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# CREATING VIABLE AND SUSTAINABLE SANITATION ENTERPRISES

## Guidance for Practitioners


FSG

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# CREATING VIABLE AND SUSTAINABLE SANITATION ENTERPRISES

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| **3Si** | Supporting Sustainable Sanitation Improvements (intervention in Bihar, India) |
| **CLTS** | Community-Led Total Sanitation |
| **CNP** | Cash net profit |
| **DA** | Demand Activator |
| **GMVA** | Gross Margin Variance Analysis |
| **HP** | High profit |
| **IYC** | Infants and young children |
| **LP** | Low profit |
| **MBS** | Market-based sanitation |
| **MFI** | Microfinance institution |
| **MIS** | Management information system |
| **NGO** | Non-governmental organization |
| **P&L** | Profit and Loss |
| **PSI** | Population Services International |
| **PVC** | Polyvinyl chloride |
| **SanMark** | Sanitation Marketing |
| **SBA** | Swachh Bharat Abhiyan |
| **STS** | Sustainable Total Sanitation (intervention in Nigeria) |
| **USAID** | United States Agency for International Development |
| **WASH** | Water, Sanitation, and Hygiene |
| **WaterSHED** | Water, Sanitation, and Hygiene Enterprise Development |
| **WHO** | World Health Organization |

# GLOSSARY OF TERMS

| Term | Definition |
|---|---|
| **Business line** | One of potentially several businesses owned and operated by an entrepreneur. |
| **Business model** | A business model defines how a business creates, delivers, and captures "value." Enterprises create and deliver "value" to customers by solving their problems and satisfying their needs while they capture "value" by providing entrepreneurs with income received from customers. |
| **Credit sales** | The case whereby toilets, toilet components, or related services are sold to a customer on full or partial credit (installment payments) by a sanitation enterprise. |
| **Customer** | The household or head-of-household that purchases, uses, and oversees the construction, operation, and maintenance of a toilet. Alternatively referred to as "consumer," "user," "buyer," or "household." |
| **Demand activation** | Direct sales and marketing activities carried out to persuade customers to convert product awareness and interest (i.e., latent demand) into a purchasing decision. |
| **Demand generation** | Activities carried out to stimulate awareness of and interest in hygienic sanitation behaviors and improved sanitation products and services. |
| **Geographic unit** | An administrative unit used as a unit of measure for a geographical area such as communes, districts, or states. |
| **Market-based sanitation (MBS)** | The development in underserved areas of a sanitation market in which the user makes a full or partial monetary contribution (with savings and/or cash equivalents) toward the purchase, construction, upgrade, and/or maintenance of a toilet from the private sector. Such an approach also leads to strengthening—of resilience, sustainability, and capability—of the private sector. This definition builds on the definitions of "Sanitation Marketing," i.e., strengthening supply by building capacity of the private sector to deliver toilets to customers in exchange for monetary payment. |
| **Microfinance institution (MFI)** | Organizations dedicated to providing financial services to low-income clients. They tend to focus on microcredit, though some MFIs also offer savings and remittance services. They are typically funded by external loans, grants, and/or investors and have staff members that regularly visit borrowers. |
| **Micro-market** | The immediate market, typically a smaller administrative unit than the geographical unit studied, in which the enterprise operates such as villages, panchayats, wards, etc. |
| **Sanitation coverage** | The share of the population that has access to sanitation as a percentage of the total population in a geographic area. Coverage is reported by limited, basic, or safely managed service levels defined by the WHO-UNICEF JMP |
| **Sanitation enterprise** | The set of specific business activities that enable the sale of sanitation/toilet products and services by a sanitation entrepreneur (alternatively referred to as supplier) to their customers. Sanitation enterprise and enterprise are used interchangeably. |
| **Sanitation entrepreneur** | An individual who owns and manages one or more sanitation enterprises. |
| **Sanitation market** | The interactions between the buyers (households) and sellers (sanitation enterprises) of toilet products and services. |
| **Sanitation market system** | The totality of the sanitation market and the business environment and broader context within which the market operates. |
| **Self-help groups** | A group of individuals living close to one another who make regular savings contributions to a central pool that lends money to the members. |

| Term | Definition |
|---|---|
| **Toilet** | A sanitation fixture used for capture and storage, or disposal of human urine and feces. Throughout this document "toilet" is used in place of "latrine" for consistency and regional universality, even if "latrine" was used by the original source. |
| **Trade credit** | An agreement wherein an enterprise gets a deferral on the payment against the delivery of goods. This is generally part of the terms of engagement between an enterprise and an upstream supplier. |
| **Definitions related to financial/ business terms** | |
| **Capital expenditure** | The investment made in purchasing assets for the business. For sanitation enterprises, it refers to the investment made in purchasing assets such as molds, trucks, equipment, etc. |
| **Cash net profit (or loss)** | Cash income earned (or lost) by an enterprise in a given period. Mathematically, cash net profit is net profit plus depreciation. |
| **Costs** | All expenses (direct or indirect) incurred while operating a business in a given period. |
| **Depreciation** | The non-cash expense of allocating wear and tear costs of an asset over its useful life. |
| **Enterprise segments** | A grouping resulting from the segmentation of sanitation enterprises based on differences in one or more attributes (e.g., profit, revenue). |
| **Financial independence** | The ability of enterprises to finance their business needs (capital investments or working capital) on their own, either through profits from the business, loans, or trade credit. |
| **Gross margin variance analysis** | A business tool used to identify drivers of the difference in gross profits. The tool is typically used by an entity to analyze the differences in profit performance between two time periods or between planned and actual profit performance. |
| **Gross profit** | The difference between revenues generated from sales of goods or services and the costs incurred that are directly attributed to the production of goods or services. |
| **Inventory** | The monetary value of the goods maintained in stock to fulfill the anticipated demand from customers. |
| **Margin** | The ratio between a profit metric (e.g., gross, net, or cash net profit) and revenue expressed as an amount or percentage of revenue. |
| **Net profit** | Profit earned after deducting all expenses from revenue (direct/indirect, and cash/non-cash) in a given period. |
| **Operational independence** | The ability of enterprises to run their day-to-day operations (procurement, management of labor, etc.) without any external support. |
| **Price** | The price at which the good or service is sold to the customer. |
| **Profitability** | An alternative term for *Margin* used in this report |
| **Profit and loss Statement** | A financial statement that shows an entity's revenues and expenses during a particular period. It quantifies the net profit earned or lost during that period and enables a comparison of performance across time periods and by line item of the statement. |
| **Sales (revenue)** | The monetary value of goods or services sold by the business; sales is used interchangeably with "revenue." |
| **Working capital** | The capital that an enterprise needs to keep invested in order to run the day-to-day operations of the business. In the context of sanitation enterprises, it refers to the summation of capital invested in maintaining an inventory of toilets/ toilet components and the capital that the enterprise provides to its customers by way of credit toilet sales. |

# PREFACE

The Water, Sanitation and Hygiene Partnerships and Learning for Sustainability (WASHPaLS) project is a 5-year task order implemented by Tetra Tech in collaboration with several non-governmental organizations and small-business partners— Aquaya Institute, Family Health International (FHI 360), FSG, and Iris Group—that contribute expertise in state-of-the-art WASH programming and research. Distinguished academics, practitioners, and policymakers from across the WASH sector regularly provide expert perspectives to the project through an internal research working group and an external WASHPaLS Advisory Board.

