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Fostering disruptive design innovations in sanitation marketing in Bangladesh

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1. Introduction

Bangladesh is one of the few countries to achieve a drastic reduction in open defecation, with current reported rates as low as 5 percent in 2015. In 1990, the rate of open defecation was 34 percent, which represents a significant achievement. However the reduction in the rate of open defecation has not been directly reflected as an increase in the rates of access to improved sanitation. Still, nationally only 61 percent population is reported to have access to improved sanitation compared to 31 percent in 1990. Bangladesh is the only country in the region where progress has been faster among the poorest and the sanitation gap has been significantly reduced (Joint Monitoring Programme, 2015).

This dramatic reduction in open defecation was achieved through numbers of mechanisms including Community Led Total Sanitation (CLTS). The approach was developed in Bangladesh in the 1990s and since then, has been implemented in a number of other countries in Asia and Africa. One of the key principles of the approach has been the creation of demand for improved latrines, and the perception that a sense of pride and dignity can motivate a family to build a latrine. In 2003, the government introduced a subsidy program through which extreme-poor families were provided with a voucher for latrine materials (rings and slabs) to facilitate more equitable access to sanitation. This subsidized system created a high demand for materials, which could not be met by the existing Department of Public Health Engineering (DPHE) system. To facilitate the demand, the private sector was developed and latrine production centres were established across the country. Since then, the number of centres has increased dramatically. However, the centres have not significantly changed their product range, nor do their sales model to adapt to the needs of a highly socially and economically variable population.

The community based sanitation approaches in Bangladesh have been successful in making low cost, basic latrines available to millions of citizens. Achieving improved sanitation outcomes, however, requires people to move towards more hygienic, higher quality latrines which effectively reduce human exposure to faeces. This involves key 'hardware' challenges, such as ensuring latrines are both technically sound, culturally appropriate, affordable and easily available; 'software' challenges such as ensuring that customers demand and maintain hygienic latrines. In addition, ensuring the necessary enabling environment to both facilitate the design, sale and follow-up support necessary, even in remote areas, as well as ensuring the effective planning, implementation and monitoring of allocations and interventions to ensure that the needs of the most vulnerable are addressed, are also essential.

Driven by social factors such as inequitable access to sanitation; health impact; and the need to ensure the safety, dignity and privacy of household members – particularly of women and children - there is a need to solidify scaled and sustainable systems that ensure access to improved latrines. Importantly, the range of economic conditions, levels of existing government support and environmental considerations highlight the importance of having a flexible model to address the sanitation needs of low-income households in a sustainable manner.

While local sanitation providers and cost effective sanitation technologies are readily available, in many cases, these are not reaching rural consumers in more remote locations due to ineffective distribution strategies. In rural Bangladesh, trained producers generally do not install latrines because the cost of an improved latrine plus the opportunity cost for the local latrine producer who can invest their time to make more rings and slabs to generate revenue, is seen as too high for consumers. The market for affordable sanitation products in rural Bangladesh is fundamentally characterised by a lack of formal commercial linkages between the installers of latrines and the commercial firms with quality products. Relationships between local latrine producers and commercial producers (lead firms) are typically limited to the purchase of latrine inputs. While a number of large scale commercial producers operate through expansive dealer/retail networks throughout the country, these producers do not provide any support services such as, marketing, sales training or credit to latrine producers (MacArthur et al. 2015; Riggs and Kaanadka, 2015).

With limited access to product services, local latrine producers (LPs) have limited ability to offer different options from the existing sanitary products. LPs also have low incentives to promote higher quality products, as moderate- or low-quality products require fewer inputs and increase profitability. As a result, local latrine producers exhibit low marketing capability, resulting in passive penetration of low cost and low quality sanitation products to low-income customers. Regular seasonal flooding and vulnerability to natural disasters further act as disincentives to a quality sanitation investment.

