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39th WEDC International Conference, Kumasi, Ghana, 2016**ENSURING AVAILABILITY AND SUSTAINABLE MANAGEMENT
OF WATER AND SANITATION FOR ALL****An approach to measurement of the sustainability
of sanitation marketing WASH programs***C. Nicoletti, Y. Wei, S. Taylor & G. Lestikow (USA)***BRIEFING PAPER 2443**

Since 2011, iDE's sanitation marketing efforts in Cambodia have resulted in over 200,000 sales of improved pour-flush latrines in rural Cambodia through 329 businesses and 473 sales agents. iDE has tried to measure the sustainability of the businesses we engage. In doing so, we have tried to identify the business strategies and market factors driving or constraining profit and sales at scale. The team has also sought to answer whether or not the cost-effectiveness of iDE's sanitation marketing programs is improving over time as we continually refine our approach and processes. In the first part of this paper, we analyze business data from the sanitation marketing program in Cambodia to identify business strategies that lead to sustainable sanitation businesses. In the second part, we present a model for understanding the cost effectiveness of iDE's sanitation marketing programs, and identify some key takeaways for future financially sustainable WASH program implementation.

Introduction

Since late 2011, iDE's sanitation marketing efforts in Cambodia have resulted in over 200,000 sales of improved pour-flush latrines across seven provinces in rural Cambodia through a network of 329 Latrine Business Owners (LBOs) and 473 sales agents, called "sanitation teachers (STs)". In that time, we have seen improved latrine coverage across those seven provinces increase from 29% to 45%. During this time, we have expanded our sanitation marketing program to five other countries, including Bangladesh, Nepal, Vietnam, Ghana and Ethiopia – with over 285,000 total latrine sales taking place as a result. With private sector actors as the central players in all contexts, a key question for the team has been how we can best measure the sustainability of the sanitation businesses that we have helped to establish. In so doing, we have tried to identify the business strategies and market factors driving or constraining profitable and sustainable sales of rural toilets at significant scale. The second primary question we seek to answer is whether or not the cost-effectiveness of iDE's sanitation marketing programs is improving over time as we continually refine our approach and processes.

By diving into these two questions, we introduce two innovative measurement approaches that address both the sustainability of the sanitation service providers that are trained and established as part of the implementation of our sanitation marketing programs, as well as the sustainability of the sanitation marketing approach that iDE and our partners have invested in more generally as a viable solution to reducing open defecation and increasing improved latrine coverage.

This paper is broken into two parts: in the first, we analyze business data from the sanitation marketing program in Cambodia to identify business strategies that lead to sustainable sanitation businesses in rural Cambodia. In the second, we present a model for understanding the cost effectiveness of iDE's sanitation marketing programs, and identify some key takeaways for future financially sustainable WASH program implementation.

Business analysis measuring sustainability of sanitation businesses

Methodology

iDE collected quarterly business data from 329 LBOs (covering a total of 22 quarters or 66 months) and combined these data with bi-weekly sales performance data collected over the three year scale up, and other known parameters, to estimate metrics such as operating ratio, breakeven and salesforce performance.

Analysis and results

Being an LBO is generally profitable

The sales data suggest that the sanitation business is profitable. Out of the 329 LBOs the project has worked with, 246 (75%) achieved breakeven with their latrine sales, and 90% of active LBOs are profitable – with an operating expense ratio between 0.71 and 0.77 – which bodes well for the latrine business in general, since the next stage is turning a profit. Currently, 90% of active latrine businesses are profitable.