WASHPaLS supports the Agency's goal of reducing morbidity and mortality in children under five by ensuring USAID programming employs high-impact, evidence-based environmental health and WASH interventions. The project identifies and shares best practices for achieving sustainability, scale, and impact by generating evidence to support the reduction of open defecation and movement of communities up the sanitation ladder while also focusing on novel approaches for reducing feces exposure to infants and young children (IYC). Specifically, the project:

1. offers USAID missions and technical bureaus ready access to thought leaders and analytical expertise across a wide range of WASH themes in response to their needs (Component 1);

2. generates evidence through implementation research to increase the sector's understanding of and approaches to sustainable WASH services, the effectiveness of behavioral and market-oriented approaches to sanitation, and measures to disrupt pathways of fecal exposure to infants and young children (Component 2);

3. administers a small grants program on innovations in hygiene behavior change (Component 3); and

4. engages and partners with national and global stakeholders to promote the use and application of WASHPaLS-generated evidence and global best practices by practitioners and policymakers, tapping into broad coalitions and dynamic partnerships (Component 4).

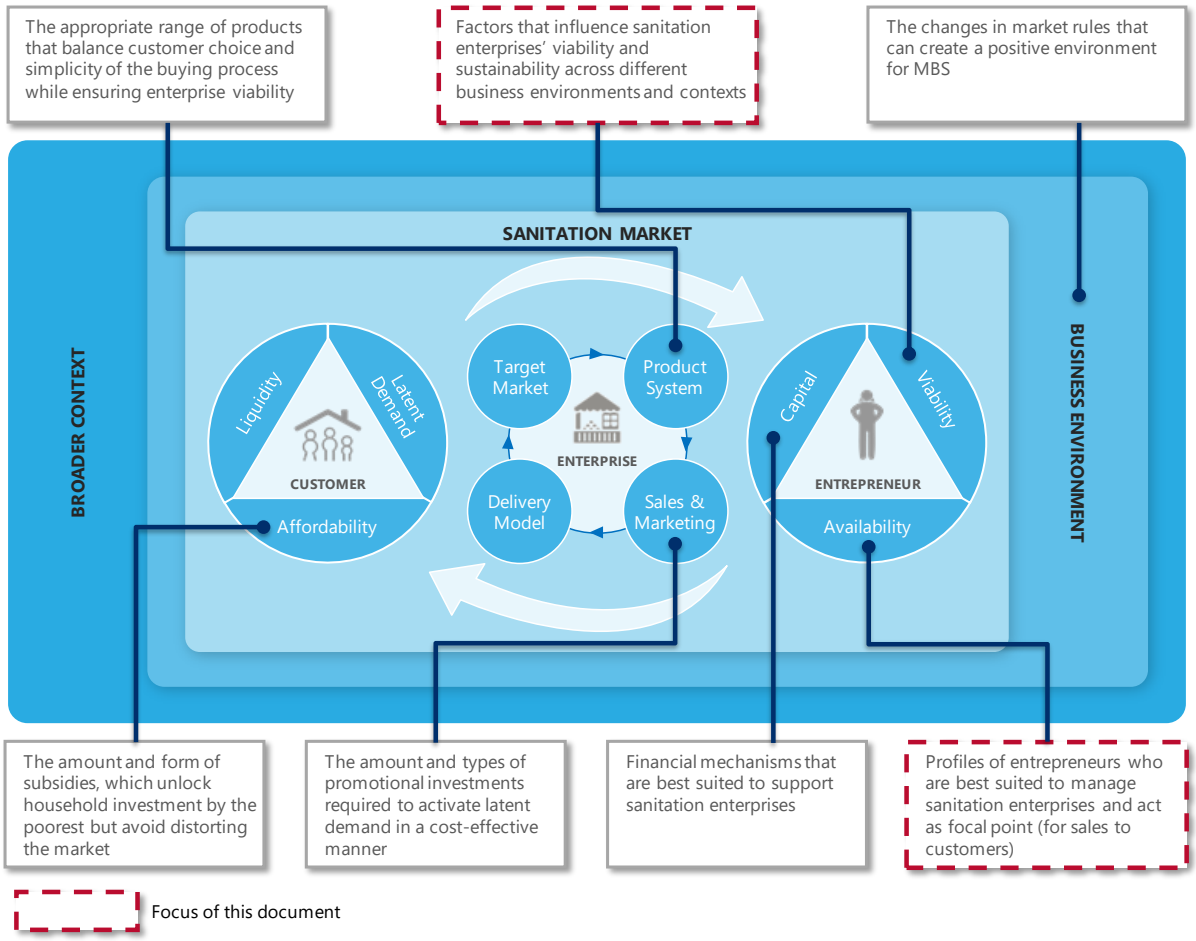
Among the first tasks of WASHPaLS was the production and dissemination of three in-depth desk reviews focusing on community-led total sanitation (CLTS), market-based approaches for sanitation, and hygienic environments for IYC. The desk reviews identified gaps in evidence-based implementation and provided a basis for identifying areas in need of further investigation and implementation research. This document presents guidance on one of those areas of research undertaken to support market-based sanitation (MBS), namely, how to ensure the viability and sustainability of rural sanitation enterprises.

# EXECUTIVE SUMMARY

Universal access to basic sanitation is a long-standing challenge despite decades of interventions by governments, donors and funders, and civil society. Even though the importance of the private sector for the supply of toilets was recognized as far back as the 1980s, few development programs applying market-based sanitation (MBS) approaches have scaled. The objective of the Water, Sanitation and Hygiene Partnerships and Learning for Sustainability (WASHPaLS) project is to better understand the barriers to scaling MBS interventions and improve programming globally.

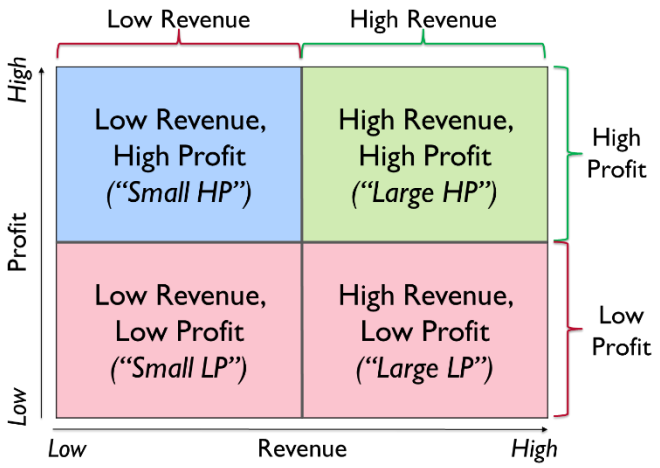
The USAID/WASHPaLS *Scaling Market-Based Sanitation: Desk Review on Market-Based Rural Sanitation Development Programs (2018)* highlighted the barriers sanitation markets face to scale, and identified some remedial interventions at the three levels of the sanitation market system—the core **sanitation market** itself, the **business environment**, and the **broader context**. The desk review identified multiple questions for further exploration of areas with inadequate evidence (Figure A). This report provides carefully collected evidence to understand ***how sanitation enterprises can be made viable and sustainable?***

**Figure A: Sanitation Market System and Barriers to scale**



This research sought to answer the question through retrospective analyses of the **viability**[1] and **sustainability**[2] of sanitation enterprises in partnership with market-based sanitation (MBS) programs in Cambodia (WaterSHED's *Hands-Off* project), India (PSI's *Supporting Sustainable Sanitation* (*3Si*) project in the Bihar state in India), and Nigeria (WaterAid's *Sustainable Total Sanitation (STS)* project). As part of this research, we realized that few, if any, MBS programs were tracking the financial performance of sanitation enterprises. To fill this essential knowledge gap, we interviewed dozens of sanitation enterprises in the three countries to build detailed financial statements and to understand better their business practices. We found enterprises differed significantly along two dimensions of performance—**profit**, the primary incentive for entrepreneurs, and **revenue**, as a metric of scale—and segmented them into four categories (Figure B). We undertook comparative analyses of enterprises across these four categories to identify the contextual and strategic choice factors that drove differential performance within the same MBS program.