Weak upward linkages between small enterprises or entrepreneurs and large-scale commercial producers also limit critical insights into potential market openings, which could encourage innovative product offerings for low-income market segments (Riggs and Kaanadka, 2015). While numerous designs exist for various environments, there are weak systems to determine which technologies are more commercially viable or how sanitation technologies can be developed and emended in various contexts, such as areas of high ground water.

In Bangladesh, some private sector sanitation technology providers are offering hygienic, cost-effective sanitation technologies. However, often these are not reaching the rural consumers, primarily because of the lack of flexible, innovative and effective distribution strategies to reach the poor and those in remote and Hard To Reach (HtR) areas.

The phrase “disruptive innovation”, coined by Clayton M. Christensen in the mid-1990s, was described as technology innovation that overtakes an existing market by applying different set of values (Christensen, 1997). Innovation for Bottom of Pyramid consumers (Prahalad 2004) is not only product design now; it goes beyond that including the business in the equation. Disruptive design is describes as combination of both process and product by Markides (2006). Whereas process refers to business model innovation, product refers to technical innovation. It is the combination of both process and product innovation that leverages existing systems moves a system to being disruptive. Here innovation is seeking to disrupt market modalities in product delivery, supply chain, services and manufacturing. While these innovations could be seen as evolutionary developments to existing paradigms, they are ultimately disruptive as they aim to overtake markets sustainably and at scale (MacArthur et al. 2015).

2. Guiding Principles

iDE-Bangladesh employs a unique set of guiding principles in our sanitation work. These principles have been developed out of a rich understanding of disruptive conditions of the market systems at play for consumer goods in Bangladesh, the existing sanitation market and the enabling environment which interacts heavily in this system to design disruptor solutions.

Firstly, the team seeks to incorporate all key aspects of a market system, which have been classified into four major themes: product, capacity, linkages and networks. Product reviews the product and service offerings that are available for consumers. Capacity reviews the physical, know-how, financial and administrative capacity of local service providers, sales agents and dealers who are directly involved with last-mile sales. Linkages refer to the intra-personal supply and demand linkages that are required to ensure an operating market system. These can be both informal and formal linkages such as a relationship between a dealer and retailer or informal such as the relationship between a sales agent and a household. Networks refer to large-scale interactions between different bodies of stakeholders. These can refer to supply deals between local service providers and local government or deals between associations of service providers and the private sector. The lines between these four categories are not black-and-white; however the framing offers a method by which to cluster interventions and learning.

Secondly, the team seeks to leverage existing infrastructure as much as possible. Examples of this could be leveraging existing public sector funding, national private firms, existing supply chains and existing local service providers. Rigorous analysis is undertaken to identify existing network systems. For example, the consumer products that are made of plastic have significant market reach in Bangladesh even in hard to reach areas. By leveraging such a sector in hard to reach areas are more sustainable and with further scale. The team then identifies brands that operate with an innovative spirit, who have a strong track record for quality, who are dedicated to reaching the poor, who have a market share which can achieve sustainability and scale and who are willing to take a risk into a new sanitation market sector. Another example is to work with existing local level public financing for latrines through existing NGO (Non-Governmental Organization) work. These two cases will be further elaborated on in the case studies below.

3. Guiding Approach

The WASH team at iDE-Bangladesh also employs Human Centered Design (HCD) principles (IDEO, 2013) in all aspects of program intervention and strategy development. HCD encourages a learner's mindset throughout the process while developing products, business models and marketing strategies. The processes are continuously iterative and seek to build on the two guiding principles of full market systems and leveraging infrastructure. The team uses three phases – Hear, Create and Deliver.

Hear – In the hear phase the team seeks to **learn** as much as possible about the market system before moving towards innovative solutions. Ideally the learning from the hear phase go beyond simply product and service insights to uncover barriers and levers for stronger market systems in product and service development, capacity building, demand and supply linkage creation as well as network formation. The learning from this phase are continuously referred through and often the team revisits these initial insights. Uniquely the insights that are not even written down often become the most strategic in the deliver phase as the create phase uncovers new ways to look at the market system not originally understood.