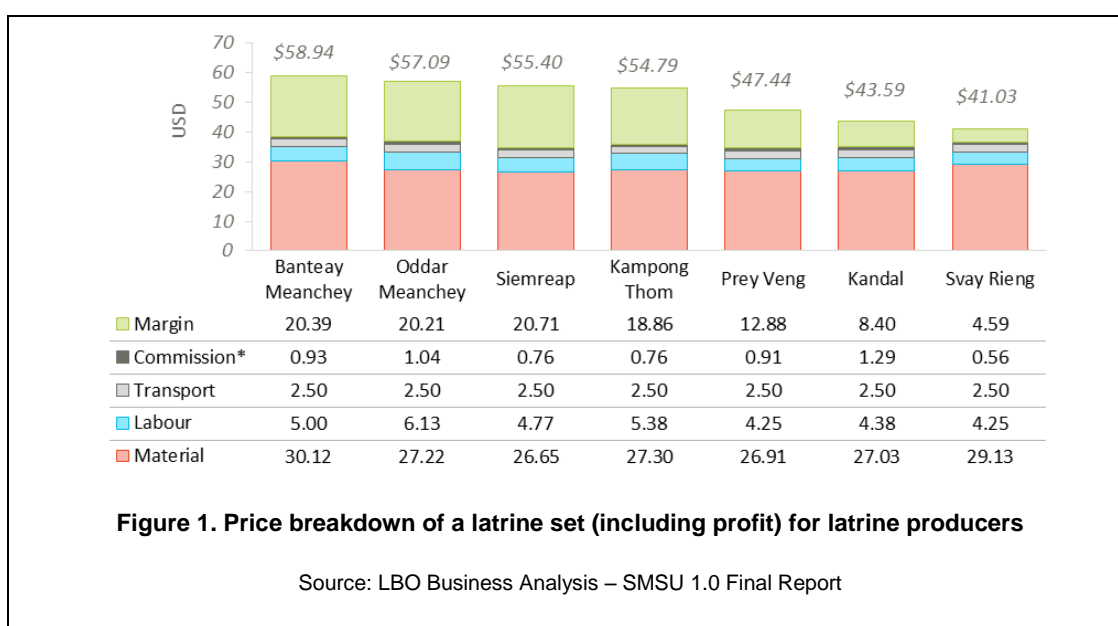


Figure 1 depicts the cost of making of a latrine set, including materials, labour, transport and sales commission, as well as profit. Lacking comprehensive data on transport costs, we estimated an average transport cost of 10,000 riel (\$2.50) per unit, which we assumed to be included in the retail price. Commissions for sales agents (also known as ‘sanitation teachers’) vary minimally by business, ranging from 4,000 to 20,000 riel (\$1 to \$5) per unit of latrine set sale. The chart below takes the weighted average based on actual commissions paid, divided by total units sold (including commission and non-commission sales, since there are numerous cases where a sale was directly made by an LBO without the involvement of a sanitation teacher).

It is interesting to note that there is a \$14 difference in margin between the the province with the highest average sale price (Banteay Meanchey) and the one with the lowest (Svay Rieng). This spread is larger when looking only at ST sales, with a range of close to \$23. One of the primary reasons for such a variation of margin is the subsidy factor. Various NGOs and project provided significant subsidy in the northern regions (Oddar Meanchey, Siem Reap, Banteay Meanchey). It appears that we may be seeing some level of price distortion resulting from subsidy. The latrine price in subsidy projects is not set by free market forces, but rather is mainly based on the agreement between donors and service providers.

A significant portion of the currently inactive LBOs were quite successful while active

In general, there have been a large number of ‘dropouts’. 191 of the 329 LBOs engaged by iDE (58%) are no longer active. Even though it appears that the sanitation business is generally profitable, profit potential alone may not be a strong enough incentive to continue with the business. In fact, approximately 30% of the

inactive LBOs were considered ‘high potential LBOs’ before they dropped out. They had a good sales record, had achieved breakeven and had become quite profitable before deciding to discontinue their latrine sales. Qualitative research data from the field suggest possible reasons for this.

