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Entrepreneurialising solar lanterns to solve energy poverty in India – potential and limitations

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This paper presents two solar lantern projects in rural Rajasthan, India, and examines success and limitations of entrepreneurialising development model in providing energy services in rural communities. Training local villagers to become entrepreneurs could provide job opportunities, improve livelihoods by clean energy and create a sense of project ownership. Without adequate support from donors and NGOs, any serious technical break-down of solar lanterns would undermine the incomes of entrepreneurs, and that would affect continuity of services. This paper promotes a genuine bottom-up approach in energy service provision, by getting entrepreneurs and villagers involved at the beginning of projects.

Keywords: Entrepreneurialising development model, Solar lantern

Introduction

Entrepreneurialising development model (EDM) intends to build a contractual relationship between entrepreneurs as service providers, and customers as service receivers[1]. Principle of the pays-for-service is intended to empower customers to demand for better services[2]. EDM claims to achieve a win-win outcome[3]. From donors' perspective, drawing on a pool of entrepreneurs ensures continuity of service provision after the departure of non-governmental organisations (NGOs). Entrepreneurs improve services and expand markets, which build a sustainable business model. Customers enjoy better services because entrepreneurs are more responsive to customers' changing needs. This paper will draw on solar lantern (SL) projects in India and examine the validity of these claims.

Experimental Section

Solar Lantern (SL) Projects and Research Methods

SLs have become a key strategy in addressing energy poverty in developing countries[4]. It is especially essential to poor communities, which have long been excluded from connections to national electricity grids or suffered from unreliable electricity supplies of grids. There are following three favourable factors that facilitate entrepreneurs to deliver SLs: i) Capital costs required to make SLs and to set up solar battery-recharging facilities are relatively low, when compared to other solar lighting equipment, such as solar home systems; ii) SL systems are built on less sophisticated technology and entrepreneurs are able to fix some basic technical faults after a few training sessions; and iii) Administrative costs of fee collection are relatively low because entrepreneurs can collect the fees when customers return their empty batteries for re-charging.

Case Study

In 2009, a Delhi-based research institute had long been promoting solar lighting interventions and a Rajasthan-based NGO received funding from the research institute. While nine local communities received 50 free SLs from the institute, NGO was responsible for recruiting an entrepreneur from each community. Entrepreneurs' selection was based on a number of criteria: 1) They had participated in NGO's former programmes; 2) They had good relationships with local people; and 3) They were able to submit regular progress reports.

Regarding payment, NGO told entrepreneurs not to charge more than Rs 60 as monthly subscription, which was based on estimation that each household paid Rs 2

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for kerosene a day. For non-regular users, entrepreneurs were allowed to charge flexibly. Entrepreneurs could also expand market by serving customers living in other communities. According to the calculation of NGO, if all 50 lanterns were successfully rented out, each entrepreneur could earn more than Rs 3,000 profit a month. In order to ensure financial viability of projects, each entrepreneur was requested to keep Rs 1,000 (or 10% of their profits) every month into banks as a maintenance fund.

Two villages (Banganga and Chhota Kantrana) were chosen as case studies; former was managed by a female entrepreneur while latter by a male. Former was regarded by NGO as a failure because of low subscription rate (only 15 out of 50 SLs were regularly rented out). The latter, in contrast, had 75% subscription rate. NGO explained that former received an older-generation of SLs, which suffered from technical problems. These contrasting features and experiences enabled to examine how context-specific nature of the practice of EDM shapes the success of projects. Then a fieldwork was conducted in April 2009. Based on a stakeholder analysis, 10 males and 8 females were interviewed from different community groups, including women, the elderly, NGO leaders, government officials and entrepreneurs.

Results and Discussion

Unequal Entrepreneur-Customer Relationships

EDM is theoretically based on an assumption that market provides a level-playing field for entrepreneurs and customers. Both parties are considered as profit maximisers, and they have strong incentives to negotiate the best price and quality of services[5]. This assumption, however, is problematic in practice because entrepreneurs and customers do not have equal power. SL business in present case studies was monopolistic in nature. There was only one service provider in each community, and alternative options for lighting were limited. Making connection to national grids might be desirable, but most poor households could neither afford it nor find electricity supplies reliable. Stealing electricity from grids could offer a solution, but villagers risked heavy fines if they were caught. Dissatisfied customers could, therefore, either switch back to kerosene or clay lamps or bear with the services and hope for improvement one day.

Entrepreneurs could easily exploit asymmetric bargaining power by charging non-monthly subscribers higher fees. This made villagers highly dissatisfied for two reasons: i) they regarded SLs as a gift from NGO to the whole community, and perceived SLs as community rather than private goods, villagers condemned entrepreneurs for making personal gains out of community resources; and ii) They felt exploited by entrepreneurs when on special occasions (weddings, harvesting in the evening, or children preparing for exams), community members hired SLs for one day at Rs 5 a day, and thus villagers complained that this was 150% higher than the daily rate of monthly subscription. Imposing non-uniform charges on different customers also raised concerns of unfairness and corruption. Since entrepreneurs were allowed to charge occasional users flexibly, they were charging their neighbours and friends at a lower rate. An old lady in Chhota Kantrana revealed that she only paid Re 1 a day because entrepreneur treated her as his mother. Some villagers were worried that this would promote favouritism and put the network-poor individuals at a disadvantage.

