



The Enterprising Sailors: Rural Entrepreneurs and Solar Distribution in Coastal India

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Abstract

Last mile distribution of solar energy products has traditionally faced logistical and sustainability challenges, with markets being inaccessible and isolated. While NGOs have tried to fill this space in the past, their distribution models fall short of full consumer empowerment and do not always encourage the consumer to invest time and attention in their solar products. This paper explores the entrepreneur distribution model, which engages local distributors as an integral part of last mile supply chains, and its effects on the Tindal community of the Konkan Coast of Maharashtra State, India.

Introduction

Rural India faces a massive electricity shortage, which has had and will continue to have long standing side effects for the country. 300 million Indian people live in darkness. As a result of this shortage, the population of rural India face many hurdles that not only limit their quality of life, but also prevent them from integrating into the economy. People cannot work at night, students find it difficult to study after school, and they cannot easily use devices like mobile phones and computers, which are becoming essential to the 21st century. This adds up to a lack of connectivity that widens the urban – rural divide and leaves large sections of the population on the margins of the economy.

My experience working with the Tindal community of Western India's Konkan Coast has shown me how access to electricity is integral to improving the lives of people. However, I also encountered the problems of last mile access that limit penetration and minimize meaningful impact on these communities. In working with these problems, I devised a method that would not only address the problems of last mile access, but would also help empower this community by introducing a new livelihood option for the people in this region.

This paper aims to analyze the effects of a unique distribution model for solar products, and potentially other energy products and consumer durables that engages local entrepreneurs in reaching the rural population. It was implemented in the Tindal community as part of an internship with Frontier Markets, a last-mile rural distribution company based in Rajasthan

The Tindals

The Tindal community is a local Maharashtrian community that comes from the Konkan Region of Maharashtra, mainly from the Raigadh, Ratnagiri and Sindhudurg districts. From September till May, they work as deckhands and caretakers on sailboats in Mumbai, following which they return to their villages for the monsoon, since sailing activities are suspended then.

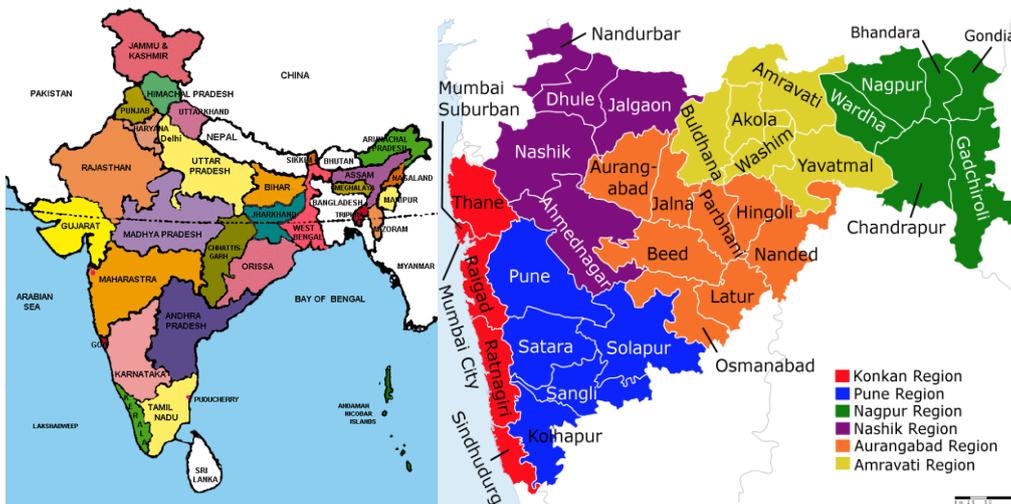


Fig. 1: The Tindals come from the Konkan Region of Maharashtra state, on the west coast of India

Monsoon is the time of the year that poses the most problems to them and their families. During the three month long monsoon, Tindals are generally left unemployed. This three-month period can extend for another month if the rains are excessively harsh. Their employment options for this period are largely restricted to agriculture, since the monsoons make it difficult for them to work as fishermen. This significantly hampers their income. Furthermore, the monsoon causes existing infrastructure such as electricity lines to collapse in their villages. This results in massive electricity shortages in an area that already has restricted access to electricity, which further limits them from pursuing alternative sources of employment.