- Latrine sales are seasonal. In many cases, sales peak twice a year: after the Cambodian New Year in April and after harvest season (this varies depending on the region). Some LBOs are only interested in producing heavily at those times, focusing on other more profitable activities during the rest of the year.
- Some LBOs were supported through subsidized sales, usually through a NGO run project, where sales are guaranteed at a fixed (generally high) sale price. Once the subsidy project is over, LBOs find it difficult to turn a profit without the subsidy, which often leads to the discontinuation of sales to focus on other business activities.
- Some LBOs may be at the point in their business growth where they have found other, possibly more sustainable sources of consistent cash income (i.e. diversifying their portfolio with multi-season products/services). SMSU’s value to the LBOs is that latrine sales provided them with consistent, easy access to cash. Once LBOs find new mechanisms to replace this, the value of continuing latrine sales begins to diminish.

Active involvement of STs brings about more sales and may predict latrine business sustainability

The data strongly indicate that sanitation teachers are often the driving force behind high sales. We divided the LBOs into quintiles based on monthly sales, and taking the top and bottom quintiles for example, we see that on average 6 different STs support a Tier 5 (highest earning) LBO at different stages of the business cycle, while only 1 ST serves a Tier 1 (lowest earning) LBO. In other words, LBOs with the highest monthly unit sales have the highest number of STs actively involved per month, while LBOs with lower sales tend to have very few or no active STs. Most of the active LBOs (94%) are working through STs, while only a small percentage of inactive LBOs (around 34%) have ever worked with an ST.

This demonstrates that there is a clear correlation between successful LBOs and involvement of sanitation teachers. It could very well be that when the challenge of closing sales is managed by the STs, LBOs have more confidence about continuing in this line of business.

High unit sales do not necessarily predict high returns, especially on a monthly basis

In a number of instances, it took LBOs many months or even years to reach significant levels of cumulative sales. As already noted, some sold only during high periods, while hardly selling anything the rest of the year. In such cases, monthly sales profit tends to be quite low. In some cases, high operating expenses cut into profit margins, in spite of a large volume of sale.

Conclusions and recommendations from LBO business analysis

Based on these findings, the team has adopted a more “hands-on” approach to managing the salesforce – emphasizing the role of latrine producers as suppliers rather than drivers of front-line sales – and developing customized sales strategies for STs. The team has developed a dynamic “load balancing” system that matches ST sales orders with latrine suppliers based on current production capacity. The team has also begun testing new delivery mechanisms for finance, along with embedded subsidies to boost penetration in low-income markets. We present this as an example of using timely and relevant data to inform market-based WASH strategy and tactics – especially as they relate to establishing independent sanitation businesses.

Estimating the cost-effectiveness of iDE’s sanitation marketing programs

Methodology

iDE collects monthly sales data from each of our sanitation businesses across each of the sanitation marketing programs that have moved into scale up phase (Cambodia, Bangladesh and Nepal). Data is captured using mobile-based sales and performance tracking forms built in TaroWorks and synced to a dynamic cloud-based database housed in salesforce.com. This management information system provides country-level and global project managers with up to date information system showing monthly total sales and cumulative scale across time. Additionally, we have extracted iDE’s project-level expenditure data from our SUN accounting system to obtain a longitudinal dataset containing monthly total expenditures, or costs, associated with the delivery and implementation of our sanitation marketing programs. Because project-

level expenditure data can exhibit high degrees of variance from month to month, we have chosen to use the 6-month weighted average of project level expenses as our cost denominator for the analysis presented here. With these two datasets, we are able to estimate the per-unit cost of delivery of a latrine set over time for each of our sanitation marketing programs by dividing the 6-month rolling average cost by the 6-month rolling average monthly number of latrine sets sold over the same period.

