying engineering in Spain and was doing research on Mauritania. Abeiderrahmane ultimately moved to Mauritania in 1970 with her Mauritanian husband. Over the years they would have two sons and two daughters. In the early days, however, she lived in the popular neighbourhoods of the capital city, Nouakchott, and went through many hardships between 1970 and 1985.

The idea to organize and launch a milk production venture took shape when she visited a small milk production facility in Europe in 1985. She immediately saw the opportunity for processing milk in Nouakchott where camel milk was sold in primitive and unsanitary conditions door to door around the city.

She wanted to set up a similar company in Mauritania, but she did not have the necessary financial resources. Abeiderrahmane prepared a feasibility study and tried to sell her idea, but her early attempts at raising the necessary funds were unsuccessful. Abeiderrahmane was persistent, however, and ultimately got a loan of one million French francs (about 150,000 euros) from La Caisse Française de Coopération Economique (CFCE).

Tiviski

Rejecting the more traditional approach of importing European dairy cows or processing powdered milk, Tiviski chose to process fresh camel milk in 1989, cow milk in 1990 and later goat milk in 1998.¹ Production started with Tiviski pasteurized fresh camel milk as its first product. Over time, the range of products gradually widened to some twenty or more products (see Figure 1). Diversification was needed to supply dairy products to different commercial niches in the market. In April 2002, Tiviski opened a UHT factory to absorb the seasonal surplus of cow milk.

Tiviski — Fresh pasteurized camel milk, ½ litre
El Badia — Fresh and fresh 1% fast pasteurized cow milk, ½ litre
El Medina — A blend of fresh pasteurized camel and cow milk, ½ litre
El Khaima — Cultured goat milk, ¼ litre
Les Saisons — A blend of cultured cow milk and fruit juice, ¼ litre
Chèv-lait — Cultured goat milk, ¼ litre
Cham’lait — Cultured camel milk, ¼ litre
L’Oasis — Sour cream, 10-cl and 20-cl

¹ Before the establishment of Tiviski, the dairy milk industry in Mauritania was dominated by two factories (the Dairy Company of Mauritania and the Mauritanian Company of Dairy Industry), which were both using imported milk powder to make liquid milk for sale.
Challenges to Overcome

In its start up operations, Tiviski faced a number of fundamental challenges in Mauritania: including milk collection, milk distribution, the unorganized nature of the sector, perceptions of suppliers and customers, and lack of business skills.

The first and central problem in connection with Tiviski’s early development was milk collection. Because of the dry conditions and sparse grazing, milk yields from all livestock are low. Although productive Mauritanian camels can provide nine or ten litres per day, average production is approximately 3.0 to 3.5 litres per camel per day.³ The milk production per square kilometre is low, and milk must be collected from herders with a more or less nomadic or semi-nomadic lifestyle. The low productivity is due in part to the sparse pasture and generally poor environmental resource management because there is no national program to develop and sustain grazing areas.

The second problem for camel milk production that Tiviski faced is that the purchased and processed milk must be sold. This requires a large market to be able to cover economies of scale of milk collection and processing. To distribute milk in a city, products need to be packaged, and for that to be possible, the milk must be pasteurized and refrigerated in modern facilities.

The third problem Tiviski faced was that dairy production in Mauritania was completely unorganized. Fresh milk was traditionally offered to neighbours or sold under uncertain hygienic conditions without refrigeration. There was no adequate government regulation for milk production. However, within the Ministry of Commerce, some efforts were being made to organize and support the industry.⁴ Herders and milk producers were scattered and there was no formal veterinary support or other animal husbandry support services.

The fourth problem Tiviski faced was a lack of business knowledge or business support services. Although Mauritanians can be natural sales people, they generally have little

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2 This new product has been designed specially in 2006 because of a severe drought that has reduced the quantity of fresh milk available.
3 In some countries with more favourable climate and grazing conditions, camels can milk 10 to 20 litres per day.
4 The first task taken into account by the government was the creation of a national laboratory for biochemical analysis.
experience with business management. Illiteracy rates in the country are about 80 percent. At the same time, banks are not well organized to support private businesses, and there is a general lack of administrative and financial frameworks in the country.

The fifth problem Tiviski faced was adjusting people’s traditions and beliefs associated with selling milk. They needed to change the historical belief that selling milk was something to be ashamed of, because it was seen as something only the poorest and most desperate people would do. At the same time, Tiviski needed to convince some urban people that it was perfectly acceptable to consume locally produced milk and milk products.

In addition to these challenges, Tiviski faced many of the same obstacles as everyone else in the country, including the hostile desert climate, which can produce extremely long droughts. There was also a general lack of land transportation facilities because of the desert environment.

The Business Model

THE DAIRY

Nancy Abeiderrahmane addressed these problems over time in a number of ways through the design of her business model. She built a dairy with two units: a pasteurizing unit and, more recently, a UHT plant, which was designed to capture the overproduction milk during the rainy season.

The cumulated investment in the dairy is an estimated four million euros (one million euros in the gradual growth of the original plant, and three million euros to build the UHT plant). The UHT plant required a loan of two million euros that was comprised of 500,000 euros from Proparco,5 500,000 euros from the International Finance Corporation and 1,000,000 euros from GBM, a local bank (backed by a line of credit from the European Investment Bank). The remaining one million euro investment was provided by Tiviski’s cash flow.

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5 Proparco is a subsidiary of the French Development Agency (AFD), dedicated to private sector financing.
Besides creating more than 200 direct jobs (100 percent of which are filled by Mauritanians), the company helps provide livelihoods for 1,000 families of herders, traditional milk processors, farmers, transporters and food suppliers. In the regions of Trarza and Brakna, indirect jobs are being created related to milk collection. In addition, herders are now building houses in small villages providing jobs to cement suppliers, house builders and carpenters.

**COLLECTION CENTRES**

The dairy has three collecting centres: one at the dairy in Nouchakout, one in Rosso (200 km from Nouakchott) and one in Boghé (320 km from Nouakchott - see Appendix A). All collection centres are equipped with scales, rapid chilling equipment and cold storage tanks.

Tiviski buys milk with two basic requirements: the milk must be fresh and clean and it must contain no water. Tiviski pays a fixed price for milk at the door of the dairy or collection centre, which means transport costs are at the supplier’s expense.

Some herders deliver their own milk to the collection centres; others rely on transporters to collect the milk in the villages and transport it to the collection centres. Milk collection in the villages and transport to the collecting points is done by pick-up trucks and donkey carts. Each supplier of milk to the collection centres has a supplier code number.

Twice a day, within a 75 to 100 km radius around each of the collection centres, suppliers collect the milk in aluminium alloy cans or other suitable containers from camps, herds or villages and deliver it to the centres. The total number of suppliers delivering milk to the centres varies between 600 and 1,000 depending on the season and migrations. Each supplier delivers between 1 to 250 litres per trip. The milk containers are cleaned and disinfected by Tiviski in their centres before being returned to the suppliers.

At the centres, the milk is checked, tasted (for freshness and water), weighed, chilled and stored. If the milk is collected at one of the two satellite collection centres, it is trucked to Nouakchott once per day in heat-proofed tanker trucks.

The price Tiviski pays for milk from suppliers is about 155 UM (Ouguiya, the national currency or US$0.57) per litre. The retail price of Tiviski’s milk is 360 UM (US$1.33) per litre on average for all types of milk.

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6 Tiviski also encourages the recruitment and promotion of women. For example, Tiviski’s financial director is a woman.

7 Calculated at the January 2007 exchange rate of 270 UM = US$1.00.
Payments are made to suppliers with vouchers– the original vouchers are given to the suppliers and copies are sent to Nouakchott for input into their computer system. Tiviski’s supplier code and tracking system keeps track of the balance due. Before issuing payment, any small loans (to buy food or vaccines for the livestock) are deducted from the payment. Those suppliers with bank accounts can receive payments directly into their accounts, and about one hundred local suppliers make use of this service. In the countryside around the collection centres, the Tiviski vouchers have become like a kind of currency with storeowners. Producers or store owners can also take their vouchers to Nouakchott and exchange them for cash from Tiviski at the dairy. This system works well for the suppliers and store owners and is based on a high level of trust that has been built with Tiviski over the years.

**SUPPORT FOR HERDERS**

Tiviski could not be efficient and grow without the development of animal husbandry practices. In Mauritania, a drought season alternates with a rainy season. During the drought season, livestock owners face several different problems: lack of money in households, scarcity of food for the livestock and animal health and veterinary issues. During the rainy season, livestock owners face different challenges such as floods, water-borne diseases and losses in fresh milk due to overproduction.

Through a non-governmental organization originally created by Tiviski (and now fully independent) called the Association of Milk Producers of Tiviski (APLT), Tiviski offers support to livestock owners to help them through hard times. APLT offers animal feed on credit at the best possible price and recovers the loans from milk payments. APLT also provides veterinary care, veterinary medicine and extension services relating to animal hygiene and feeding. Training of producers within the framework of APLT helps them understand how to calculate ratios for feeding animals. Nancy Abeiderrahmane created the organization when she learned that there were no other possibilities offered to the herders to sustain animal feed and animal healthcare in poor villages. The suppliers believe in APLT and support the organization’s ideas. Because of APLT’s work, livestock losses have decreased due to disease prevention and care, as well as improved knowledge of animal nutrition and health.

**DISTRIBUTION**

In Nouakchott, there are thousands of small shops selling all types of products, and Tiviski sells its products to these retailers. In addition to the small shop owners, there are two large supermarkets in downtown Nouakchott. Supermarket managers confirm that Tiviski milk is of great quality and highly appreciated by consumers.

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8 In 2006, there were 1.5 million camels, 1.5 million cows and eight to twelve million sheep and goats in Mauritania.
EXPORTING ABROAD: CHALLENGES AND OPPORTUNITIES

For a number of years, Tiviski has pursued another channel for distribution: exporting speciality products, like camel cheese, to the European market.

Traditionally, in the hot and dry desert, milk was preserved by dehydration and not by making cheese, which requires cool, damp facilities. Camel milk does not curdle naturally, so in the 1990s Tiviski worked to develop a process for making camel cheese (which is similar to brie or camembert). The Food and Agriculture Organization gave Tiviski a US$150,000 Technical Cooperation grant in 1994 to experiment with camel cheese production. Camel milk cheese is difficult to make properly. Throughout the process, too high or too low pasteurization temperature, starter, enzyme or salt can effectively spoil the cheese. However, Tiviski has mastered the delicate process and currently sells a small amount (60 kg per month) in Nouakchott.

However, the Mauritanian market for cheese is quite limited. The promise of selling this unique, interesting and expensive cheese to the European market has been a tantalizing promise for some time. Unfortunately, as Tiviski has been exploring this possibility over the last several years, a number of obstacles raised by European Legislation have emerged that Tiviski is still working to overcome:

- Camel milk is not included in European dairy import regulations. Some progress has been made on this issue, however, because an annex (inserted in 1995 into an EU Decision) empowers the Director General to enact regulations for milk produced by non-European species.
- European sanitary inspectors are also concerned about foot and mouth disease which is still present in Mauritania. As a result, Mauritania is not allowed to export dairy products to Europe.

Even if Mauritania was to be included in the list of countries that could export dairy products to Europe, the country still lacks a national laboratory accredited and certified by Brussels to test the cheeses. There is still some hope, however, because a European Union Delegation in Nouakchott is working towards the establishment of standards and an official quality assurance institution that would act as a certification entity.

Development Impacts

Tiviski Dairy has had many positive impacts on the poor, the natural environment and the economy in Mauritania.
Improved Livelihoods

Tiviski has enabled poor, nomadic people to earn a living from previously non-productive livestock. Nancy Abeiderrahmane led Mauritanians to look at animal husbandry “as an economic activity, not merely a way of life passed on from father to son.” More and more people are now seeing milk production as a source of income and are eager to improve their practices and hygiene standards. Herders are no longer forced to sell some of their camels if they adopt a more settled lifestyle. Instead, they can keep their animals and maintain their traditions because their camels are considered valuable forms of capital. Also, with Tiviski’s feeding and veterinary support, herders are experiencing fewer losses.

Improved Health for Urban Mauritanians

The availability of camel milk, a staple food for desert people, has improved the health of the urban population of Mauritania. By replacing unsanitary traditional milk handling practices with modern methods of collection, processing and distribution, Tiviski products help reduce the risk of transmitting diseases such as salmonella and tuberculosis (both common milk-borne diseases). Through improving the health of the urban population, Tiviski has helped improve the overall quality of life in Mauritania.

Cultural Preservation

According to Tiviski, the preservation of nomadic culture among Mauritanians can not be done without an improvement of the living conditions of both herders and livestock. Nomadic Mauritanians usually see the city as an exile and the desert as the place to enjoy the pleasures of life: a tent, camels, and the beauty of the natural environment. With the income generation opportunities and animal husbandry and veterinary support from Tiviski, livestock-owning Mauritanians are more able to preserve their nomadic culture. For more wealthy Mauritanians, camel milk is a reminder of their culture. Every family in the city owns a tent and many people enjoy organizing parties in the desert where they serve camel milk.

Preserving the Natural Environment

Allowing pastoralists to maintain a nomadic lifestyle actually contributes to better desert ecosystem management. Several types of seeds can only grow after passing through the digestive tract of desert grazing animals. At the same time, pastoral animal husbandry is often the only way to make productive use of huge grazing areas in the country.
Catalysing the Development of a Domestic Dairy Industry

Tiviski means “spring” in the local language. And Tiviski Dairy has led the emergence and growth of the domestic dairy industry in Mauritania, and it has been an important touchstone to further capital investment in the industry. Tiviski’s operations have demonstrated that it is possible to attract investment and simultaneous substitutions for costly foreign imports.

Opportunities for Replication and Scaling Up

Tiviski products have not yet been exported regionally; however, the company is currently studying local export possibilities. Also, Tiviski’s entire business model has potential to be replicated in neighbouring countries including Algeria, Morocco, Tunisia, Egypt, Mali, Senegal, Chad, United Arab Emirates, and other places with similar contexts. It is important to take into account the particular context of Mauritania:

- Mauritania had an underdeveloped dairy industry that only had to be catalysed.
- Mauritanian milk producers accepted the necessity to organize themselves according to Tiviski’s needs.
- Dairy industries in other countries are subject to various dimensions and regulations.

For Sahelian countries, replicability will depend on different elements related to the existence of grazing areas and milk technology. For now, Nancy Abeiderrahmane believes that Tiviski’s best strategy is to continue to consolidate and grow in Mauritania.
Conclusion

Tiviski Dairy has achieved great success in the last 20 years as it established itself as the first camel milk dairy in Africa and second worldwide. For her pioneering efforts, Nancy Abeiderrahmane was awarded the National Order of Merit in Mauritania as well as a Rolex Award for Entreprise. Tiviski’s main innovations include the following:

- Displacing milk and milk products imported from Europe with locally produced, high quality cow, camel and goat milk and dairy products
- Modernizing camel milk processing and the production of a variety of related milk products (including yogurt, butter and cheese) under extremely difficult conditions
- Bringing together scattered herders around one organized business venture
- Bringing the semi-nomadic camel herders into the supply chain and providing supplemental incomes and animal husbandry support services for them
- Allowing herders to keep their camels, which is culturally very important, even as the population becomes more settled in towns and peri-urban areas

For centuries, camels have been essential for human life in arid zones. With the looming onset of climate change and spreading deserts, there is renewed interest in the economic potential of these wonderfully adaptable animals. The local livelihoods and camel milk production that Tiviski has enabled is particularly attractive because it can generate steady income for herders and act as a substitute for imported milk products.
References


Tiviski. List of Products. Available at: www.tiviski.com/produits.html

Photographs provided by Tiviski.
Appendix A: Map of Mauritania

Map of Mauritania, including the capital Nouakchott (location of Tiviski dairy), Rosso and Bogué (Collection Centres). Tiviski also operated a collection centre in Kaédi for some time but closed it due to lack of suppliers.