Rural Energy Distribution and NGOs

Rural areas are supposed to get electricity from the grid of the State Electricity Board or private utility providers. Although the government does provide some electricity in rural areas, electric supply cannot meet demand and the electricity infrastructure is poor. Some Tindals have said that they are lucky if they get four hours of electricity a day outside the monsoon. During the monsoon, it is nearly impossible to get electricity because the rains cause frequent outages and power lines tend to collapse. When electricity does get provided, it is not enough to power all appliances in a house. A fan and a light bulb may work, but it is rare to see a fully lit house in rural Maharashtra. Thus, since the State Electricity Board is not able to provide a continuous and uninterrupted supply of electricity, there is a need for an off-grid solution in rural Maharashtra.

There are several NGOs which are distributing partially or entirely subsidized solar energy products to rural consumers. This model has three inherent problems; the first one being that subsidizing solar products so that they have little to no cost for the consumer prevents the model from being self-sustaining. Funding thus comes entirely from external sources, leading not only to the commitment of large resources to fundraising, but also carrying an inherent uncertainty in the model outside of the distributor’s control. Such an uncertainty, i.e. the volatility of external funding and the global economy, runs the risk of destroying the entire model due to external factors alone, reducing its long-term viability. Given that robust funding is not always guaranteed, it also incentivizes players to prioritize low-cost products in lieu of quality.

Secondly, this model also makes rural consumers completely dependent on NGOs and external factors that affect NGO funding, like global recessions and regulations regarding NGO funding. This hinders full empowerment, in the sense that it does not give villagers full control over their lives and choices. In turn, this prevents villagers from properly utilizing an additional source of livelihood, leaving them with the product but without the sense of empowerment or disposable income that comes from the entrepreneurship model.

Thirdly, the perception of a free solar product differs greatly from a product that a rural consumer has bought themselves at market rates. The same value that is attached to a market product is not attached to a free product, simply because the consumer does not have much investment in it. Setting aside issues of class hierarchies and the caricature of an urban savior inherent to giving products out for free, the model also fails to properly account for feedback that allows distributors to better tailor products to suit rural consumers' needs, since consumers are less likely to give feedback for a product they perceive as having little inherent value and no investment in. In turn, flaws or deficiencies within the product remain unknown to the supplier since the perceived cost of improving the product is seen to be greater than simply asking for another product. Therefore, the NGO model is not sustainable in the long term and does not fully deliver the goal of rural empowerment.

The Entrepreneur Distribution Model: Why it Works

Addressing the problems of sustainability, rural empowerment, and feedback management requires the creation of a model that actively involves the local consumer population. To that end, Frontier Markets created the entrepreneur distribution model to reach last mile consumers.

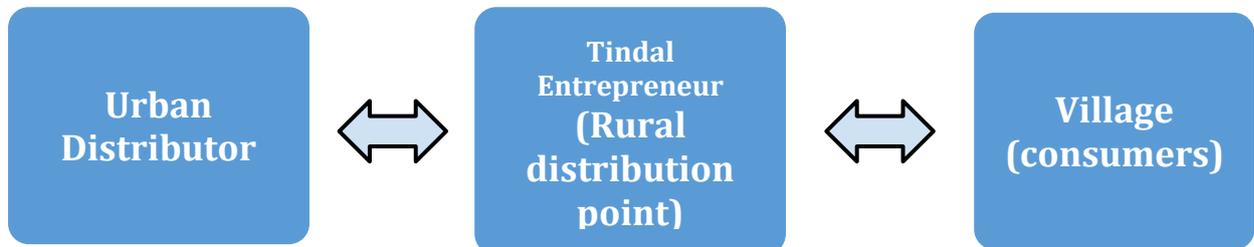


Fig. 2: An illustration of the entrepreneur distribution model's operations

In this model, companies like Frontier Markets acts as an urban distributor and partners with rural entrepreneur, group or business to distribute products to reach the consumer in that areas. In this case, the Tindal entrepreneur was given the shipment in an urban distributor center as the Tindal typically works in an urban area in non-monsoon months. Ideally, there should be a mechanism to ship the products to the coastal village but this has been challenging. Hence the consignment is picked up from the urban centre and taken it to his village where he sells them at market prices to consumers or other resellers within his community. The Tindal Entrepreneur receives a 20% commission on each sale, and can directly contact the urban distributor to give consumer feedback and report product issues. In this manner, the model allows a distributor like Frontier Markets to gather valuable data on rural consumers and focus innovation to address local needs.