Create – In the create phase the team seeks to create innovation solutions. Sometimes solutions must be contextualized, others require full development and still others require scaling from an existing pilot. The create phase also offers an opportunity to **hook** relevant stakeholders and link them into a sustainable and scale market system. This can include the national private sector, local private sector and the public sector. The team is careful to not limit the creation phase just to products or services – here the innovation in business models and marketing strategies is just as important and often overlooked in traditional models.

Deliver – In the deliver phase the team seeks to move innovations beyond proof of concept and link products and services to their relevant business models and marketing strategies while leveraging existing infrastructure in a full market system for sustainability and scale. Here the four aspects of a market system become the points for interventions, activities and continuous learning.

4. Four Case Studies

iDE has a portfolio of sanitation marketing projects all of which use these guiding principles and the HCD approach to deliver sustainable sanitation solutions in Bangladesh at scale. Six projects have created the platform for four unique case studies. The projects are described as follows.

The *SanMark Pilot* (2012-2014) project, funded by Swiss Agency for Development Cooperation (SDC), Water and Sanitation Program (WSP) program of the World Bank, and supported by the United Nations Children's Fund (UNICEF) aimed to develop new approaches in achieving hygiene coverage across rural communities by creating a feasible market system for hygienic, affordable, and desirable latrine provision through designing a new latrine product based on demand from the consumers which will be branded and promoted; developing the skills of Latrine Producers (LPs); and forming public private platforms to underpin coordination at the local level.

Profitable Opportunities for Food Security (PROOFS) is a four year (2013-2017) project funded by The Embassy of Netherlands and implemented by the consortium of ICCO Cooperation, iDE, and BOP Innovation Center aims to improve access of 80,000 Base-of-the-Pyramid farmers and Consumers in rural Bangladesh to sufficient, safe and nutritious food, drinking water and sanitation to maintain healthy and productive lives.

SanMark-CITY: Intelligent Design in Urban Sanitation Marketing (2013-2015) is funded by Bill & Melinda Gates Foundation and implemented by the consortium of ICCO Corporation, iDE and Dustho Shastho Kendra (DSK). SanMark-CITY is designed to explore the potential of four on-site composting toilet technologies for slums in urban Bangladesh in sustainable and affordable manner - Tiger Toilet, Sun-Mar, Embiolet, and the Biofill.

SanMark-SUPPORT: BRWSSP (Technical assistance to Bangladesh Rural Water Supply and Sanitation Project) project provides technical assistance to Department of Public Health and Engineering (DPHE) for implementing the sanitation sub-component of the BRWSSP project. Funded by Water and Sanitation Program (WSP) program of the World Bank, iDE is providing capacity building trainings to 500 local latrine producers and 300 DPHE local officials and technical backstopping and monitoring support during this twenty six month project (2014-2016).

SanMark-SEAMs (Sanitation Marketing in Southern and Eastern Area Markets) project (2014-2015) is funded by The United Nations Children's Fund (UNICEF) aims to join the "seams" of the margins of current achievement in rural basic sanitation in Bangladesh by large-scale, ongoing modalities of sanitation programming with markets-based solutions related to Sanitation Marketing for increasing hygienic sanitation coverage. SanMark-SEAMs facilitates improved sanitation product sales for improved health outcomes; and utilize the Human Centered Design (HCD) process for research, development and demonstration of customer-oriented hygienic latrine product(s) and markets-based business and service delivery models.

SanMark-SUPPORT: IFRC (Sanitation Marketing Support: International Federation Of The Red Cross And Red Crescent Societies) is a Australian Red Cross funded technical assistance package to IFRC WASH programming, namely CDI 2 - WASH Program (Community Based Development Initiatives - Water and Sanitation Hygiene Promotion) implemented by Bangladesh Red Crescent Society (BDRCS), to address systemic challenges which slow down the delivery of sustainable and scalable sanitation products and services to low income consumers in rural Bangladesh. To achieve the program goals, CDI 2 program staff will be coached in Sanitation Marketing approaches and tools and CDI 2 activities will be supported through ongoing technical assistance to achieve project targets.

