

Jan – Mar 2017

Sanitation Market Study

Challenges &
Opportunities to
Create High Impact
Sanitation
Interventions



Samastipur Dist, Bihar

Ganjam Dist, Odisha

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1. Introduction

1.1 The Macro Context

India is home to around 500 million people who defecate in the open every day. More than half of rural India continues to defecate¹ in the open. The Indian government through its Swachh Bharat Mission (SBM) aims to eliminate open defecation and manual scavenging and also provide sanitation for all by October 2019. Since inception SBM has increased the overall percentage of households with individual toilets from 41.9% in Oct 2014 to 63.7%² in May 2017. However states like Bihar (29%), Jammu & Kashmir (38%) and Odisha (42%) continue to have the lowest percentage of households with toilets with respect to the national average despite significant increase in government efforts and spending on these states.

1.2 The Local Context

We implemented this study across three months (from January to March 2017) in the Samastipur district of Bihar and Ganjam district of Odisha. Both these districts are free of any political or external turmoil. Rural communities of these districts largely continue to depend on local surface (ponds & lakes) as well as shallow sub-surface (hand drawn water wells) water bodies to meet their domestic water needs. However given the ecological resources available to them both these districts differ in terms of population densities, livelihood sources and disposable income levels.



Pic 1: Samastipur & Ganjam on the India map

Samastipur a fertile agricultural plain with a heavy clay silt soil profile is situated in the vicinity of many rivers. It has a high population density of 1465 people per sq. km with more than 96% of them living in rural areas³ depending on agriculture as their primary source of income.

In contrast Ganjam is a tropical coastal district with a mostly sandy soil profile situated along the Bay of Bengal. It has a much lower population density of only 429 people per sq. km with only 78% of them living in rural areas⁴ with most of them depending on fishing and rain-fed farming as their primary income sources.

In addition to the above described differences, one may get more contextual data on [Samastipur](#) and [Ganjam](#) from their respective [CGWB](#) district reports.

As we describe later in the report, these differences along with other important factors play an important role in determining the adoption of sanitation solutions.

¹ Figures from the recent [Swachhta Status Report 2016](#) by [NSSO](#) – pp. 69 and 70.

² Data from the [SBM website](#).

³ Data from the [Samastipur official website](#).

⁴ Data from the [Ganjam official website](#).

1.3 The Sanitation Market Study

This study aims to understand the unique sanitation challenges and its related problems from a ground level perspective. This study also identifies and narrows down opportunities to design effective sanitation interventions to improve this situation.

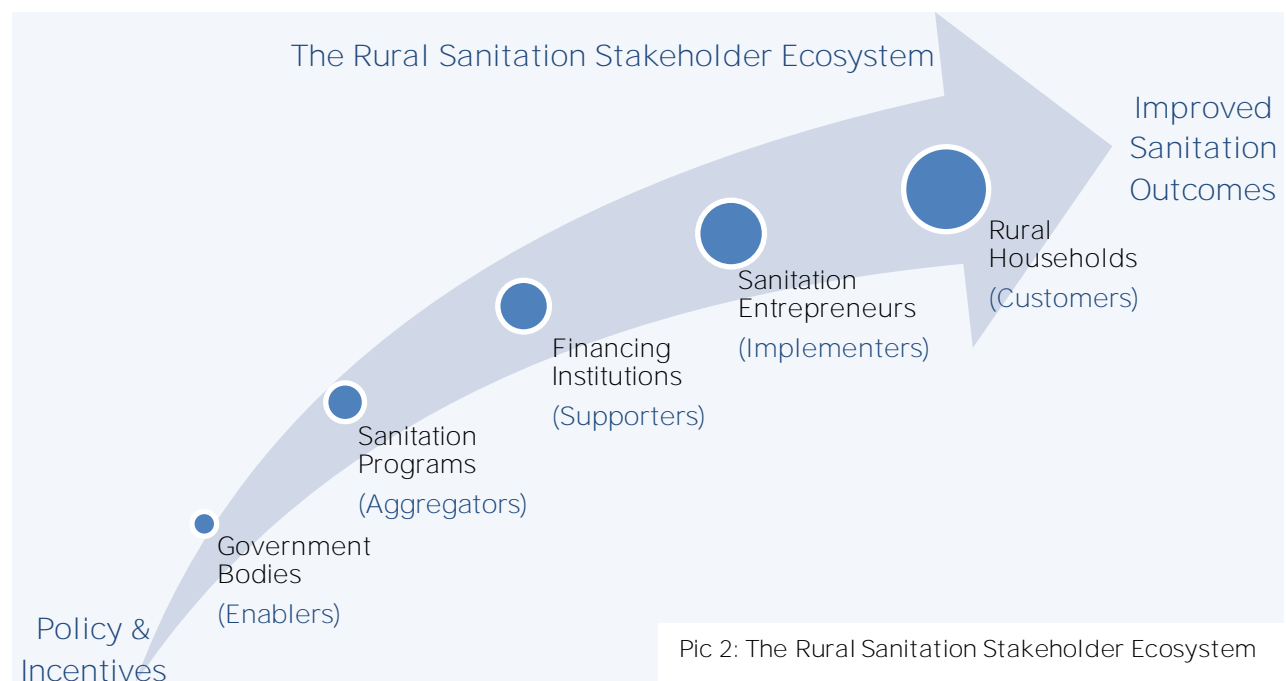
The observations and learnings presented here are primarily derived from in-person interviews with a range of government officials, financial institutions, sanitation programs, local sanitation micro entrepreneurs and rural households across the two districts. This study was designed to be a qualitative research study to uncover key learnings to improve sanitation outcomes for rural Indian households. It does not have the statistical significance of a large scale study.

1.4 The Sanitation Ecosystem

This study taught us that sanitation for rural India is both complex and interdependent.

It is complex because helping rural households adopt improved sanitation solutions also means changing deep rooted cultural practices, helping them with the appropriate financing tools and making relevant sanitation solutions that solve their unique needs more accessible.

It is interdependent because sanitation solutions can seldom succeed on their own without depending on various factors like disposable incomes, the local economy, water availability, geography, waste management, committed government officials and proximity to a thriving marketplace.



Given this complexity and interdependency, solving the rural sanitation problems needs multiple stakeholders within the ecosystem to play different complementing roles best suited to their unique strengths and limitations.

The rest of this report presents our learnings about the challenges and opportunities from the perspectives of these stakeholders.

2. Government Bodies (Enablers)

At the highest level the Ministry of Drinking Water and Sanitation (MDWS) implements the Swachh Bharat Mission (SBM) policy through respective state governments. The setting up of toilets in a district becomes the responsibility of the district collector and the respective department. Each district collector engages with the block development officers (BDOs) to set targets and drives the team to achieve it. The district coordinator of the PHED department and RWSS engineers work towards achieving the set targets by having toilets constructed in homes through partners. The district, block and village administrative structures are important institutions who engage with the village communities to motivate households, train masons, approve the construction of toilets, monitor the construction and finally release the subsidy to the beneficiary. The implementation has been enabled through an IT based standard process which is transparent. The system approves and sanctions SBM incentives for the beneficiaries who submit their application for constructing toilet in their homes.

At the block level (administrative unit consisting of a cluster of villages) the block development officer and sanitation coordinators take initiative to visit rural households, motivate them to build toilets and enter applications data into the government MIS portal. More often than not they end up relying heavily upon the panchayat officials and respective ward members to help them at the local level.

For our study we met with the respective PHED district coordinators, RWSS engineers, sanitation coordinators, panchayat officials and ward members in the study districts of Samastipur and Ganjam.

2.1 Targets & Toilet Adoption Rates

As described earlier, Bihar and Odisha are among the three Indian states that have the lowest toilet coverage rates. The central government has set a target of achieving ODF in India by 2019 which has translated to the need of faster conversion and construction of toilets. Therefore the local implementing bodies have steep ODF quarterly targets. As each state government is entitled to choose how it wants to implement their ODF drive, we found two different approaches between the Bihar and Odisha governments.

Samastipur, Bihar

The PHED District coordinator of Samastipur clarified that demand for toilets is lower than expected and estimates that on average around 8,000 new toilets are built in a month in the district which would mean constructing around 400 new toilets every month in a block like Kalyanpur. Given that the number of households in Samastipur is about 8,35,000 (Census 2011) and only around 26% of families ⁵ /households have toilets, it is understandable that he and his

Pic 3: A public drain in Ganjam



⁵ District level data from the [SBM dashboard](#).

team have a herculean task and are therefore under pressure to achieve the quarterly and annual targets..

An estimate based on the present rate of construction of toilets, suggest that, it will take another 10 more years before every rural household in Samastipur has toilets. The low conversion rate of households is affecting the demand for toilets. Also, some of the government policies to drive toilet construction seems to be negatively affecting the rate of conversion. In a recent decision to pressurize communities to adopt toilet construction and use in mass, Bihar state government will sanction SBM incentives only to households in wards that are declared ODF. The INR 12,000 SBM incentive will now be given to applicants only when all households in their respective wards have constructed toilets and are declared to be free of open defecation (ODF) practices by their elected panchayat official.

On the other hand the Bihar government is also partnering with civil society organizations like PSI to help rural households get toilet construction materials on credit that are automatically repaid once through the incentive.

Ganjam, Odisha

Unlike Bihar, the Odisha government has adopted a more direct approach of remitting the SBM incentive of INR 12,000 directly to individual bank account and is recently attempting to do this **within a week's period** once a family completes the SBM incentive procedures. The district collector of Ganjam district is opting to leverage the government staff/ local bodies to accelerate the rate of toilet coverage. And by doing this the collector is also choosing to not work directly with any CSO's, NGO's or private entities.

The RWSS engineer we interviewed told us that despite the pro-active efforts of government officials going door to door in almost every village to increase demand for toilets and assuring speedy incentive transfers, he is unable to understand why he and his team are only able to generate around 300 new toilets every month on average for Chatrapur block. He also told us that he and his team estimates that around 35,000 to 40,000 more toilets (as on March 2017) need to be built across the 17 panchayats of Chatrapur block alone. Given that Ganjam district has 7,58,000 households (Census 2011) and only 48% of households ⁶ have toilets, the task for the engineer and his team to achieve the status of ODF is a pressurized situation. This also means that at the current rate of toilet adoption it will take more than 11 years before every household in Ganjam has toilets. Similar to Bihar the rate of toilet adoption is several times lower than the targets being set for them.

2.2 Twin Leach-pit System

The government mandates a specific design for toilet construction and the SBM incentive for the household beneficiary is linked to constructing the approved model. The design of the approved toilet consists of a appropriately fitted toilet pan with a water seal trap, a permanent super structure (mostly a 4 inch brick wall with cement mortar) and a proper waste disposal system (mostly the twin pit system). In terms of costs such a toilet can be built for around INR 18,000 to 20,000 (based on cost estimates from Jan 2017).

Pic 4: RSM entrepreneur in Bihar with a Y-valve



⁶ District level data from the [SBM dashboard](#).

We further understood from the Bihar & Odisha state government officials that they primarily promoted a brick wall super structure and a twin pit waste disposal system because it was the cheapest and durable option, and also the availability of construction materials in neighboring small town markets. Given these advantages we could understand why government bodies promoted this system over the other more costly and complex disposal systems like the septic tank, ecosan or bio-gas digesters. However we later on learnt why this is also not the most appropriate solution for all rural households especially the ones living in low flood prone regions.

Cost breakup of a new toilet	Amount (in INR)
Labor (1 Mason & 2 Helpers)	3,000
Bricks, Cement & Sand	5,800
6 Cement Rings & 2 Ring Covers	6,000
Hardware (Pan, Seal, Pipes, Valves etc.)	2,000
Roof (Sheet & Supporting Frame)	1,200
Total Estimated Cost	18,000

2.3 Toilet Incentive Transfers

Interaction with government officials highlighted the importance assigned by them to the process of sanctioning SBM incentives in a transparent and efficient manner. They shared the process adopted to approve an application for construction of a toilet which started with the submission of the toilet incentive application which is necessarily signed by the respective ward member (or) elected panchayat official. This is followed by the approval of the sanitation coordinator and lastly with the signature of the respective RWSS engineer. This process typically takes anywhere between 2 to 4 weeks. The departments in both the states have lately been taking steps to make this process more transparent by tracking data through MIS portals⁷. While the government departments have been focusing to bring about transparency in processes and systems for sanctioning SBM incentives, there is a concern about the poor result in dispensing the incentives to the rural households who are the prime beneficiaries. Also given that Bihar & Odisha continue to have low toilet adoption rates in spite of having two different incentive transfer approaches suggests there is a deeper problem that affects sanitation adoption – beyond the incentives. We observed that this focus on the incentives alone without also understanding the entire range of customer pain points – severely limits their ability to influence rural households to adopt improved sanitation solutions.



Pic 5.1: Steps to get the toilet incentive approved

⁷ The [Bihar government's incentive transfer data](#) (fed by their internal MIS) – publically available on the internet

2.4 Section Summary & Recommendations

Government bodies need to go beyond their simplistic ***‘incentives will improve toilet adoption rates’*** paradigm.

Facilitated knowledge exchanges between government bodies and the other sanitation ecosystem stakeholders can potentially help governments go beyond their current limitations and help them better understand the various factors that lead to rural households adopting sanitation solutions. On the other hand it might also help the sanitation stakeholders evolve with respect to the changing government needs.

To increase the customer demand for sanitation solutions, government bodies (in addition to making the incentive transfer process more efficient) also need to understand the different customer pain points that current systems and policies do not yet address. One way to do this is through partnerships with a range of sanitation ecosystem stakeholders.

Government bodies also need to realize the limitations of promoting only one type of sanitation solution (the current brick super structure & twin pit system) and understand the different situations where this is not a suitable solution. It needs to provide better support for innovators to develop alternate sanitation solutions that meet the varied needs of different rural customer segments.

Pic 5.2: A Toilet Incentive Application



3. Sanitation Programs (Aggregators)

3.1 Overview

For this study, we met with various teams implementing sanitation programs to improve sanitation outcomes. The programs were led by Civil Society Organizations (CSOs), Non-Governmental Organizations (NGOs), for-profit Social Enterprises and Corporate Social Responsibility (CSR) initiatives. Most programs are funded through grants or government subsidies and do not expect a direct financial return (at this stage) from the program operations. Broadly these programs added value to the sanitation ecosystem by either aggregating demand or supply or both demand & supply.

In Samastipur we were supported by the Nidan and PSI teams to meet and interview a range of government officials, financing institutions, sanitation micro entrepreneurs and rural households.

In Ganjam we were supported by Gram Utthan, Svadha and Gram Vikas teams to meet and interview a range of government officials, financing institutions, sanitation micro entrepreneurs and rural households.

3.2 Lessons from PSI

The PSI team works with the Bihar government, a network of local sanitation entrepreneurs and financing institutions to solve two important problems for rural households that want to build a new toilet but cannot afford the required upfront payment. Firstly it solves their cash flow problem by helping them buy the required raw materials to build a toilet without any upfront cash payments from any of the sanitation entrepreneurs linked to the Rural Sanitary Mart (RSM) network. Secondly it also helps the family buy most of the raw materials needed conveniently from one place. The PSI team ensures that the sanitation entrepreneurs get paid from the SBM incentive for the materials within two weeks and also link them with small loans (up to 1.5 lakh at an interest rate of 14% to 16% p.a.) rupees from micro finance institutions to help them meet their working capital requirements.

The RSM entrepreneurs in Samastipur confirmed that the PSI model increased customer demand for constructing toilets and as a result their operations were more profitable. This highlighted the importance finding solutions to customer pain points that refrain households from spending in construction of toilets. Such customer behavior directly affects the sanitation intervention as it affects growth in demand for toilets and reduces the income opportunity for micro entrepreneurs.

We also learnt how it is important for sanitation programs to address cash flow problems that micro entrepreneurs struggle with. We further learnt that RSM entrepreneurs currently get around 20% to 40% of their total sales from the RSM model and the remaining 60% to 80% sales from customers who pay in cash. The entrepreneurs shared with us the importance of cash sales to customers as a necessity to sustain their business. **The high dependence of 'cash and carry model'** (60%-80%), adopted by the entrepreneurs helps them overcome the cash flow pressures in their business caused by delayed receipt of payments in the RSM model.

We believe that infusion of more credit at the manufacturer/ trader level can potentially stimulate the flow of money and eventually also increase customer demand. This approach to increase credit to increase sales of a particular product category is widely prevalent in the Fast Moving Consumer Goods (FMCG) sector where super-stockists are given extended credit lines to promote

certain products (**that don't yet have a strong market demand**) to make the product more accessible and thereby improve its sales. Our learnings lead us to believe that this kind of additional capital infusion can further help the sanitation ecosystem serve more customers.

3.3 Lessons from Svadha

Svadha increases customer demand by offering more sanitation product choices to rural households wanting to invest in a toilet. It aggregates a wide range of products from different manufacturers and distributes them to local sanitation retailers in small quantities as and when they need it (at attractive price points). On one hand by aggregating demand from a number of stockists /wholesalers located in distant market locations across rural districts, Svadha makes it possible to reduce distribution costs for products that were previously unavailable in local market. On the other hand Svadha entrepreneurs have been enabled to offer product choices to customers which is a business advantage over competing non-Svadha sanitation entrepreneurs. This in turn helps them consolidate their position in the local market and better manage their cash flows and profits.



Pic 6: A dysfunctional government overhead tank in Kanamana, Ganjam

The Svadha customers expressed their satisfaction for the product choices and options offered to them by the entrepreneurs. The value associated to gaining access to a range of products was substantiated as some customers were even willing to pay a premium up to 25% for getting access to better products that **aren't typically available in rural markets**. This taught us that there are different customer segments (with different needs and paying abilities) including a premium customer segment within every rural community. Though defining customer segments based on their unique needs and ability to pay is an obvious strategy for most businesses to increase sales, it is not yet widely used within the sanitation ecosystem.

3.4 Lessons from Gram Vikas

Gram Vikas helps rural communities organize themselves to solve their water supply and sanitation problems. They help communities leverage available public funds to build and maintain community level water and sanitation infrastructure. A Gram Vikas coordinator first ensures that every home agrees to pay an upfront contribution to build the infra, pay a monthly fee to maintain it and use only a toilet to relieve themselves. In return every home gets reliable piped water supply directly into their kitchens and toilets.

We learnt about the effectiveness of this approach when we interviewed households from two neighboring villages in the Kanamana Panchayat of Ganjam district. Both villages had similar income levels, number of households and access to natural resources. However because of the Gram Vikas



Pic 7: Overhead tank built & maintained by Gram Vikas in Kanamana, Ganjam

intervention one village continues to have piped water supply and be open defecation free over the last eight years. In contrast the other village continues to practice open defecation extensively and a broken down water supply system forces households to draw water from nearby hand pumps and wells. The non-availability of water in toilets has resulted in their no-use by the households as water has to be carried from distant water bodies for domestic use. Women carry the water in vessels and there is a limit to which such a practice would be convenient or be physically possible.

This taught us how important community participation and involvement in the decision making process is. It also taught us how reliable water availability and the convenience of using toilets with piped water supply can significantly improve sustainable adoption of sanitation solution rates compared to most other sanitation programs that stop with just awareness and training instead of solving important customer pain points.

3.5 Section Summary & Recommendations

Sanitation programs designed to leverage micro entrepreneurs must help them solve important customer pain points which have been limiting the demand generation. Programs need to rigorously differentiate between the existing market demand (households that would have anyways invested in sanitation irrespective of the program) versus the new demand a program creates by solving a pain point (that would have otherwise prevented the customers from investing in sanitation). This *'increase in new customer demand'* metric will help us **correlate the effectiveness of a program's approach and** also bring in more transparency into the outcomes of sanitation programs (especially the grant funded programs)



Pic 8: Newly built homes with attached toilets through the ORDP scheme in Ganjam, Odisha

Most sanitation programs limit their scope of intervention by only promoting the twin pit system without fully understanding the customer pain points that prevent them from adopting sanitation solutions. While our learnings around these pain points and customer segments are presented in section 6 of this report, we believe that sanitation programs are best positioned to gain an in-depth understanding of these customer pain points and create tailor made solutions for each customer segment. In addition to this they also need to look at the range of interdependent problems that affects adoption of sanitation solutions - Gram Vikas solving reliable piped water supply (an interdependent problem) to significantly improve sustainable sanitation adoption rates is a good reference point for this.

Sanitation programs also need to critically look at ways to build partnerships with financing institutions to infuse more capital into the sanitation ecosystem. By building on proven approaches used by the FMCG sector we need to look at infusing more capital at strategic points in the value chain that could best increase cash flows for others as well as ultimately result in more customer demand.

4. Financing Institutions (Supporters)

4.1 Overview

For this study, we met with the branch managers of various national banks, grameen banks and micro finance institutions across Samastipur and Ganjam to understand how financing products for sanitation entrepreneurs and rural customers fit with respect to their current operations.

Disclaimer: This study was conducted shortly after the Indian government's demonetization policy and our learnings might have been influenced by this. Also the study does not take into account the changes that have happened over the last few months as a result of this policy.

4.2 National & Rural Banks

We spoke with the branch managers of national banks like State Bank of India and Indian Bank as well as the regional rural banks like Bihar Gramin Bank and Utkal Grameen Bank. We understood **from them that they don't provide financing specifically to help rural** households invest in toilets. The closest financial product they had were the multi-purpose personal loans (with an interest rate of 10% to 14% p.a.) and SHG group loans (with an interest rate of 12% to 16% p.a.).

In general they also did not prefer to lend money to sanitation micro entrepreneurs and treated this as a very risky proposition for two reasons. Firstly because most small business owners do not maintain proper financial transactions under registered legal entities and **therefore don't have** a long banking relationship with any bank making it hard for banks to recover loan dues from them. On the other hand because micro businesses tend to have unpredictable cash flows and do not own assets that can be hypothecated as security collateral towards a bank loan.

When asked about the recent Mudra scheme (a scheme actively promoted by the current central government) offering unsecured loans for small businesses – bank managers explicitly told us that they did not encourage customers to avail unsecured loans and that they could afford to do so because they do not have any specific Mudra loan targets to meet. Even in the few cases where bank managers told us that they gave out Mudra loans on a few occasions it was only to businesses that already had a good repayment track record with them. The most relevant bank financial product was a CC account that allowed small businesses to open fixed deposits and avail short term working capital loans on the deposit.

This highlighted the practice of banks to give out personal loans and SHG group loans compared to financing small businesses. It also taught us that small businesses needed to improve their financial hygiene with a set of simple business tools if they wanted to attract better financing facilities to grow their businesses.

4.3 Microfinance Institutions

We spoke to local teams of microfinance institutions like Bandhan, Aarohan and Sahyog Development Services and **understood that most of them don't yet have any specific financing** products for rural households or sanitation entrepreneurs in Ganjam. However in Bihar both Bandhan and SDS were actively promoting toilet loans up to INR 15,000 (at a 14% p.a. interest rate) to a group of 12 to 20 households. SDS in partnership with the PSI team were also providing working capital loans up to INR 1,50,000 (at an interest rate of 14% to 16% p.a.) for sanitation entrepreneurs linked to the RSM network.

We observed that this difference could be a function of two factors. Firstly the Bihar government being more open to partnering with external entities to fulfill their sanitation targets and the other factor being better income from irrigated land among rural households in Samastipur, Bihar compared to their peers in Ganjam, Odisha who depended mostly on fishing and seasonal rain-fed farming. We also learnt that MFIs and Small Finance Banks have the potential to act as pioneers in financing the sanitation ecosystem before it becomes attractive for larger banks to do so (similar to what happened with the SHG movement).

4.4 Informal Local Moneylenders

We learnt that most sanitation micro entrepreneurs borrow money from informal local money lenders (also locally known as mahajans). These loans have very high interest rates ranging around 3% to 5% per month. Micro entrepreneurs avail these loans to fulfill their short term working capital needs and typically repay these loans within two to three months. This indicates that a) micro entrepreneurs have the capacity to repay loans and b) working capital loans at reasonable interest rates can positively benefit their businesses. A business arrangement between these entrepreneurs and formal lending institutions can reduce the interest burden on these entrepreneurs who are presently paying a much higher rate of interest to private lenders.

4.5 Section Summary & Recommendations

Micro finance institutions and Small finance banks have multiple opportunities to create financial products specifically catering to the sanitation ecosystem before larger banks can afford to do so. In the meanwhile sanitation programs should work towards raising grants and other forms of blended capital that can act as credit guarantees initially until the sanitation ecosystem proves itself of becoming credit worthy to financial institutions.

5. Sanitation Micro Entrepreneurs (Implementers)

5.1 Overview

We met and interviewed a mix of local sanitation micro entrepreneurs (cement ring manufacturers, trader-retailers dealing with sanitation products and mason-contractors) across Samastipur and Ganjam. These micro entrepreneurs typically own and operate small sanitation related business operations that bring in an annual turnover anywhere between INR 2 to 18 lakhs. These businesses mostly operate and attract customers within a limited geographical area only. The PSI and Nidan teams introduced us to these micro entrepreneurs in Samastipur while the Svadha and Gram Utthan teams introduced us to micro entrepreneurs in Ganjam.

5.2 Cement Ring Manufacturers



Pic 9: A typical CRM operation in Bihar - beside the entrepreneur's home on the side of a well-connected road

The cement ring manufacturers (CRM) have the biggest operations, maximum employees and the largest annual turnovers out of the three sanitation entrepreneur categories we interviewed for this study. They also served the largest market size among the three entrepreneur categories. The below table presents a simplified perspective to help us understand key factors that influence their business:

Key factors that influence the unit costs of a typical CRM	
Market Size Served by Business	6 to 8 Panchayats
Approximate No. of CRMs per block	5 to 10 per block
Average Annual Turnover	INR 12 to 18 lakhs
Average No. of customers served per year	240 to 360 customers
Average Bill Amount per customer	INR 5,000 to 6,000
Average Profit Margins on Bill Amount	30% to 35%
Average Annual Net Profit	INR 3.5 to 6.5 lakhs

Given their size of operations and nature of business the CRMs are ideally placed to receive support from sanitation programs as well as supporting finance institutions and transfer its benefits to other businesses as well as potential customers. This explains why effective sanitation programs like the RSM model design their interventions around CRMs. The biggest pain point for CRMs is finding easily accessible financing options at a reasonable interest rate, because CRMs have to buy raw materials at least two weeks in advance, maintain inventories that can last for at least a month and in some cases like the RSM model also provide credit to customers.

5.3 Retailers

As retailers are the primary touchpoints for customers (who have decided to invest in a toilet) to interact with, they can have a large influence on customer buying decisions. However compared to CRMs they serve a much smaller geographical area and receive lower margins on the products they sell.

The below table presents a simplified perspective to help us understand key factors that influence their business:

Pic 10: Inside the shop of a sanitation retailer in Ganjam



Key factors that influence the unit costs of retailers	
Market Size Served by Business	2 to 3 Panchayats
Approximate No. of Retailers per block	30 to 50 per block
Average Annual Turnover	INR 3 to 6 lakhs
Average No. of customers served per year	200 to 300 customers
Average Bill Amount per customer	INR 1,500 to 2,000
Average Profit Margins on Bill Amount	12% to 18%
Average Annual Net Profit	INR 0.3 to 1 lakhs

Given that the retailers are ideally placed to educate and influence potential customers to buy better sanitation products – effective sanitation programs like the Svadha model can help retailers increase the number of customers they can serve. As close to 90% of all sales currently come from new customers increasing customer demand is the biggest pain point for a retailer.

5.4 Masons

Among the three entrepreneur categories we interviewed, the mason category had the largest number of people. They also serve the lowest number of customers and earn the lowest profit margins compared to the other entrepreneurs. They mostly prefer to operate within a gram panchayat and rely extensively on word of mouth customer referrals. The below table presents a simplified perspective to help us understand key factors that influence their business:

Key factors that influence the unit costs of masons	
Market Size Served by Business	1 to 2 Panchayats
Approximate No. of Masons per block	100 to 200 per block
Average Annual Turnover	INR 1.2 to 2.4 lakhs
Average No. of customers served per year	40 to 60 customers
Average Bill Amount per customer	INR 3,000 to 4,000
Average Profit Margins on Bill Amount	10% to 15%
Average Annual Net Profit	INR 0.12 to 0.36 lakhs

Masons currently do not prefer to rely entirely on toilet construction projects because of the unpredictable nature of customer demand. Every mason we spoke to told us that they work on toilet projects only as a stop gap arrangement (usually between house constructions that tend to provide constant work over 2 to 6 months). We also learnt that they get on average anywhere between 2 to 5 toilet builds every month and that their biggest pain point is in finding consistent work through toilet build projects.



Pic 11: Mason making leach pit covers on the road near a toilet build.

Sanitation programs at a community level like the Gram Vikas model can potentially provide enough consistent work at a scale that makes economic sense for a team of masons to specialize exclusively in toilet builds. This could significantly increase the number of customers masons are able to serve as well as help them work towards better optimizing labor and time to save costs.

5.5 Section Summary & Recommendations

Sanitation micro entrepreneurs need to understand the needs of financing institutions if they want to access better working capital loans from them. Micro businesses also need a set of simple tools to help them maintain basic accounting systems and better plan their cash flows. Financing institutions also need to simplify lending procedures to better serve small businesses.

As discussed earlier in the summary of the sanitation programs section, it is critical for sanitation programs working with micro entrepreneurs to help them increase the number of customers they are able to serve. Models like PSI and Svadha increase customer demand by solving important pain points for different **customers (who wouldn't have otherwise invested in sanitation)**.

In addition to this, increasing customer demand at a community level (like what Gram Vikas does) can further significantly improve distribution, logistic and labor costs when compared to the retail model of providing sanitation solutions for fragmented customer segments across many villages.

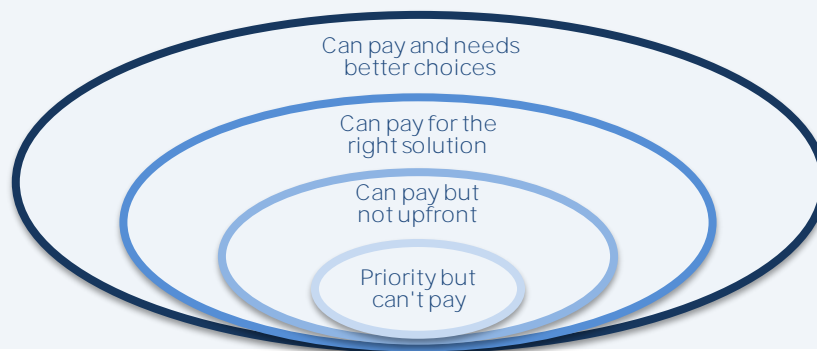
Also sanitation entrepreneurs are in tune with market peak and low demand seasons. For example more than half of all sales occur in a 3 to 4 month window between January and April. These variances depend on multiple factors like rainfall, harvest yields, the wedding season, the agriculture season etc. however the other sanitation stakeholders like the financing institutions, government bodies and even most sanitation programs do not quite share this insight. The sanitation ecosystem could significantly increase the adoption of improved sanitation solutions if their interventions were designed to leverage these naturally occurring peaks and lows.

6. Rural Households & Communities (Customers)

6.1 Customer Pain Points

As highlighted earlier, rural households have to first solve a set of sanitation related problems before they can afford to think about investing in a toilet. By meeting a range of rural households across Samastipur and Ganjam we wanted to go beyond simplistic theories on why rural households invest or **don't invest in toilets** and actually understand key factors that influence their decision process.

Customer segments & their primary pain points



Pic 12: Customer segments and their primary pain points

Our most important learning from this study is that rural households have different primary pain points. These pain points differ with respect to disposable incomes, access to water, cultural beliefs, usable space they have and proximity to a thriving marketplace.

Broadly we learnt that households wanting to invest in sanitation had one of the following four pain points:

- Can pay for the sanitation solution and needs better sanitation products & services
- Can (or is willing to) pay for the right solution that solves their unique problems
- Is willing to pay for sanitation, but is unable to pay the entire amount upfront
- Cannot afford to pay for current sanitation solutions, but sanitation is a priority

6.2 Can Pay But Needs Better Choices

Customers with this pain point (about 20% of households we interviewed), have a better ability to pay for sanitation solutions compared to the other sets of customers identified in this report. Their primary pain point is not having access to a wide range of sanitation product options and choices that suit their needs and desires. Svadha is a good example of a program solving this pain point for this

Pic 13: Girls and women in Ganjam using the nearest hand pump to wash clothes and bathe.



customer segment.

6.3 Can Pay For the Right Solution



Pic 14: Note the elevated foundation to prevent flooding.