Fig. 3: A solar lamp at the urban distribution centre in Mumbai

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This model has three main advantages for consumers and their communities over alternatives implemented by NGOs. Firstly, it creates a distribution system that is self-sustaining and independent of external funding, since overheads are factored into the price of the product. This protects consumers from the uncertainty and variability of NGO funding, which may oscillate every year depending on economic conditions and donor activity.

Secondly, it sets up a feedback system that creates real dialogue between the supplier and consumer, ensuring that the supplier can get data on product adoption and user issues, thus allowing them to innovate and serve consumer's needs directly; for example, mobile phone penetration has risen drastically in rural India over the last few years, leading to an increased demand for mobile chargers. The feedback infrastructure inherent to this model ensures that suppliers can innovate with this fact in mind, and consumers are incentivized to talk to rural and urban distributors since they now have an investment in the product. Such an infrastructure is almost impossible under an NGO model.



Fig. 4: A Tindal entrepreneur holds up a solar lantern

Thirdly, the entrepreneur model creates an opportunity for locals to become entrepreneurs within their own communities. It thus establishes an alternative source of revenue that can make dramatic changes to rural lifestyles; unemployment in the monsoon reduces, leaving locals with more disposable income. The spillover from this increased economic activity invigorates local businesses and allows locals to start, expand and strengthen their own enterprises. In turn, this leads to more prosperous societies that are able to invest in education for the next generation, allowing rural India to better integrate into the mainstream economy.

Challenges and Developments

The entrepreneur distribution model faces three major challenges in execution. The first challenge regards connectivity, which is not always consistent in rural India. This is also true for regions like the Konkan Coast which are located to metros like Mumbai. Although mobile phones are widely available and used, bad weather affects signal quality, which in turn hinders communication between rural entrepreneurs and urban distributors.

The second challenge deals with transport. Solar products are currently delivered to Tindals in small shipments of around 10 boxes at a time. However, as demand increases, an efficient and rapid transportation system will have to be set up to transport larger quantities of products. Additionally, the monsoon carries the risk of landslides and floods affecting transport networks for days on end, and generally tends to slow down transport on major routes. Solutions for telecommunications and transportation that were applied by Frontier Markets in Rajasthan could be implemented in the Konkan to deal with these challenges; additionally, the period before the monsoon could be used to send supplies to fulfill demand for the entire monsoon.

The third challenge is that of market development. Tindal entrepreneurs need to create awareness about solar energy and educate potential consumers on the investment value of solar products in order to expand the market. After their first month as entrepreneurs, some Tindals saw sales volumes reduce or remain stagnant. Sales were accelerated, however, after I conducted a training session on the economic benefit of using solar products as opposed to solar products or Kerosene lamps. A marked change was seen in demand and sales accelerated. At the end of it, the entrepreneurs asked for a more diverse supply of products, including some of higher value. They also wanted to set up monthly payment plans for consumers who wanted higher value products. In this way, they were able to work with the data to innovate their business, just like urban entrepreneurs.



Fig. 5: Solar lanterns being used at a tea stall and corner shop in Raigad district

Market development was also greatly improved by consumer feedback. In my fieldwork with Tindal entrepreneurs, I learnt that there are numerous market niches which Frontier Markets could fill, including solar torches for women and students, home lighting systems in rural health centres, more powerful torches for farmers, and lantern-shaped torches for pushcart vendors, shopkeepers, and small restaurants. Local cultural practices and the nature of the local economy strongly influenced the feedback given to the entrepreneurs and the subsequent market development; these insights could not be gained without creating a consumer-supplier relationship beforehand, and has the potential to go a long way. It is possible to expand this model in the future by creating simple, phone-based training kits or leaflets that could be distributed to entrepreneurs by Frontier Markets and help with sales training. Additionally, a Tindal entrepreneur might use these resources to start training his own distribution team and scale up in the future.