The following four case studies review one area of success that iDE has seen in each of the four named thematic regions in a market system: product, capacity, linkages and networks.

CASE STUDY 1: TRANSLATING INSIGHTS INTO PRODUCTS- The SaTo to SanBox EXPERIENCE

Hear

SanMark-Pilot was the first project through which iDE initiated the identification of existing disruptive conditions for the sanitation products and processes in Bangladesh. The team- which included experts from iDE and American Standard Brand (ASB)- spent weeks to gather insights on behavioral and technical aspects which hindered achieving sustainable sanitation at scale. The key finding was that the current siphons or water traps requires too much water to flush the feces and maintain water seal which triggers the household to break the water seal or often install the latrine without one. Water scarcity was not a problem for the households to manage but the rural households do not store water inside the latrine and when they take water by a 'bodna' to clean themselves and flush, this 2 litre capacity container falls inadequate to flush with the current trap design. People need to carry water multiple times to the latrine to flush properly, which ultimately results in an unhygienic latrine either a broken water seal or none at all.

It was also identified that a household does not have access to a complete sanitation product, rather purchases components from different sources to build a latrine. Thus, there is no standardization of the offering and the quality varies vastly depending on the consumers' technical know-how of a hygienic latrine, where the focus often shifts to aesthetics of the latrine rather than the technical details.

Create

The learnings were then translated into an "entry point" innovation-SaTo pan (derived from "Safe Toilet"), that generated key "disruptive design principles". The SaTo pan is an inexpensive plastic pan with counterweight trap door for pour flush latrines designed by ASB that can be flushed with half a *bodna* water and maintains a water seal. The key focus while developing the product was to make sure that it will not require significant behavior change in terms of water usage that was seen during the hear phase. The manufacturing of the product was then done by a lead national plastics firm in Bangladesh reputed for delivering quality to BoP consumers, RFL.

This relationship between iDE and RFL then emerged beyond one product and one project into an institutional relationship exploring and developing of multiple products, the major one being a latrine mid-structure SanBox (Sanitation in a box). SanBox is the next step for the consumers in the sanitation ladder to an offset pit system from a direct pit that includes footstep, flush funnel and pipes to connect to pits. This product will reduce the need for consumers to buy the components one by one and will offer a mass manufactured, quality controlled, bundled product delivered by a national conglomerate at scale.

Deliver

SaTo pan is mass manufactured and distributed by RFL in Bangladesh through their widespread network of over 3,500 retailers in every district of the country. RFL has also picked up the disconnected latrine producers in this network treating them as retailers for the product. iDE has connected RFL with the latrine producers through different programming under iDE WASH portfolio- namely SanMark- Pilot, SanMark-SEAMs, and PROOFS to provide them the support of the lead firm for product innovation, quality control, mass marketing and the brand recognition. Till date, RFL has produced over 350,000 SaTo pans and distributed them through different channels. Leveraging the same network, SanBox will be introduced in the market in late 2015.

CASE STUDY 2: DEVELOPING CAPACITY OF THE CENTRAL ACTOR- ONE MODULE AT A TIME

Hear

Under the SanMark Pilot, SEAMs and PROOFS projects, much effort was taken to understand how best to engage with the extensive network of latrine producers who are currently working across Bangladesh. The team estimates that there are approximately 10,000 of these entrepreneurs nationally and they often live from mass order to mass order. They are often unable to get financing and do not have the business formality or linkages to continue quality business once NGO and government contracts are completed. Most of these latrine producers often are also passive sellers and are unable to engage with the community to explain why latrines are even important. One latrine producer in the SEAMs project told us that he has no plan to ever invest profits back into his business for business expansion in spite of paying very high interest on loans. His reasoning was that “profit is for my family, loans are for the business”. This mentality is common across producers and the seasonality of sales restricts many of these producers from expanding product lines, securing better financing and maintaining employees. Often the producers are unable to access quality inputs once NGO projects finish and many latrine producers are unable to make profit from mass sales, as they often underestimate their costing.