**Figure B: Enterprise segments**




We also assessed enterprise-specific support provided by each MBS program that influenced viability and sustainability. The findings are published as three country case studies (USAID 2020a, b, c). This report consolidates the findings and recommendations across the three case studies to offer implementers guidance on improving the viability and sustainability of the sanitation enterprises they support.

## KEY FINDINGS FROM THE RETROSPECTIVE ANALYSIS

**A sanitation enterprise is attractive as a business line but not as a standalone, full-time business.** Profits from sanitation enterprises alone are often low and unstable due to infrequent or seasonal demand; as a result, they may not attract or sustain entrepreneurial participation. A sanitation enterprise is far more viable when operated as a **business line** alongside an entrepreneur's existing, related business, which is the predominant configuration among the enterprises we interviewed. This configuration reduces the entrepreneur's dependence on sanitation for income, lowers start-up capital requirements, and offers recurring business benefits from sharing assets, capabilities, and customers among the entrepreneur's several business lines.

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[1] Viability is a subjective measure, evaluating profit relative to a variety of explicit or implicit factors considered by an entrepreneur (e.g., minimum income expected, income from other non-sanitation specific enterprises, time and effort, or financial investment and risk).

[2] Sustainability is the likelihood that an enterprise remains viable over an extended period of time (i.e., multiple years) and continues operations without external, non-market-based support.

**Five key drivers can explain the differences in financial performance and, by extension, the viability of sanitation enterprises.** In their quest to increase their returns, some sanitation enterprises benefited from contextual factors while others implemented business practices to leverage one or a combination of the following five drivers (see Figure C):

1) ***Number of customers:*** "High Revenue" enterprises (see Figure B) predominantly managed customer acquisition by investing in demand activation through commissioned sales agents, unpaid demand activators (e.g., local leaders), and active self-marketing. Other practices include assisting customers facing cash liquidity issues in availing credit or subsidies. They also supplied toilets to subsidy programs when such opportunities arose in their micro-markets and expanded geographically to adjacent markets.

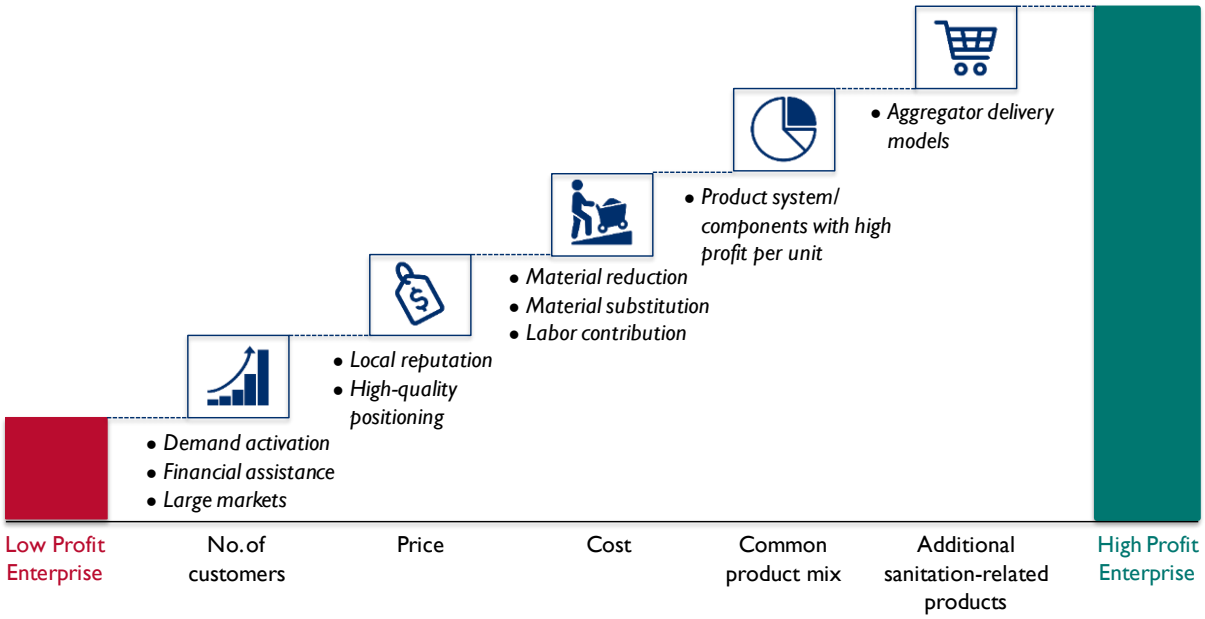
2) ***Price:*** "High Profit" enterprises marketed the high quality of their products by over-engineering toilets (e.g., increasing raw material quantities) to highlight structural strength and durability. In some instances, they may have benefited from the entrepreneur's reputation or social standing in the community to charge a premium over competitors. The intensity of local competition also influenced pricing.

3) ***Costs:*** "Small HP" enterprises re-engineered toilets by lowering raw material usage or adopting low-cost substitutes since customers may plausibly not have discerned changes in quality or durability. Such enterprises also substituted/supplemented paid labor with the entrepreneur's labor given their small scale. A few "Large HP" enterprises with high sales volumes secured discounts on bulk procurement of raw materials to lower costs.

4) ***Common product mix:*** "High Profit" enterprises increased the proportion (of total sales) of products generating the highest profit per unit by targeting affluent customers with relatively expensive toilets.

5) ***Additional sanitation-related products:*** "High Revenue" enterprises adopted aggregator delivery models to offer superstructure materials and components, which customers would otherwise purchase elsewhere, thus capturing a greater share of the customer's wallet, i.e., total spend on a toilet.

**Figure C: Five profit drivers and the underlying practices**



We found that the profit drivers and the underlying business practices necessary to activate the drivers interacted with one another and involved tradeoffs. An examination of the business practices underlying the profit drivers revealed that "High Profit" enterprises leveraged drivers that were compatible with their capabilities, motivation, and micro-market conditions. By contrast, "Low Profit" enterprises typically adopted sub-optimal business practices or were limited by their capabilities and operating context.

**Sustainability of sanitation enterprises is at risk when enterprises are financially or operationally dependent on MBS programs due to the program's design or actions.** In situations where enterprises had not fully accounted for or internalized costs subsidized by programs (e.g., sales commissions to demand activators), their sustainability was at risk because their profitability would erode or had reduced once non-market financial support ended. MBS programs that directly participated in the market (e.g., as suppliers of toilet components to enterprises) or intermediated market interactions (e.g., on-going payments to demand activators for selling toilets on behalf of enterprises) created non-market dependencies, which could impede or disrupt an enterprise's ability to operate when such support was withdrawn.

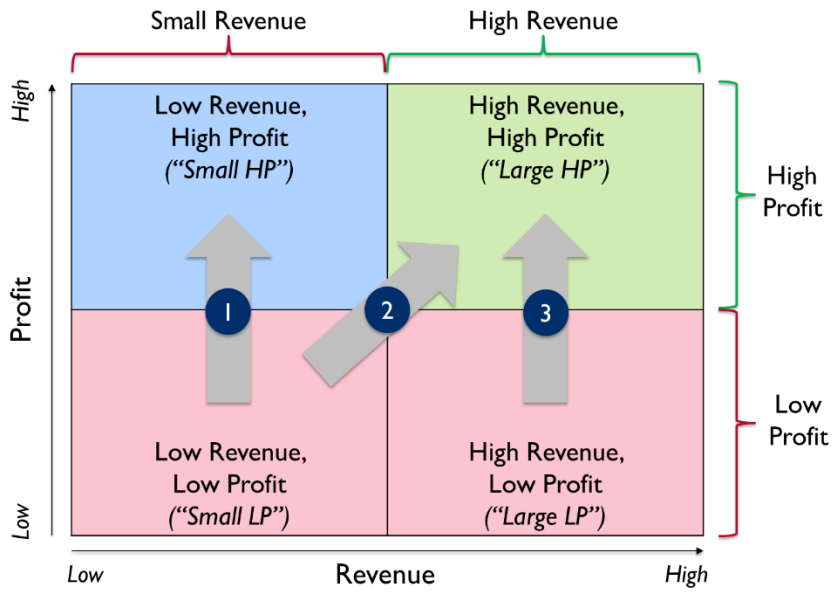
## GUIDANCE FOR IMPLEMENTERS OF MBS PROGRAMS

From our research on understanding the drivers and business practices that underlie improvements in viability and sustainability, we offer several recommendations for implementers of MBS programs. The recommendations improve the chances that the sanitation enterprises supported by a program continue to thrive after the program ends.