Case Study

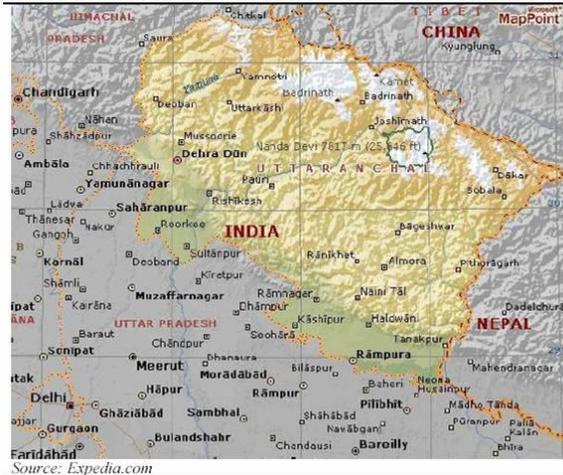
Santosh, a Tindal from Raigad District of the Konkan Coast, would earn Rs. 12,000 per month in Mumbai during the sailing season. By selling solar lamps to members of his village community, he has earned more money than he would normally earn in a year. The demand for his products is so high that he asks for new shipments of 10 lamps every week.

<u>March 2015</u>					
<u>Product</u>	<u>Qty</u>	<u>Unit Billing Price (Rs.)</u>	<u>Suggested MRP (Rs.)</u>	<u>Total Billing (Rs.)</u>	<u>Commission to Rural Distributor (Rs.)</u>
Sunlite JS 10	24	1500	1800	36000	7200
Sunlite II 09	24	550	700	13200	3600
Dlite S20	48	600	700	28800	4800
<u>TOTAL</u>	<u>96</u>			<u>78,000</u>	<u>15,600</u>

Fig. 6: Santosh's total sales for the month of March 2015 is more than his salary as a Tindal. Santosh's extra income has enabled him to afford both a new television and fan, and he can run both almost 24/7 because of his new-found access to reliable electricity. His children have been able to study at home much more than before, and he has very happily reported that their academic performance has greatly improved. He no longer pays money to the government or private utilities for a few scattered hours of electricity a day, nor does he buy kerosene for lighting anymore.

Frontier Markets' entrepreneur model has given Santosh and his family an opportunity for a better life and a brighter future. There are many more such entrepreneurs to be found in rural India, and the entrepreneur model has the potential to impact their lives in the same way.

Case Study 2: **Replicating the Model, In another geography**



The village of Harkot, located in the Himalayan foothills of the state of Uttarakhand, faces the same problems with electricity that the Konkan Coast faces. Life in this region of India is much more challenging than the Konkan Coast, since the inaccessibility and unpredictable weather of the Himalayas results in inadequate transportation, communication, and electricity infrastructure. Last mile distribution, therefore, faces greater challenges in this part of the country.

I grew up spending my vacations on treks in the Himalayas with my family, during which we employed porters from Harkot. We carried solar lamps on one of these treks and gifted them to the porters at the end. Harsingh, the head porter, called us after he reached the village with request for two dozen solar lamps. His nephew then came to meet me in Mumbai to pick them up; he had sold the ones we had gifted them and wanted to expand this business. We explained the mechanics of the entrepreneur distribution model to him, and sent him back with two boxes. He sold them easily and asked for more, which we shipped to his village. Unfortunately, the entrepreneur model does not work the same way over long distances. Shipping and insurance costs were high, and when the shipment arrived some lamps were damaged and others were missing. Revenue for that shipment thus fell and claims could not be easily made because of Harkot's inaccessibility. Communication became very sporadic as the Himalayan winter set in, leading to me suspending the business for the time being.

The lesson learnt from this experience was that the entrepreneur model must also adapt and be flexible in different markets. Setting up closer distribution points, creating lines of credit for entrepreneurs, and sending bulk shipments are all changes that could be incorporated to ensure its success across India.

About Vibhav Mariwala

Vibhav Mariwala, 18, is a Class 12 student in Bombay International School, Mumbai, India and is a candidate for IB Diploma Program. An avid sailor and trekker, he is passionate about social entrepreneurship, environment conservation and clean energy. He has interned with Frontier Markets since 2013 and has been able to sell more than 100 solar lanterns in Coastal Maharashtra and a few in Himalayan villages in the last two years. The profits of sales from the solar products were donated to World Wildlife Fund for marine ecology conservation.

About Frontier Markets:

