

Use of Technology Applicability Framework as a tool to assess the scaling-up potential of a water-treatment product

Short Paper

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Abstract

TARA in collaboration with Antenna Technologies provides safe drinking water through a point-of-use water-disinfectant, Aqua+, developed by Antenna Technologies. This paper deals with the use of the Technology Applicability Framework (TAF) as a tool to assess the scaling-up potential of a water-treatment product like Aqua+ in a specific region of Solan district, Himachal Pradesh, India. Based on results of the TAF study, we understood that demand for safe drinking water and the willingness to invest in Aqua+ is high in this region. Recommendations include building a strong social marketing capability by leveraging TARA’s existing footprint, creating influence-networks and champions out of last-mile distributors to create awareness, collaborating with the government to conduct specialised trainings for distributors, increasing shelf-life and getting access to quality certifications.

Introduction

Some of the common household water-treatment methods improving drinking-water quality thereby reducing reported diarrhoea are boiling, chlorination and filtration (Freeman et al., 2012). Traditionally, the point-of-use market is dominated by boiling, ultraviolet-purifiers and filters. However, these solutions are unaffordable to majority of the BoP population. Chlorination is unique among these, since it eliminates most pathogenic microorganisms and provides residual disinfection, guarding against risk of stored water contamination (Gadgil et al., 2003). It is a low-cost treatment method on a large-scale, but becomes expensive when scaled down.

In response to the situation, TARA partnered with Antenna Technologies to provide safe drinking water through a scalable and replicable business model through a point-of-use water-disinfectant, Aqua+, a 50ml bottle of Sodium Hypochlorite solution. Aqua+ provides a unique value proposition. One bottle priced at INR 42, purifies 500l of water, sufficient for a family of 5 people for a month; reducing the cost of purification to INR 1.5/day, increasing affordability. It is easy to use (2 drops of Aqua+ per litre of water, 30 minutes wait and the water is safe to drink) and readily available. With the success of first phase of the project, TARA in 2014 hived off a for-profit company TARALife Sustainability Solutions Pvt. Ltd. to scale the Aqua+ business (FACT SHEET-INDIA Aqua+ ‘Creating a Social Enterprise Delivering Safe Water to the Base of the Pyramid (BoP)’, 2014). For deeper penetration, NGOs, commercial distributors and local social businesses serve as distribution channel partners. In the current phase, TARA and Antenna Technologies are continuing this partnership to support the scale-up of TARALife operations in India and to replicate its success in other parts of India & South Asia.

TAF is a decision-support tool that provides comprehensive assessment of the likelihood of successful scaling-up of a specific WASH technology and its applicability in a certain context (Olschewski et al., 2015). The decision to use TAF in this case was taken by TARA in association with Antenna Technologies, to understand the applicability, scalability and sustainability of Aqua+ for the BoP market. This paper presents the results and recommendations of this study in the particular case of Solan district, Himachal Pradesh, India.

Description of the Case Study

A workshop was organised at one of TARA's local channel partner's campus, *RUCHI*, in Bandh village, Solan aggregating key stakeholders. In a participatory process, TAF was used to examine the social, economic, environmental, institutional and legal, skills and knowhow, and technical conditions from three stakeholders' perspectives, users with village council members, the producers, i.e. head of TARAlife, technical and marketing team of Aqua+, the distributors, i.e. representatives of *RUCHI* including the last-mile distributors and the regulator, facilitator or funder as representatives of TARA.

The scorecard presents the results of the TAF participatory scoring exercise. In some cases where two symbols are present in the second column, the first one stands for the producer, TARAlife and the second for the distributor, *RUCHI*.

Main results and lessons learnt

SOCIAL

Aqua+ scored positive on this indicator from users' and distributor's perspective, whereas from producer and regulator/investor/facilitator's perspective it had a potential impact and could become critical with appropriate follow-up.

- Users' perspective: People were aware of poor water quality in their area and its associated health risks. Since water-treatment is of utmost importance to them, usage of Aqua+ is not associated with any religious or cultural barriers along with being comfortable with the taste of treated water.
- From distributors' view, people preferred buying Aqua+ from somebody from their local community.
- From producer's view, although TARA has resources to conduct awareness and promotional activities, the target area is huge. Penetration rate of the targeted population is reported to be less than 10%. Word-of-mouth was suggested as an important means of creating large-scale awareness here.
- From regulator's perspective, support from government is potentially important because of its outreach and networks. First step towards it would be to align our initiative with government's existing schemes like the Swachh Bharat Mission to create awareness. Currently, government schemes include provision of free-of-cost chlorine tablets as water-treatment solution.

ECONOMIC

Aqua+ scored negative on this indicator from producer and regulator/investor/facilitator's perspective. It scored positive from distributor's perspective whereas from users' perspective, it had a potential impact and could become critical with appropriate follow-up.

- Users' perspective: Willingness to invest in Aqua+ is high due to absence of long-term water-treatment solutions. However, unless they see significant results they are apprehensive on spending INR 42/month on a bottle of 50ml Aqua+. Moreover, one month sufficiency of one bottle for a family of 5 reduces consecutive purchases.
- Currently TARAlife sells 5,000 bottles/month in this region. From producer's perspective, with costs involved in supply chain management and promotion, it is expected to be profitable in this region when a threshold of 20,000 bottles/ month is reached.
- Distributors' perspective: Last-mile distributors are satisfied with their current margin of INR 10/bottle. To reduce costs involved per sale and increase incomes of last-mile distributors, TARAlife is working towards selling Aqua+ as part basic needs multi-product portfolio, aimed at solving current unmet needs of specific group of customers. To elaborate, access to safe drinking water addressed by Aqua+ and other water-purification solutions, biomass-pellets and improved cook-stoves catering to health and cooking needs of women whereas energy services catering to households and micro-entrepreneurs.
- Regulator's perspective: Minimum expectation from the government since it has its own water-treatment product: chlorine tablets, distributed free-of-cost. Therefore, Antenna Technologies supports part of TARA's social-marketing.

ENVIRONMENTAL

Aqua+ scored positive on this indicator from users’ perspective, whereas from producer/distributor’s perspective, it had a potential impact and could become critical with appropriate follow-up.

- Users’ perspective: Empty Aqua+ bottles are usually conserved and sold to a scrap-collector at INR 8/kg. Additionally, majority of users preferred chlorination to boiling, unrealising the environmental impact created. Boiling requires substantial quantities of fuel, usually wood, which puts tremendous pressure on forests. Moreover, additional smoke-inhalation attributed to using indoor cookstoves lead to respiratory problems.
- Producer’s perspective: Production of Aqua+ takes place in Orchha, India only, that flasks sold in Solan are shipped over 750km. TARAlife wants to set up local production centres to reduce shipping cost and environmental impacts. Nevertheless, considering the quantity currently sold, creation of those centres is not priority. Local production model could be profitable when sales reach a threshold of 5,00,000 bottles/month. Additionally, all consumable required for Aqua+ production like salt, bottles, packaging material are produced and recycled in India itself.

INSTITUTIONAL AND LEGAL

Aqua+ scored positive on this indicator from the users’ perspective; however, from the producer/distributor and regulator/investor/facilitator’s perspective it has a potential impact and could become critical with appropriate follow-up.

- TARAlife Sustainability Solutions Pvt. Ltd. is an ISO 9001:2008 certified company, with the right to produce and distribute a water-treatment product like Aqua+. From users’ perspective, it was found that quality certifications have to be obtained to gain customers’ confidence and distribute it through governmental channels. TARA is in talks with BIS (Bureau of Indian Standards) to customise their existing standards, since they currently don’t have any standards for a product like Aqua+.
- Producer’s perspective: Aqua+ has obtained the National Test House certification attesting it is as a safe as an efficient water-treatment solution.
- Distributors’ perspective: certifications like these make Aqua+ attractive for local retailers.

SKILLS AND KNOW-HOW

Aqua+ scored negative on this indicator from the regulator/investor/facilitator’s perspective, whereas from users’ perspective it had a potential impact and could become critical with appropriate follow-up. Aqua+ scored positive on this indicator from the producer and distributor’s perspective.

- Producer’s perspective: Training and follow-up training is provided to the last-mile distributors, the only people who interact with the consumers on a regular level.
- Users’ perspective: Positive response to distributors who were trained and aware about Aqua+. The training is oriented not only towards Aqua+ but also towards the basic needs multi-product portfolio TARAlife wants to make Aqua+ a part of.
- Distributor’s view: To enhance the brand value, it is imperative to recognise last-mile distributors as TARAlife representatives through intensive training with necessary tools.
- Producer’s perspective: Technical training on Aqua+ production helps in better understanding of the technology and its field implications.
- Regulator’s perspective: No support in terms of provision of government trainings for local distributors/retailers on skill-development and employment.

TECHNOLOGY

Aqua+ scored positive on this indicator from users’ perspective however from producer/distributor’s perspective it had a potential impact and could become critical with appropriate follow-up.

- Users’ perspective: No understanding on the exact effect of Aqua+ on their water. However, it is user-friendly, with instructions-for-use clearly defined on the bottle. The bottle is convenient

with a resistant and robust design and allows quick-dosing. Its volume is a good compromise between its cost and period-of-use. Being lightweight, the last-mile distributors can carry multiple bottles at a time.

- Producer’s perspective: TARA has a production unit with a capacity of 2,00,000 bottles/month. Increasing this capacity is not very costly and can be carried out relatively quickly. In case of decentralisation, funds will have to be identified. Although shelf-life of Aqua+ is 6 months, by the time it reaches the consumer its expiry is due in 1 month. Consumers prefer a minimum of 3 month shelf-life on purchase. Since stock management is an issue at different levels of supply chain; it makes the product unattractive for kiosk retailers.

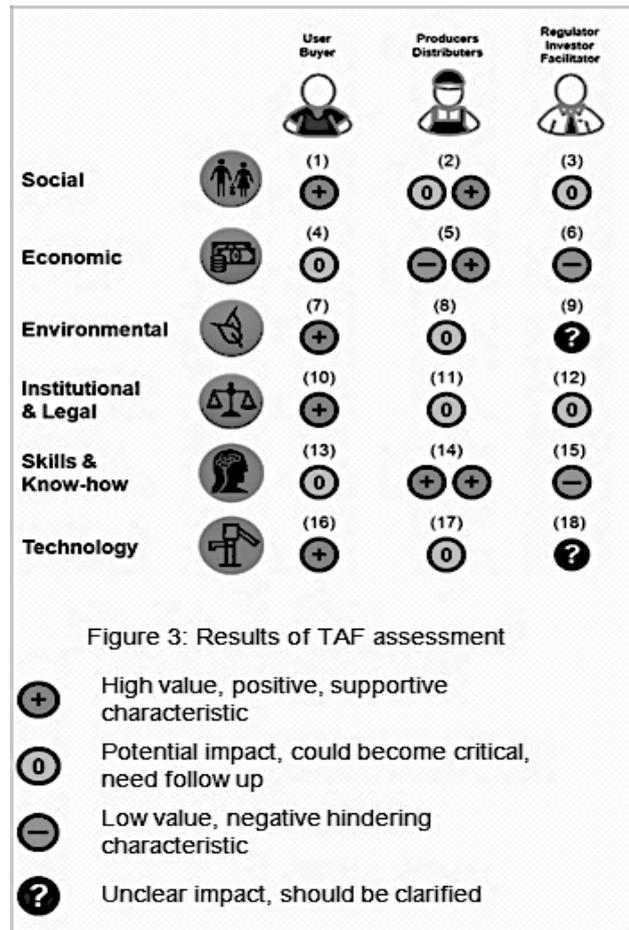
Considering remoteness of the study area, bringing all stakeholders on a common platform to participate in a multi-stakeholder workshop was challenging. Some results exhibited above are a consequence of telephonic conversations and one-to-one meetings.

Conclusions and Recommendations

TAF helped capture perspectives of users and all stakeholders to score Aqua+ on each of the six sustainability dimensions to assess its applicability, sustainability and scalability across the entire supply chain in this particular case of Solan. It helped identify bottlenecks hindering uptake of particular technology and emerge with mitigation measures. We learned that demand for safe drinking water and willingness to invest in an affordable water-treatment product like Aqua+ is high in this region, provided it is sold by people from local communities. Moreover, since last-mile delivery of basic needs products hinges on strong social-marketing capability, TARA has to conduct attention-getting campaigns combining economic rationality and health issues to raise the Aqua+ demand.

TAF highlighted the importance of training the last-mile distributors from users’ perspective. Users preferred buying Aqua+ from distributors who were aware and trained. TARAlife aims on providing an integrated ‘business in a box’ solution to distributors to enhance chances of distributors running successful businesses. The box would include, product portfolio with product-sourcing information, sales, financing strategies, social-marketing techniques, collaterals like caps, kiosks and a mobile communication system for monitoring and evaluating sales. They are currently developing these tools. Additionally, TARAlife would create strong influence networks and champions out of last-mile distributors to become spokespersons and spread safe drinking water message across the region. Going forward, TARAlife plans on collaborating with National Skill Development Corporation to conduct specialised trainings for local distributors on business development. TARAlife is also working towards developing bigger bottle sizes: 500ml and 1l, catering the demand of users.

TARAlife is developing a mobile-based app that monitors and evaluates sales, repeat purchases and distributors’ performance. Additionally, a step-by-step research procedure has been set-up to increase shelf-life of Aqua+. Access to BIS certification is a priority. To ensure repeat purchases and make it a common household product, TARAlife is working towards revising margins across the delivery channel to reduce costs at the users’ end. Parallely, TARA is conducting active social-marketing by leveraging TARA’s existing footprint and expanding into new geographies.



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