**Recruit entrepreneurs with existing, related businesses to start sanitation enterprises as a business line.** In the early stage of an MBS program or when targeting new markets, implementers should encourage entrepreneurs with existing businesses to diversify with sanitation enterprises. This tactic contrasts with the historical practice of persuading artisans to start and operate sanitation enterprises as a standalone business. Among existing businesses, implementers should prioritize those related to sanitation in terms of capabilities (i.e., financial capacity, managerial or technical skills), supply chains, and/or customers. Examples of sanitation-related businesses are concrete product manufacturers, hardware stores, and building materials suppliers, who are likely to have an existing direct or indirect role in sanitation markets.

**Guide enterprises in choosing a strategic path to improve viability that appreciates their capabilities and constraints.** Implementers with an existing base of partner enterprises at any stage in the lifecycle of an MBS program should aim to identify and help "Low Profit" enterprises that have a scalable proposition to improve their viability. Implementers need to understand the profit drivers and underlying factors differentiating the better performing enterprises from their peers in their target markets to develop contextually appropriate strategic paths to increase profit. The applicability of a strategic path for a given "Low Profit" enterprise will depend on the enterprise's capabilities, aspirations, and micro-market conditions. We identified three strategic paths to improve the viability of "Low Profit" enterprises (Figure D):

**Figure D: A framework to assess enterprise performance and identify an appropriate path(s) to improve its viability**




- Path 1 is a **cost-reduction strategy** for *"Small LP"* enterprises that can optimize raw material costs, labor costs, or both. But it is typically non-scalable if customers are attentive to raw materials as markers for high-quality or substituting/supplementing paid labor limits the enterprise's production capacity. Therefore, the strategy is ideal for those entrepreneurs who are content to remain small or constrained by a micro-market with low demand.
- Path 2 is a **revenue-led strategy** for *"Small LP"* enterprises that aspire to grow, have the financial resources and managerial capabilities, and are situated in high demand micro-markets. The strategy entails investing in low-risk demand activation mechanisms and geographic expansion to increase the number of customers, investing in quality to charge a premium, targeting affluent customers with relatively expensive toilets, and/or expanding the product system to offer additional, sanitation-related products. Implementing a revenue-led strategy is challenging, given the multiple practices that an enterprise needs to adopt. Enterprises can either prioritize investment in demand activation or take a pragmatic, two-step approach by pursuing Path 1 to improve profit, consolidate their position, and then exploring the feasibility of switching to a revenue-led strategy.
- Path 3 is a **margin-expansion strategy** for *"Large LP"* enterprises that fail to monetize their demonstrated ability to acquire customers adequately. Enterprises can reduce costs, increase prices, or both. They can implement cost-reduction practices outlined earlier, raise prices with the trade-off of reducing the size of their customer base, modify their product system to target affluent customers, and sell additional-sanitation related products.

**Recognize that some (indeed many) sanitation enterprises may not have a viable or scalable proposition.** Some enterprises, however, might not have the resources, supportive micro-market conditions, or the entrepreneur may lack the motivation to grow or improve profits (for the sanitation enterprise). Implementers should recognize such limitations while recruiting and supporting sanitation enterprises. We recommend that implementers recruit entrepreneurs who are successful in their existing business and are willing to start sanitation enterprises regardless of their stated growth aspirations. As enterprises' performance data emerges, implementers should focus the program's limited

resources on entrepreneurs who demonstrate both the desire and potential to improve their viability. Where external conditions do not support creating and/or maintaining viable sanitation enterprises, implementers should assess if MBS needs to be supplemented with complementary approaches (e.g., CLTS, subsidies). However, we recommend that demand still be fulfilled by sanitation enterprises to ensure solutions meet customers' needs and preferences and long-term market sustainability is not distorted by short-term interventions.

**Facilitate the development of a sanitation market system instead of direct participation.** We reiterate our recommendation in the WASHPaLS MBS desk review that implementers should actively build redundancy in their program design by eliminating non-market dependencies early in the program lifecycle. Implementers need to encourage enterprises to assume all costs early, if not from the beginning, of a program. Costs are for not only recurring expenses such as raw materials and sales agents' commissions but also longer-term capital equipment such as molds. Program designs should aim for localizing the value chain to avoid direct participation or intermediating interactions among market actors. While such roles may be a necessity at the beginning as a demonstration or to refine interventions, programs should actively transition these roles to permanent market actors.

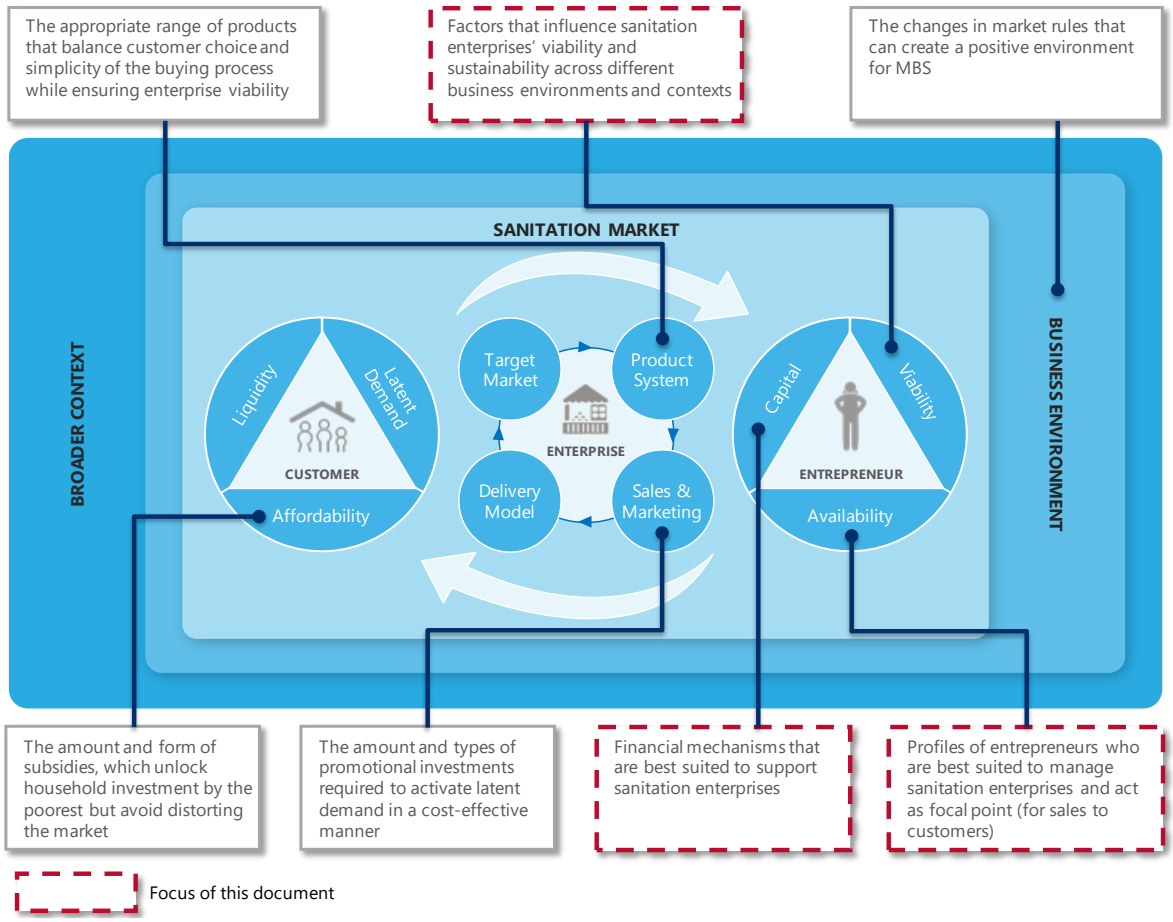
**Track enterprise performance metrics beyond toilet sales.** Implementers of MBS programs would be well-served to expand the scope of monitoring and evaluation systems to track enterprise performance metrics beyond sales, which few programs track, if at all. Financial performance metrics such as revenue and profit margins at different levels of a conventional P&L statement, i.e., gross, operating, and cash net profit, provide a starting point for implementers to develop a nuanced understanding of enterprises and the strategies that are effective in the contexts in which they operate. This is needed to equip implementers to be able to improve or enhance the viability and sustainability of sanitation enterprises and, by extension, supply in the market. The USAID/WASHPaLS project has developed toolkits to aid implementers track, analyze, and improve the performance of sanitation enterprises.