To avoid SLs being left idle, entrepreneurs were encouraged to serve customers from other communities. Although NGO had stressed that entrepreneurs should take their own communities' interests in the first place before serving other communities, the temptation for entrepreneurs to charge outsiders up to Rs 10 a day was so strong that they tended to ignore such advice. Entrepreneurs' motives of maximising profits were in conflict with villagers' 'solely-serve-our-community' principles. Entrepreneurs making easy money could easily arouse jealousy. Even in not-so-profitable-communities, such as Banganga, where SLs were frequently broken down, some villagers started challenging the domination and authority of entrepreneurs by requesting the NGO to offer them help in setting up similar business. This could be considered as a success of EDM for creating competition. However, without proper conflict resolution mechanisms, keen competition for limited resources would result in disharmony within communities, and that would affect how villagers built the norms of cooperation in the long run. In a nutshell, strengthening of entrepreneur-customer relationships did not necessarily empower customers[6]. Instead, present study has shown that many disillusioned customers felt so powerless that they did not believe that their complaints to entrepreneurs and NGO would make any differences to their livelihoods.

Insufficient Support from NGO

Main attractiveness of EDM is that it offers donors and NGOs an easy exit strategy when their projects and funding are over. In EDM, entrepreneurs are perceived

as 'doers', rather than 'thinkers', because their role is simply to continue the service provision. As a result, entrepreneurs are often left out in decision-making process[7]. In present case studies, entrepreneurs were recruited and trained late, when projects had reached the implementation stage. NGO leader did not take this problematic, thinking that as long as simple rules were laid out clearly, entrepreneurs would follow and implement them accordingly. This study, however, suggests that exclusion of entrepreneurs from the process of rule-making could result in undesirable outcomes. Questions (how regular and non-regular customers were defined, how much different groups of customers were charged, and how fees were collected) were discussed without the involvement of entrepreneurs and other villagers. Rules might be clearly set, but lacking a sense of legitimacy amongst villagers caused grievance.

Assumption that entrepreneur-customer relationships would become self-regulatory has also misled NGO that they could adopt a hand-off policy. Without proper monitoring, entrepreneurs kept changing old, and designing new rules. Some of the changes might seem desirable because this would make rules more suitable to the needs of their communities. However, entrepreneurs changing rules, without consulting their customers and NGO, could easily generate dissatisfaction. For example, entrepreneur in Chhota Kantrana imposed a new rule that no refund was allowed if users did not report any technical faults within 2 h after collecting SLs. However, SL users found new rule unreasonable because they did not often check batteries till they used SLs in the evening. A lack of vigilant supervision by NGO also enabled some entrepreneurs to exploit loopholes. Female entrepreneur in Banganga admitted in interviews that she had not set up maintenance fund even though the project had started for 12 months. This risked jeopardising long-term financial development of the projects.

Success of SL systems relies on efficient technical support[8]. Instead of working as a middle-man between entrepreneurs and SL suppliers, NGO worked hard to build close relationships for these two parties. This might work if entrepreneur was pro-active and suppliers were responsive. In practice, however, not all entrepreneur-supplier relationships went smoothly. Case study of Banganga used older-generation of SL systems, which broke down frequently. For entrepreneur, she found it difficult to articulate problems to the suppliers. From suppliers' point of view, repeated failure of the systems had distracted them from supporting other communities, and that was not cost-effective. As a result, technical problems persisted. This had undermined confidence of SL users. Reducing demands for SL service lowered profit margins and the enthusiasm of entrepreneur. Although NGO tried to provide technical advice, its late intervention made it difficult to break vicious cycle.

Conclusions

Using SL projects in Rajasthan, this study has demonstrated strengths and limitations of EDM in rural development. Transferring the tasks of service provision to entrepreneurs helped break the dependency culture of rural communities on NGOs and donors. By setting up clear rules and providing sufficient training, local communities have shown their capabilities of running SL projects by themselves. New financial arrangements also helped create new job opportunities and improve livelihoods by solar lighting. Targeting women entrepreneurs to demonstrate women's leadership and earning ability, thus to achieve gendered equality, was also well-intended. EDM, however, suggesting a quick exit strategy for donors and NGOs is misguiding. Without NGO's continual support, this study has suggested that entrepreneur-supplier relationships could easily be broken down, and that would affect maintenance services. Without constant monitoring, entrepreneurs would exploit customers by changing rules in their favour. In order to ensure fair and sustainable service provisions, NGOs and donors need to provide more support to the projects. Rule-making over payment and technical support plays a key role to the success of SL projects. Yet late involvement of entrepreneurs, and exclusion of villagers in negotiating rules have resulted in misunderstanding and grievances. Thus adopting a bottom-up approach and getting entrepreneurs and villagers involved, before projects started, should be able to identify obstacles that might constrain the success of projects.

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