Across the projects, iDE spent time listening to over 500 latrine producers to understand exactly what the actual requirements were in a training system. While it is evident that many of these producers require training, much of the available training is on competing ideas of what makes a hygienic latrine or training that is mandatory to get the mass order that follows.

For the technical assistance projects, SanMark-SUPPORT:BRWSSP and SanMark-SUPPORT:IFRC, iDE listened to latrine producers to engage them as a service provider for the projects through a specific tendering or subsidy modality developed for that particular project to provide latrines to project beneficiaries.

Create

Based on these learnings, the team used design principles to collaboratively create a holistic capacity training for sanitation entrepreneurs (also known as latrine producers or local sanitation service providers). The team identified capacity gaps in all four of the market system aspects: business skills, creating quality products and services, marketing and selling to communities, and creating mutually beneficial linkages. Stemming from a rate of 8% literacy rate amongst producers in some of the project areas, the team sought to produce training curriculum that used consistent symbols instead of words. These symbols become easily recognizable as the training progresses. Additionally, the training was developed to be six modules. Each module is a one-day activity based training that incorporates each of thematic areas. Group discussions and simple but effective tools such as an augmented Business Model Canvas provide the backbone of this training.

For the SanMark-SUPPORT:BRWSSP project, the capacity development modules included specific technology construction for latrines endorsed by Department of Health and Engineering (DPHE) for this particular project and how to apply for the tender for construction of latrines in their working areas. For SanMark-SUPPORT:IFRC project, the training will include designing service delivery model for each community and installing latrines at extreme poor households in the working areas following the specific voucher scheme for CDI 2 Sanitation component.

Deliver

As of October 2015, 108 latrine producers have been trained in this methodology (with another 320 currently in training). Field results are highly positive and latrine producers have seen increases in sales, increased confidence in creating both public and private sector deals and linkages, increased ability create demand amongst their consumer base, better business management and a better understanding of what makes quality products. The team has heard

positive feedback from the private public and NGO sectors about how the training is able to draw out the natural business capacities in these entrepreneurs. Besides this, 312 latrine producers have been trained and 110 are being trained currently through the technical assistance projects as of October 2015.

One latrine producer in PROOFS began as a producer who sold poor quality (in his own words) ring/slab from his small shop. After working with the program he has drastically increased his business, expanded into new product lines, is no longer reliant on NGO orders, is able to order and stock quality inputs, and is able to conduct a sales pitch to his consumers. He has also articulated the importance of quality control and offering a product warranty. Originally he was using a ratio of 1:4:5 for his cement:sand:brick chips mixture, but took a risk after our training to change his ratio to 1:3:4 (not quite the 1:2:3 we recommend, but a start). This risk paid off and now he is known as the highest quality producer in the area and has increased profit instead of seeing loss as he originally expected. He is happy to be recognized as a community leader at events and says that the training was really the catalyst to changing his status.

By building on the specific gaps identified through the hear phase, building a holistic training and meeting producers where they are at while envisioning where they can be, the team believes that this training could be packaged and shared with private sector partners who wish to build capacity for increased quality, sustainability and scale.

CASE STUDY 3: LINKING LATRINE PRODUCERS TO A NATIONAL SUPPLY CHAIN

Hear

While SanMark Pilot offered a proof of concept for the improved product lines, PROOFS and SEAMs have offered opportunities to prototype and pilot the business models and product supply chains associated with these product lines. After hearing of difficulties in accessing products through existing linkages in hard to reach areas, the team began researching the barriers and opportunities for strengthening these weak linkages through a bottleneck review. This research uncovered a number of unique barriers. One is that the turnover of private sector representatives in hard to reach areas is high which means that producers often do not have a valid phone number through which to place orders. Additionally in areas that are hard to reach are often areas where subsidized orders are common. Many subsidy schemes bring products inputs from a centralized supply center for distribution, however this decreases the incentive for dealers and retailers to stock improved products. Furthermore prices tend to be high for improved product inputs for several reasons including: transportation costs because of further distance to distributions depots, local monopolies for new products and a low demand for bulk purchasing schemes. In some of these areas even purchasing sand can become a challenge.