# 1. INTRODUCTION

Access to basic sanitation remains a critical challenge to achieving the United Nations Sustainable Development Goal (SDG) 6.2. Market-based approaches to sanitation, which unlock household investment and develop private sector supply of household toilets and related services, to achieve SDG 6.2 targets have gained in popularity and feature in many sanitation development programs. While there are cases of successful application of market-based sanitation (MBS) approaches, many sanitation development programs have failed to scale and impact a large number of people (Agarwal, et al., 2020).

The objective of the Water, Sanitation and Hygiene Partnerships and Learning for Sustainability (WASHPaLS) project is to better understand the barriers to scaling MBS interventions and recommend approaches for doing so. WASHPaLS conducted an extensive desk review that included a survey of approximately 600 documents on MBS, key informant interviews, and in-depth research into 13 MBS intervention case studies across the global south (USAID, 2018). WASHPaLS developed a comprehensive framework to analyze and catalyze sanitation markets systems by addressing barriers to scale in all domains of the system. The viability of sanitation enterprises, availability of enterprise capital, and availability of entrepreneurs were among the several barriers to scale identified. This report presents guidance to address these barriers, which is essential to scaling sanitation markets and the success of MBS programs (Figure 1).

**Figure 1: Areas for further research identified in the WASHPaLS MBS Desk Review (USAID, 2018)**



Sanitation enterprises (used interchangeably with the term *enterprise* from hereon) operating in rural and peri-urban markets in developing countries often struggle with low customer density, seasonality in demand, and limited access to capital to grow their businesses. Market uncertainties tend to discourage existing suppliers and suppress entrepreneurial entry into sanitation markets, thus weakening the supply of sanitation-related products and services vital to achieving national and global development goals. For instance, in WaterAid's *Sustainable Total Sanitation (STS)* program in Nigeria, only 11 sanitation enterprises out of the 30 trained remained active two years after training. Even among these 11, three enterprises accounted for 63 percent of the combined revenue of all enterprises, while one enterprise sold more than a third of all toilets under the program (USAID, 2020c).

We also found that sanitation entrepreneurs, who received support from donor-funded market-based sanitation (MBS) interventions, do not often fully account for all business costs because the programs cover a portion of these costs. Without accounting for full business costs, the long-term financial viability of these enterprises may falter.

In the desk review, we present a range of factors, e.g., profiles of entrepreneurs, business practices, and access to enterprise capital, which can impact the viability and sustainability of sanitation enterprises. For instance, entrepreneurs with existing businesses have operated sanitation enterprises successfully in several MBS programs. iDE's assessment of the sanitation enterprises it supported in its *Sanitation Marketing Scaling-Up (SMSU)* program in Cambodia revealed the importance of engaging demand activators to drive sales (Wei, et al., 2014; iDE, 2019). Successful enterprises have adopted tactics such as geographic expansion and selling toilets with other products in the entrepreneurs' portfolio. However, evidence on the key drivers of enterprise performance or the profiles of entrepreneurs best suited to manage sanitation enterprises was unclear (USAID, 2018).

In light of this evidence gap, WASHPaLS undertook retrospective research to analyze the financial performance of sanitation enterprises and understand ***how sanitation enterprises can be made viable and sustainable***. We recognize that contextual factors influence an enterprise's **strategic choices**, i.e., decisions to leverage one or a combination of drivers and the ability to implement the relevant business practices successfully. Therefore, we partnered with MBS programs in three countries—one each in Southeast Asia, South Asia, and Sub-Saharan Africa—to analyze the same question in different contexts and broad-base our findings and recommendations. Moreover, within each intervention, we studied enterprises diverse in performance, capabilities, and market conditions. We synthesized the findings from the research into three country case studies from which we developed guidance targeted at implementers of MBS programs. This document presents this guidance and is ideally read in conjunction with the three supplemental country case studies from Cambodia, Bihar (India), and Nigeria.

## ORGANIZATION OF THIS REPORT

Section 2 presents the approach for the retrospective research, and data collection and analytical methods adopted to assess sanitation enterprises in three countries, which are detailed in Annex B. Section 2 also explains key concepts that are used in this report.

Sections 3 and 4 consolidate the findings from the three country case studies (USAID 2020a, b, c). We detail the key drivers and the underlying factors and business practices that impact the viability (Section 3) and sustainability (Section 4) of sanitation enterprises.

Section 5 offers guidance on the strategic choices and related practices that sanitation enterprises can adopt to improve their viability and sustainability, along with recommendations for implementers of MBS programs.

# 2. METHODOLOGY OVERVIEW

To help MBS programs improve the viability and sustainability of sanitation enterprises, we sought to understand the factors that differentiated enterprises at different levels of profit. We adopted the approach of analyzing the retrospective financial performance of sanitation enterprises to answer the primary question: ***"How can sanitation enterprises become viable and sustainable?"*** Our approach to understanding the viability and sustainability of sanitation enterprises is based on the assumption that these outcomes are largely a function of profit (see Box 1).

**Box 1: Distinguishing between *profit*, *profitability*, *viability*, and *sustainability***

**Profit** is the revenue generated by an enterprise in excess of its costs, expressed in absolute terms (USD).

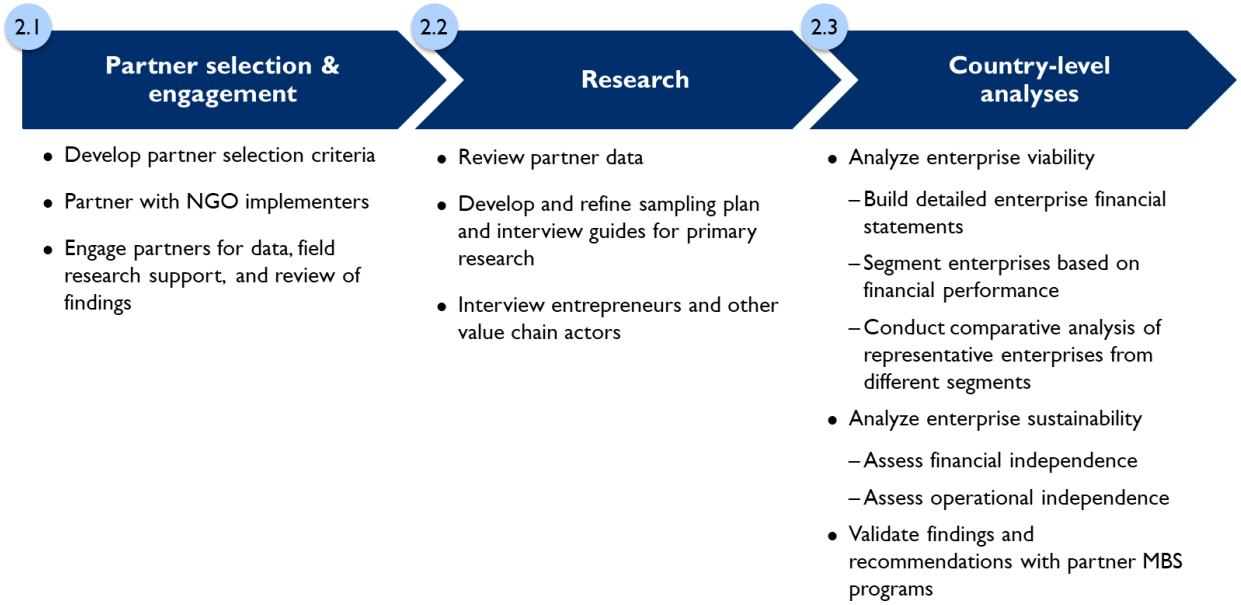
**Profitability** refers to a profit relative to the scale of an enterprise, such as **profit margin** – the ratio between profit and sales, typically expressed in percentage. Two enterprises may have equal profits (say, USD 1,000 annually), but one earning USD 1,000 in profit against USD 10,000 in sales is more profitable (10 percent margin) than another earning USD 1,000 against USD 50,000 in sales (2 percent margin).

**Viability** refers to profit *relative* to a variety of explicit or implicit factors considered by an entrepreneur (e.g., minimum income expected; income from other non-sanitation specific enterprises; time and effort; or financial investment and risk). Unlike profit, or profit margin, which are specific numerical quantities, viability is a subjective measure, which varies from entrepreneur to entrepreneur: an enterprise that makes a profit might be considered viable by one entrepreneur but not by another. We posit that, in general, *increasing* profit *improves* the viability of an enterprise.

**Sustainability** refers to the *likelihood* that an enterprise remains viable *over an extended period* of time (i.e., multiple years) and continues operations without external, non-market-based support.

Our initial analytical construct was a retrospective, longitudinal analysis of sanitation enterprises that increased their profit over time. Analyzing several such sanitation enterprises in different contexts would have led us to broad-based findings and guidance to improve the viability and sustainability of sanitation enterprises. However, we encountered two challenges: a) few MBS programs collect or report performance or financial metrics beyond sales volumes, and b) entrepreneurs were unable to recall or provide reliable, historical financial performance data. To overcome these challenges, we chose an alternative analytical construct of comparative analyses of enterprises with different profit levels by collecting and analyzing financial data from one year. We partnered with three programs in different countries to collect the data from sanitation enterprises and ensure that our guidance accounted for variations in operating contexts. The findings led to guidance on strategies that low profit enterprises could adopt to increase profit, and hence, improve their viability and sustainability. Figure 2 summarizes our approach of establishing partnerships, collecting and analyzing data, and developing the guidance presented in this report. In this section, we briefly describe each stage, the methods, and key concepts, which are described in depth in Annex B: Detailed Methodology.

**Figure 2: Approach for the retrospective study of rural sanitation enterprises**



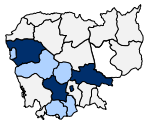
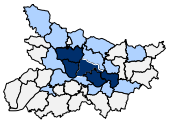

## 2.1. PARTNER SELECTION AND ENGAGEMENT

We collaborated with WaterSHED's *Hands-Off* project in Cambodia, PSI's *Supporting Sustainable Sanitation* (*3Si*) project in Bihar (India), and WaterAid's *Sustainable Total Sanitation (STS)* project in Nigeria. We selected the three interventions based on criteria developed to ensure diversity along several dimensions—geographic location of the MBS intervention, enterprise viability, entrepreneur profiles, supply chain maturity, delivery models, product systems offered by the programs' partner enterprises, and enterprises' access to finance (see Annex B.1). Our partners contributed at each stage of the approach by sharing data, coordinating the field research, including enterprise identification and logistics, and sharing their perspectives during field research and the development of country-level findings. Partners also provided thought partnership on the supplemental country case studies.

## 2.2. RESEARCH

Our research began with a review of partners' existing data from their MIS (Management Information Systems), prior studies, and interviews with program personnel. We then identified enterprises differentiated by sales volumes, situated in different sub-national contexts, and status (i.e., active or inactive) as well as other value chain actors for interviews (see Annex B.2.2.1 for the sampling approach). We concluded this stage with in-depth interviews lasting 1.5 to 2 hours to record quantitative and qualitative data (see Annex B.2.2.2 for the areas of inquiry). Over a period of two months, we conducted a total of 133 interviews with a range of actors across the three countries (see Table 1).

**Table 1: Interviews conducted by country and actor type**

| Actor |  ***Cambodia*** *(Hands-Off program - WaterSHED)* |  ***Bihar (India)*** *(3Si program - PSI)* |  ***Nigeria*** *(STS program - WaterAid)* | *Total* |
|---|---|---|---|---|
| Active Enterprises | 27 | 28 | 11 | **66** |
| Inactive enterprises | 7 | 6 | 12 | **25** |
| Demand activators | 8 | 11 | 7 | **26** |
| Input suppliers | 3 | 2 | 5 | **10** |
| Masons | - | 2 | - | **2** |
| Credit Providers | 1 | - | 3 | **4** |

*Note: 1. Dark blue represents interview locations; Light blue represents other geographies of the interventions as of 2017*

## 2.3. COUNTRY-LEVEL ANALYSIS

We analyzed enterprises in each of the three countries separately and developed country-level case studies. Each case study outlines the different approaches employed by enterprises to improve viability. The case studies also include recommendations for strategies that practitioners can adopt to improve enterprise viability and sustainability in their respective contexts (USAID 2020a, b, c).

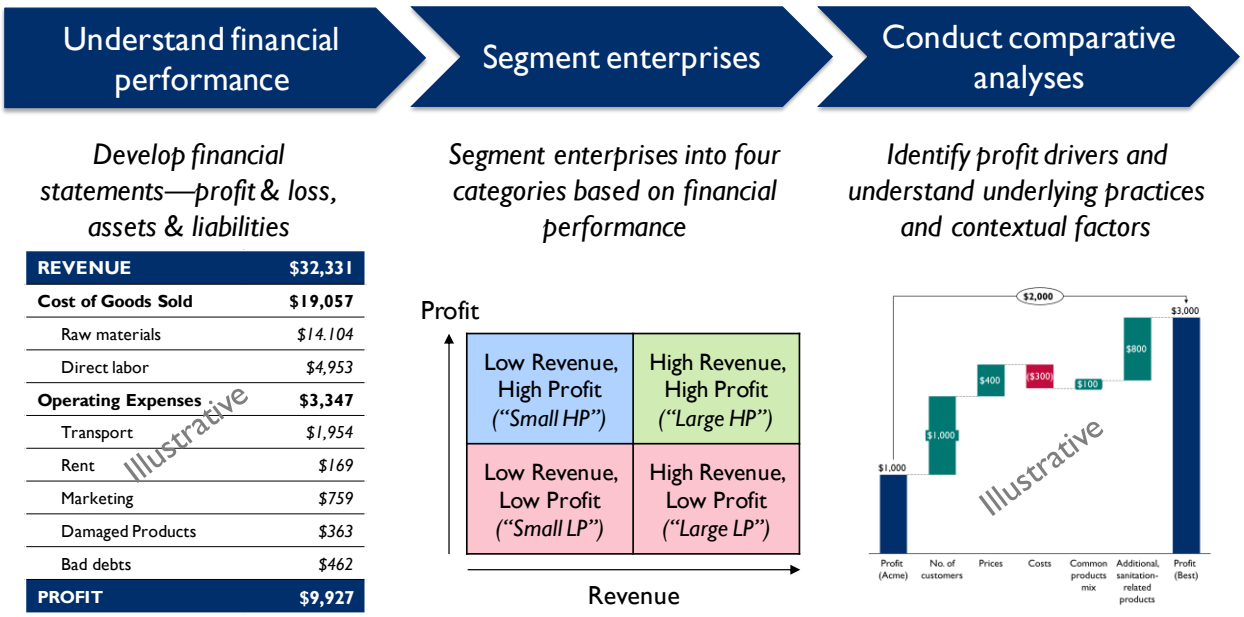
Considering the overall objective and primary research question, we adopted two principles in developing our analytical approach:

1. Evaluation at two levels—*viability* as determined by the current revenue and profit of the enterprises based on the premise that these two markers motivate entrepreneurs; and *sustainability* (i.e., long-term viability), a forward-looking assessment of enterprises' ability and motivation to continue operating in the market without external, non-market-based support.
2. Comparative analysis of enterprises at different levels of revenue (sales) and profit to identify the practices and contextual factors that differentiate these enterprises: We hypothesized that relatively high-performance enterprises were following certain practices and benefiting from market conditions that differentiated them in scale and profits from low-performance enterprises.