Customers with this pain point (about 30% of households we interviewed), is either able to pay or is willing to find a way to pay for the right sanitation solution as long as it also solves their sanitation related problems. We have already seen how Gram Vikas is able to serve communities with reliable piped water supply and thereby significantly improve sanitation solution adoption rates over time.

An example of an unsolved sanitation related problem is the unsuitability of the twin pit toilet system as a solution in the flood prone regions of Samastipur. With a heavy clay soil profile and being a low plain in between multiple rivers, Samastipur is prone to flooding every few years. This flooding risk is even more evident in the low lying areas that most low income communities occupy. Incidentally these communities have the maximum number of households who do not yet have toilets. Even otherwise, **because of the region's water table levels**, groundwater enters the leach pits in a good rainfall year and fills them up.

We learnt that households do not want to invest in a toilet because of this flooding event. In other cases households created very deep leach pits up to 10 feet from ground level because they believe that a bigger pit can contain larger volumes of waste and thereby delay this flooding event (in reality the pit ends up filling faster and also contaminates the ground water table). A few low-income households in some extreme cases had taken loans and invested up to INR 80,000 to construct a septic tank toilet system to solve this flooding problem. Clearly solving this problem through a more suitable low cost sanitation intervention can lead to many more households adopting sanitation solutions.

Another unsolved sanitation related problem is the lack of usable land to build a toilet. We repeatedly heard many households across Samastipur and Ganjam tell us that they had no land to build a toilet. On further enquiry we saw a pattern of this being a pain point mostly for low-caste households (that tended to have smaller homes and no additional land) living in villages near a city or town (as land prices were higher in these villages). We also noticed that most of these households also had a flat RCC roof on their homes and thereby they were actually telling us **that they didn't have enough land to build a twin pit leach toilet system**. Clearly solving this problem through modular sanitation systems that



Pic 15: Notice the closely built homes (for lack of space) in a low caste settlement in Ganjam.

can be installed on roofs and temporary places can significantly increase adoption of sanitation solutions, especially given that a large percentage of low-caste households **don't** yet have toilets.

6.4 Can Pay, But Not Upfront

Customers with this pain point demonstrate a willingness to pay for sanitation solutions by taking small loans at a reasonable interest rate (about 30% of households we interviewed), but are unable to pay the entire cost of building a toilet upfront.

These customers are best served by micro finance institutions like Bandhan and SDS offering low interest toilet loans to a cluster of households in Samastipur.

Pic 16: Lady in rural Samastipur willing to take a loan to build a toilet. She also shows us where she would like to get it built.



By aggregating rural households in this customer segment and providing the necessary social infrastructure for financing institutions to recover toilet loans from a cluster of households. This way sanitation programs can serve this customer segment by helping them access small toilet loans from financing institutions and at the same time also reduce the risk and cost of lending for the financing institutions.

6.5 Sanitation A Priority, But Can't Pay



Pic 17: Self built pit toilet. Woman in rural Samastipur uses it and covers the faecal matter daily with ash from her wood fire cook stove.

Customers with this pain point have the least ability to pay for a sanitation solution among the four identified segments (less than 10% of households we interviewed). They want a sanitation solution but are not yet prepared to take a loan or rely entirely on the government incentive to pay for a sanitation solution. Instead they are willing to trade off durability and aesthetics in exchange for a radically low cost solution (our conversations indicated a price point under INR 4,000) that they could finance on their own either through installments (or) on a pay per usage basis.

Though we have not yet come across viable solutions (suited to the Indian context) solving this extreme case, we still included this in the report because such an intervention could ultimately disrupt other existing sanitation solutions and possibly also create a new product category in the sanitation market and significantly improve adoption rates.

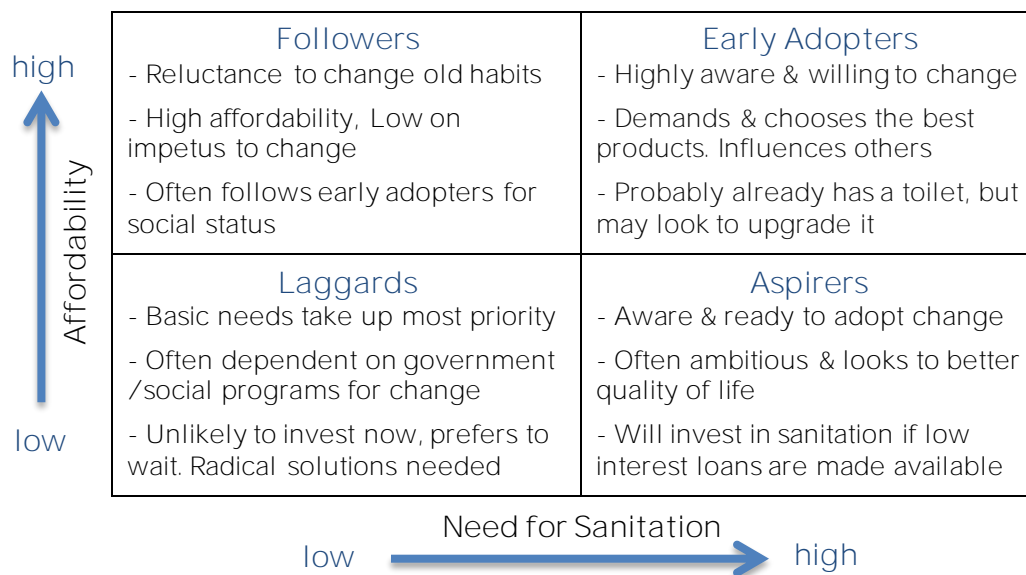
The rural households can be segmented based on their 'felt need' to set up a toilet and their 'affordability'. The characteristics of the rural households on various parameters as discussed above can be comprehensively represented in a matrix.