Analysis and results

Key investments in research and developments as well as operational systems pay off in the long run

iDE’s longest running sanitation marketing program is in Cambodia. Over the course of the 6-year program we have moved through a pilot program (late 2009 through 2010) and into scale up (mid 2011 through the end of 2015). We can see in Figure 2 that there were up-front costs associated with the pilot where the per-unit delivery of latrines was quite high (\$289/unit). As the pilot gained traction and iDE began to demonstrate proof of concept the per-unit cost of a latrine dropped significantly to around \$50/unit in April-May of 2011. At the beginning of scale up, iDE had to make significant investments in staff, operational systems, and research and development. This influx in spending is seen in the figure as the large hump where the per-unit cost of delivery increases to \$327/unit, between July 2011 and June 2012, which is even higher than it was during the pilot-phase of the project. As the program began to scale up and total sales began to exponentially grow at the end of 2012, we see that the investments made pay off in the form of a lower and lower per-unit costs - reaching the lowest point around June 2014 of \$31/unit.

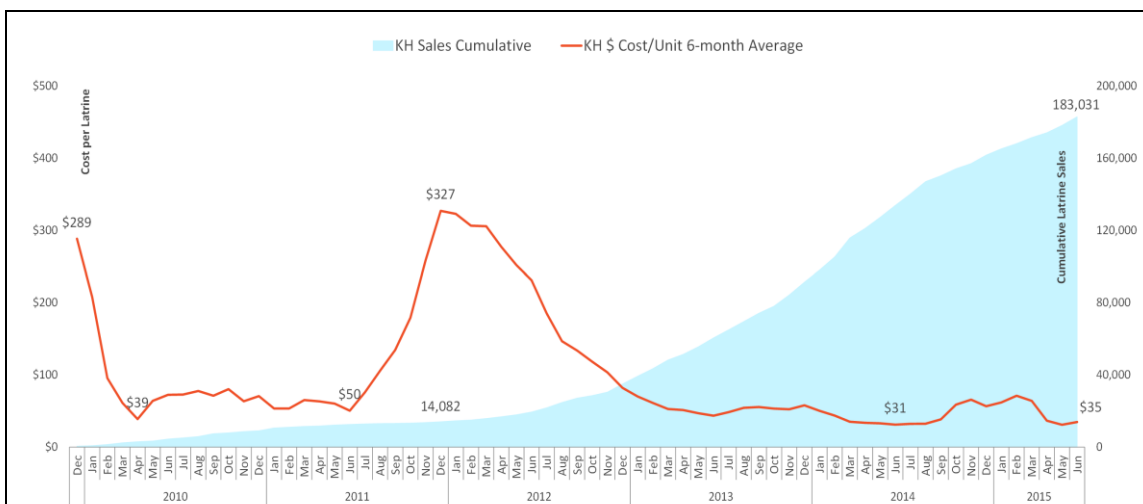


Figure 2. Cambodia sanitation marketing program - cumulative latrine sales vs cost per unit sold