### 2.3.1. The analytical process to identify the drivers of enterprise viability

We followed a three-step process for assessing the viability of sanitation enterprises and developing recommendations for each of the three contexts that we researched. The process is summarized in Figure 3 and explained in the following sections.

**Figure 3: Analytical process summary**




*UNDERSTAND THE FINANCIAL PERFORMANCE OF SANITATION ENTERPRISES*

We required detailed data on the financial performance of sanitation enterprises to segment them and compare their performance, which would help identify the drivers of viability and sustainability. We created detailed profit and loss (P&L) statements (see Figure 4 and Annex B.3.1.1) for the 66 active enterprises interviewed. We used data on sales volumes, prices, costs, revenues, profits, assets, and business practices collected during the interviews to prepare these statements.

The primary metric we used to analyze and compare sanitation enterprises was **cash net profit (CNP)**[3], which can be understood as the "bottom line" of an enterprise, excluding depreciation, a non-cash expense. We excluded depreciation because the entrepreneurs we interviewed understood revenue, expenses, and profit only in terms of cash and did not consider non-cash expenses. We compute CNP by adding back the depreciation amount to the conventional metric of **net profit** (see Box 2, Figure 4, and glossary). Henceforth, we refer to cash net profits as "**profits**" unless mentioned otherwise.

**Box 2: *Depreciation as a non-cash expense***

Sanitation enterprises receive revenue in the form of cash from customers who purchase toilets. Similarly, all expenses (except depreciation) involve cash payments by the enterprise.

Depreciation, however, is an accounting method for expensing long-term assets (e.g., production equipment) that does not entail the enterprise making a cash payment. In this method, the cost of a long-term asset is spread over its useful life because its value is "expended" or "consumed" over multiple years, unlike other expenses that are incurred during the year. For instance, a USD 500 equipment paid upfront with a useful life of 5 years is depreciated as a "non-cash expense" of USD 100 per year for five years. To compute CNP, we add back this non-cash expense of USD 100 to the net profit of the enterprise each year for five years.

[3]AccountingTools, Inc. (7 August 2020). How to calculate cash profit. <https://www.accountingtools.com/articles/how-to-calculate-cash-profit.html>

**Figure 4: Structure of a conventional P&L statement for a sanitation enterprise**

| | |
|---|---|
| 1 | **TOTAL REVENUE** |
| 2 | **COST OF GOODS SOLD** |
| 2.1 | Raw materials |
| 2.2 | Direct labor |
| 2.3 | Transport of raw materials |
| 3 | **GROSS PROFIT** *(Total Revenue – Cost of Goods Sold)* |
| 4 | **OPERATING EXPENSES** |
| 4.1 | Transport for delivery |
| 4.2 | Land rent |
| 4.3 | Utilities |
| 4.4 | Marketing (commissions) |
| 4.5 | Marketing (non-commission) |
| 4.6 | Repairs |
| 4.7 | Depreciation |
| 4.8 | Bad debt |
| 5 | **OPERATING PROFIT** *(Gross Profit – Operating Expenses)* |
| 6 | **OTHER EXPENSES** |
| 6.1 | Interest |
| 6.2 | Tax |
| 7 | **NET PROFIT** *(Operating Profit – Other Expenses)* |
| 8 | **CASH NET PROFIT** *(Net Profit + Depreciation)* |

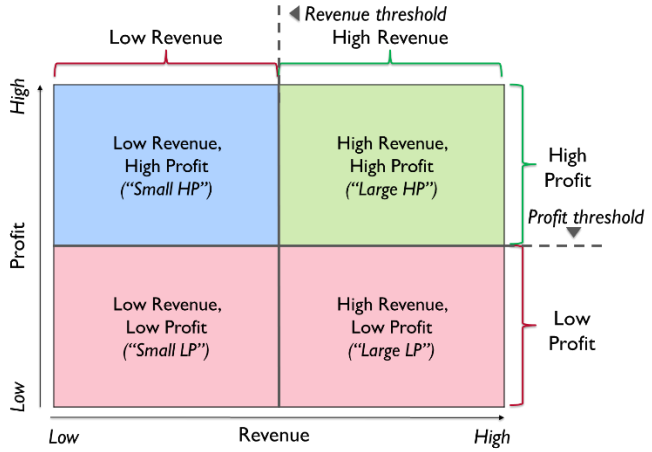
**Legend**

- Influenced by decisions related to the *sanitation enterprise* only
- Influenced by decisions related to the *non-sanitation* business
- Not consistently applicable across enterprises

*SEGMENT ENTERPRISES BASED ON THEIR RELATIVE FINANCIAL PERFORMANCE*

For the comparative analyses, we segmented the sampled enterprises into two categories— "High Profit" and "Low Profit" enterprises based on **cash net profit**. We used the scale or size of the enterprise (as assessed by **revenue**) as a second segmentation variable because we hypothesized that enterprises adopt different profit-maximizing strategies at different scales. We selected thresholds for these two variables in each country that were contextually relevant, allowed for a clear distinction between enterprises that differed significantly, and considered sample size. We selected the median in each country as the revenue threshold. The profit thresholds were selected relative to the income from and risk of comparable occupations, such as construction workers in Cambodia and masons in Bihar (India) and Nigeria (see Annex B.3.1.2 for the threshold values, the selection rationale, and the distribution of sampled enterprises in each country). As a result, we classified enterprises into four groups and assigned a nomenclature for use throughout the report (see Figure 5)

**Figure 5: Enterprise segments**



*COMPARATIVE ANALYSIS OF DRIVERS IMPACTING ENTERPRISE PERFORMANCE*

The comparative analyses primarily focused on representative enterprises in the following categories, as shown in Figure 5:

- "Small LP" vs. "Small HP";
- "Small LP" vs. "Large HP"; and
- "Large LP" vs. "Large HP,"

using a methodology called Gross Margin Variance Analysis (see Annex B.3.1.3 for a detailed discussion of the GMVA approach). GMVA is conventionally used within a *single enterprise* to compare financial performance between two periods (e.g., quarters or years) and diagnose the causes of the difference in profits. However, given the inability to conduct a longitudinal analysis, we made a novel application of GMVA to compare *different sanitation enterprises in the same time period.* We compared enterprises in pairs because GMVA can be applied only to two financial results at a time.

GMVA examines a measure of financial performance called **gross profit:** the difference between an enterprise's revenue from the sale of toilets and its costs incurred exclusively for manufacturing the toilets sold (see Figure 4). We note that our analysis relies on **cash net profits** to **categorize** enterprises but on **gross profits** to **compare** the drivers of their performance (see Box 3).