6.6 Section Summary & Recommendations

Only less than 10% of households we interviewed explicitly told us that they were currently not in a position to invest in sanitation solutions. But we also observed that most other rural households first need to solve a set of sanitation related problems before they can invest in a sanitation solution. The sanitation ecosystem needs to critically look at funding, designing and implementing interventions that address the unique customer pain points (described in the above sections), within the limited disposable incomes and timelines available to low income rural households in India.

One way to design interventions for the above described customer pain points is by segmenting customers with respect to their felt need for sanitation mapped against affordability. The following 2 x 2 matrix (though only a simplified version of reality) helps us better understand the socio-economic characteristics of these customer segments, how they might respond to various government sanitation schemes and what interventions might be most attractive to them.

Pic 18: Customer Segments for rural sanitation represented as a 2 x 2 matrix



The early adopters are highly responsive to new initiatives that can improve their quality of life. They are willing to experiment and adopt new practices even if it requires their investment upfront. They also often act as local influencers. As described in section 6.2 of this report, there are customers who demand the best materials to construct toilets and are willing to pay more than the government sanctioned amount to construct a good toilet facility. Some of them also might be upgrading their existing toilet facilities as better materials are made available. From our interviews we know that the early adopter customer segment forms the majority of households that have invested in sanitation. No specific interventions are needed to increase demand for sanitation amongst this customer segment. Sanitation programs like Svadha are best suited to address the needs of this customer segment.

The aspirers are similar in many ways to the early adopters except that they do not have the economic advantage. However, they actively participate in all events and processes through which they learn the new practices being proposed by government or society. They are willing to adopt measures that offer better quality of life to their family. Existing government sanitation schemes

and sanitation programs like PSI are best suited to address the cash flow needs of this customer segment.

The followers are low risk takers and are often resist any change. They wait and watch how the early adopters and aspirers benefit from adopting various products, services and schemes before investing in them. They usually have the capacity to construct their own toilets but will not like to do so. They are critical of government departments and will wait for the program to offer them the incentive. One of the method to make them participate in the program is to develop a high level of social decibel related to social status and recognition. Tapping into this customer segment's inherent need for social recognition could increase adoption of sustainable sanitation practices. Sanitation programs like Gram Vikas could rapidly improve the sanitation adoption rates of this customer segment.

The laggards usually tend to accept existing status-quo and unfavorable realities as a result of having a low socio-economic status in their villages. These households also tend to depend on government and social programs to earn their livelihoods and benefit from food security (Public Distribution System). From our interviews on the ground we roughly estimate that this customer segment makes up close to 30% of the rural population. Government departments and NGOs need to find both financial and other solutions which can include these households. They are unlikely to convert on their own. A range of radical sanitation solutions (pay as you go models, ultra-low cost toilets, zero interest toilet loans etc) may be needed to address the needs of this customer segment.

As both Samastipur and Ganjam districts have low toilet penetration rates currently, efforts to address the needs and pain points of the aspirer and the follower customer segments may significantly improve sustainable sanitation adoption rates. This will also provide the necessary momentum that can be used to experiment with more complex models that have the potential to address the needs of the laggard customer segment.

7. Summary of Learnings & Next Steps:

Government Bodies (Enablers):

Government bodies need to go beyond the simplistic ***'incentives will improve toilet adoption rates'*** paradigm. Facilitated knowledge exchanges between government bodies and the other sanitation ecosystem stakeholders can potentially help governments go beyond this limitation by understanding the key factors that prevent rural households from adopting sanitation solutions.

Sanitation Programs (Aggregators):

Sanitation programs must solve important customer pain points and thereby increase demand for sanitation solutions. Programs need to start differentiating between the existing market demand (customers that would have anyways invested in sanitation irrespective of the program) VS the new demand a program creates by solving a customer pain point (customers who would have not **invested in sanitation if the program didn't exist**).

This 'increase in new customer demand' metric will help us correlate the effectiveness of a program's approach and also bring in more transparency into the outcomes of sanitation programs (especially the ones funded by grants to create social impact).

Sanitation programs also need to look at the range of interdependent problems that affects adoption of sanitation solutions. For example: if water is a problem in a particular area this needs to be addressed simultaneously with sanitation.

Financing Institutions (Supporters):

Financing institutions need to pro-actively collaborate with sanitation programs to infuse more capital into the sanitation ecosystem. Sanitation programs need to also look at how they can leverage their on-ground presence to lower repayment risks and collection costs for the financing institutions. More nimble and business oriented institutions like MFIs, Small Finance Banks etc. have the potential to pioneer the whole sanitation ecosystem - financing movement, before it becomes attractive for larger banks to do so.

Sanitation Micro-entrepreneurs (Implementers):

Sanitation micro entrepreneurs need to understand the needs of financing institutions if they want to access working capital loans at attractive rates. Micro businesses also need a set of simple tools to help them maintain basic accounting systems and better plan their cash flows. Financing institutions also need to simplify lending procedures to better serve small businesses.

Sanitation programs working with micro entrepreneurs need to increase customer demand. While sanitation entrepreneurs are in tune with market peak and low demand seasons, none of the other sanitation stakeholders share this insight. Experimenting ways to leverage these naturally occurring peaks and lows might offer us key insights on how to improve sanitation outcomes.

Rural Households (Customers):

Rural households first need to solve a set of sanitation related problems before they can invest in a sanitation solution. The sanitation ecosystem needs to critically look at funding, designing and implementing interventions that address these unique customer pain points, within the limited disposable incomes and timelines available to low income rural households in India. The customers have different pain points and need a range of sanitation solutions that address them.