Create

Based on these barriers to continuous and affordable supply of quality product inputs, the team put together several recommended business models and incentive schemes to keep dealers in the business model, ultimately keeping access to improved products open to consumers. One of these concepts was to create business associations of producers in hard to reach areas. These associations could work together to build demand, lobby subsidy programs for more sustainable product supply models, bulk order inputs and incentivize dealers to keep stocking products.

Deliver

In the Patuakhali district in Southern Bangladesh, these identified concerns were significant and both SEAMs and PROOFS projects were working in these areas. Instead of pushing a linkage network or association on the producers, the team made basic suggestions at informal rapport building sessions and through the final module in the capacity training. Through these simple suggestions 60 producers have currently banded together to create a formal business association. Each member has paid 1000 taka to join the association and sub-groups are forming. The association has elected leadership and is working to create bulk purchasing

agreements, is lobbying subsidy programs for sustainable product supply models and is working together to build demand for improved products.

CASE STUDY 4: CREATING NETWORK WITH LOCAL GOVERNMENT INSTITUTIONS

Hear:

SanMark-Pilot provided the opportunity to explore facilitating engagement with local government institutions without developing new process to do so. This is the proof of concept for utilizing existing sanitation subsidies to deliver hygienic latrines to the extreme poor households. The Union Parishads (UP) receive a regular budget to provide hygienic latrine which includes three rings and one slab with plastic pan. The team explored the process of how UP decisions are made, how the products and services are delivered to the doorstep of the household, and how the payment process works between the UP and the latrine producer.

Create:

From there, the team facilitated creating platform for the latrine producer to inform the UP WATSAN committee and the Chairman about his product offerings and services. Rather than developing a MoU between the project and the UP to have certain numbers of latrines delivered, iDE aimed to develop a relationship between the UP and latrine producer. In the meetings, latrine producer delivered a 'sales pitch' describing his services and the benefits of SaTo pan in a direct pit latrine and his other services. Though the total value of a subsidized latrine was in par with the product offering of a latrine producer, the price of individual components became the concern. The UPs used to allocate BDT 80 for a pan, SaTo pan was above that price range. The UP chairman of Kismat Gonokoir union of Durgapur upazila in Rajshahi district was the first to revise the component price for subsidized latrines in his working location to ensure hygienic latrine is provided to his constituents through a sustainable channel which was later adapted by many. A revised cost structure was developed and latrine producers were contracted to provide certain number of latrines within a specific time period following a payment schedule discussed and agreed by both the parties. The specifics of those agreements varied from UP to UP based on the subsidy amount available and the latrine producer's ability to deliver the products.

Deliver:

1,497 units of latrines were sold during SanMark-Pilot in eight UPs through such contracts. Whereas the UP paid for the components, the consumers paid for the transportation. The UP chairman also ensured to follow up on the installation of the latrines later before paying the latrine producer fully and closing the contract. In the starting, the contracts were for small numbers like twenty units, it was observed that some UP chairmen were re-contracting the latrine producers for delivering more products. This short term engagement modality was appreciated by both the UP chairmen and the latrine producers as it gave the UP chairman to first evaluate and then increase his engagement with a certain latrine producer and do it as much as his funds allowed him to in a certain period. On the other hand, the latrine producers could finish a certain order, get paid for it and then engage into the next one allowing him financial liquidity. This created a sustainable relationship between the institution and latrine producer that lasted beyond the project timeframe. The modality of engagement was later scaled in SanMark-SEAMs and PROOFs the respective working areas.

5. Conclusion:

By incorporating all components of a market system and by leverage existing structures for sustainable growth at scale, iDE has developed both products and processes that are grounded in the potential of each stakeholder. Standing on the foundation of thirty years of sanitation work in Bangladesh and by engaging the private sector's ability to manufacture at scale and their unique positioning to reach the furthest corners of Bangladesh through a robust supply, the iDE team is working to connect the dots through disruptive solutions- both in business models, marketing systems, products and services.

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