Source: iDE’s Sanitation Marketing Cost-effectiveness Analysis

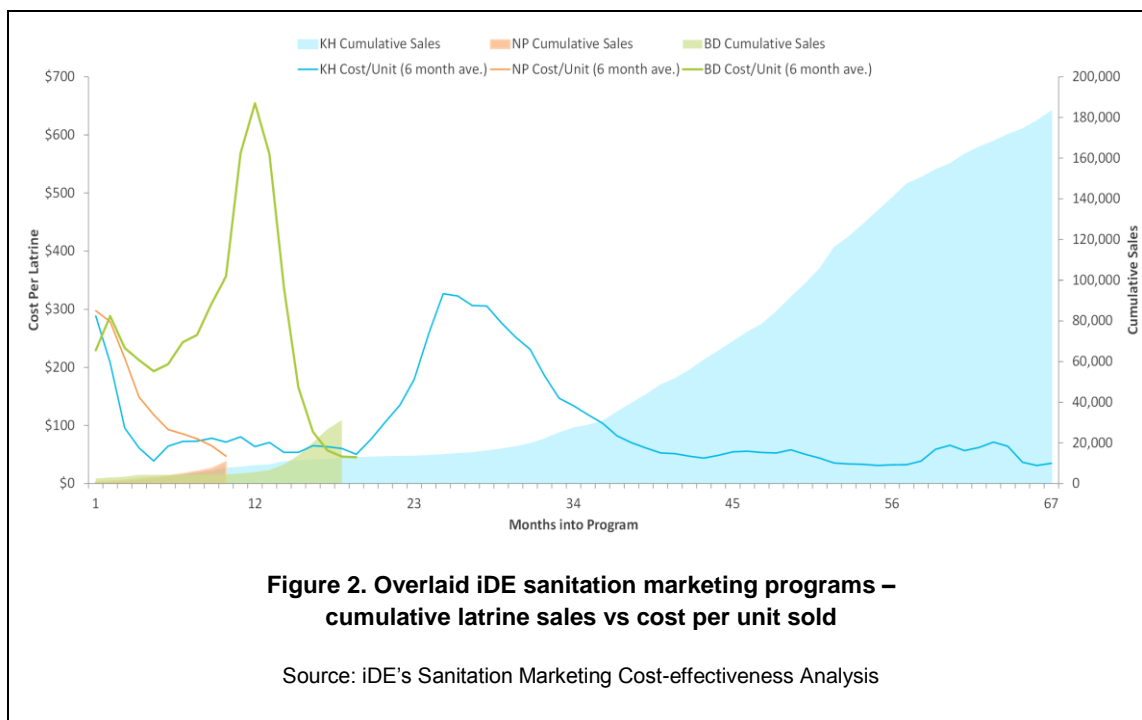
iDE Seems to be improving with each sanitation marketing scale up

In an effort to understand whether the Cambodia program was a one-off success, or if it was a success story that we can see evidence of in the early stages of our newer sanitation marketing programs, we have overlaid the same data from our Bangladesh and Nepal programs on the same set of axes as the Cambodia cost-effectiveness data. By overlaying the data from all three programs, and standardizing them based on the total number of months that have passed since the program’s inception, we are able to identify patterns in the cyclical nature of program expenditures and achievement of scale.

We can see in Figure 3 that the Nepal sanitation marketing program (indicated by the orange line and orange shaded area) achieved greater scale, earlier, than the Cambodia program. In addition, over this period of time the Nepal program had a lower per-unit cost per latrine than the Cambodia program did at the same stage of maturity in the program. Similarly, the Bangladesh program (indicated by the green line and green shaded area) had much higher per-unit costs during the up-front investment stage, but that the Bangladesh

program quickly achieved a similar level of efficiency as both the Cambodia and Nepal programs in terms of per-unit cost of a latrine.

In all three programs presented here, there are clear up-front costs associated with building sanitation markets, but there is evidence that once the private sector begins to respond, and sanitation businesses begin to operate more efficiently, clear inflection points in the ability to achieve scale and a mirrored inflection points showing a rapid decrease in the per-unit cost per latrine begin to emerge.



Conclusions and recommendations from LBO business analysis

We are unable to compare the longitudinal cost effectiveness estimates that we have against other WASH programs, but with this information iDE is able to identify which key programmatic investments result in greater scale and have a higher return on investment. Furthermore, rigorous measurement of program cost effectiveness should serve as evidence to the broader WASH sector that investment in sustainable sanitation businesses and building sanitation markets does result in sustainable and scalable solutions across a number of very difficult contexts.

The examples highlighted here demonstrate the benefits of linking rigorous evaluation with program management and strategic direction. Reflecting on these experiences, we highlight a few key components that have led to success in making these links. These include: support from funders who recognize the importance of investments in good measurement and build in flexibility to modify program strategies mid-stream; research partners who understand managerial priorities and emphasize decision-relevance of evaluation questions; in-house expertise that bridge the potential gap between technical evaluation considerations and operational perspectives; and management systems that reward results, incentivizing managers to use evidence to optimize program outcomes.

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