**Box 3: *Why use one financial measure (cash net profit) to categorize enterprises and a different one (gross profits) to compare them?***

Sanitation enterprises are generally not stand-alone businesses; they function as one of multiple business lines operated by an entrepreneur. To understand how effectively a sanitation enterprise is contributing to an entrepreneur's overall financial success, cash net profits are ideal because they represent the "bottom line:" profits realized after accounting for all cash expenses. The higher the cash net profit of a sanitation enterprise, the more likely an entrepreneur will deem it "viable", that is worthy of the time, investment, and opportunity cost.

Gross profits, on the other hand, are better for understanding the differences in financial performance of sanitation enterprises (as one of multiple businesses) because it focuses on the two most basic financial line items: revenue, and the cost of goods sold, i.e., the costs of manufacturing toilets (see Figure 4 for a list of line items of a Profit & Loss statement). *Gross profits differ importantly from cash net profits in that they exclude expenses that are influenced by the entrepreneurs' other non-sanitation related business (or businesses), such as rent and utilities*.

Entrepreneurs are unlikely to make decisions on factors such as location of the workshop or investment in transport vehicles solely for the sanitation enterprise as they will also consider the requirements of their other business (or businesses). Further, the cost of goods sold, i.e., manufacturing toilets accounted for the bulk of total expenses, which implies decisions to improve the sanitation enterprise's performance should focus at the gross profit level. Cash net profits also include other expenses such as interest payments and taxes, which are not comparable across enterprises since access to finance and compliance with tax codes vary widely considering the informal nature of most rural sanitation enterprises in developing countries.

GMVA focuses the detailed comparative analysis on the underlying factors that impact the viability of sanitation enterprises by decomposing the difference in gross profits between two enterprises into its constituent components or drivers:

1. the *number of customers* that bought different toilet-related products and services from the enterprises;
2. the *prices* of different products sold;
3. the *costs* of manufacturing different products;

However, product systems[4] of enterprises typically include variants, each of which has a different price, cost of manufacturing, and sales volume. Also, enterprises often sell additional, sanitation-related products that are not sold by their competitors. These constitute two additional drivers of gross profits (see Box 4 for an illustration of these concepts):

4. the relative quantities of the common, sanitation-related products, each with different profits, sold by enterprises (also known as *common product mix*); and
5. the *additional, sanitation-related products*, which includes superstructure components and construction material.

**Box 4: Common product mix and additional sanitation-related product drivers**

*Acme* and *Best* are two mobile phone retailers, which sell the same "Budget" and "Top-end" models. Despite *Acme* and *Best* having products in common, i.e., mobile phones, and selling twenty mobiles in a month, their gross profit from the sale of mobile phones ($P_m$) differs by $1,200 because of variances in their prices, costs, and the composition of total volumes sold of the two phone models. The "common product mix" is the combined effect of these variances and is calculated as a part of GMVA (refer Annex 3). In this example, *Best* has a better "*common product mix*" than *Acme*.

*Best* also sells phone cases, which is not sold by *Acme*, i.e., an additional mobile-related product. *Best* makes $100 from the sale of mobile phone cases, which contributes to an additional difference in profit compared to *Acme* ($P_c$).

| **Enterprise →** | **Acme** | | | **Best** | | |
|---|---|---|---|---|---|---|
| **Metric** | Budget | Top-end | Case | Budget | Top-end | Case |
| *Price (p)* | *$500* | *$1,000* | - | *$400* | *$1,200* | *$20* |
| *Cost (c)* | *$310* | *$750* | - | *$300* | *$800* | *$10* |
| *Volume (v)* | *10* | *10* | - | *8* | *12* | *10* |
| ***Gross Profit by product (v x (p-c)*** | ***$1,900*** | ***$2,500*** | **-** | ***$800*** | ***$4,800*** | ***$100*** |
| **Gross Profit from mobiles ($P_m$)** | **$4,400** | | | **$5,600** | | |
| **Gross Profit from cases ($P_c$)** | | | **-** | | | **$100** |
| **Total Gross Profit ($P_m + P_c$)** | **$4,400** | | | **$5,700** | | |

The above concepts also apply to sanitation enterprises. They often sell the same toilet designs (e.g., single-pit, twin-pit) or components (e.g., pit rings, pit covers, pan seat), which differ in prices, costs of manufacturing/ procurement, and volumes sold. These constitute the "common product mix." Some enterprises also sell components not sold by others such as bricks, doors, etc., for the superstructure, which constitute "*additional sanitation-related products.*"

The drivers of gross profit also influence the cash net profit because both the profit metrics are positively correlated; **"increasing"** or **"decreasing" gross profit** will result in a **corresponding change in cash net profit**. We offer the following limitations to the use of the GMVA method to understand the gross profit drivers of different enterprise:

- **GMVA does not account explicitly for the role of market conditions** (e.g., customer preferences or availability of raw materials) in influencing viability as they are not quantified or directly attributed to any of the five drivers. To overcome this limitation, we complemented GMVA with a qualitative analysis of the micro-market conditions of each enterprise.

[4] Product system refers to the substructure components (e.g., pit, septic tank), interface (e.g., slab, pan, water closet), and/or superstructure components (e.g., walls, roof, door) in one or several combinations offered by an enterprise

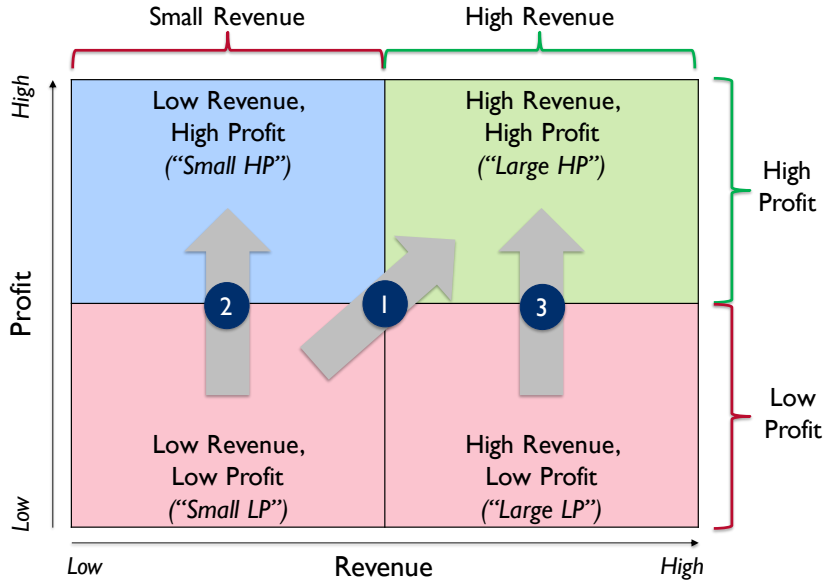
- The **results from the GMVA may vary depending on the choice of enterprise selected for analysis**. GMVA can only be conducted between two enterprises at a time, and different pairs of enterprises may reveal various differences in profit drivers. While our selection of enterprises for each case study was aimed at highlighting the impact of a range of drivers, we also conducted GMVA on a few other enterprise pairs in each geography to improve the external validity of country-level findings and arrive at broad-based recommendations in their contexts. Recommendations for a specific enterprise could be different, however, since they would depend on the GMVA results from comparing it with another enterprise, ideally in the same context. The three country case studies include additional GMVA bridge analyses.

Having identified the drivers, we conducted in-depth qualitative and quantitative analyses to identify the underlying business practices, capabilities, and contextual factors that explained the relatively higher profits earned by some enterprises in comparison to others. GMVA was the underlying framework, but our analyses also accounted for other parameters.

*DEVELOPMENT OF RECOMMENDATIONS*

The comparative analysis of enterprises at different levels of performance helped us identify the choices and practices of "High Profit" enterprises. We organized the choices and practices into three strategic paths that "Low Profit" enterprises can follow to become "High Profit" as appropriate for their contexts, capabilities, and aspirations.

**Figure 6: Strategic paths to improve the viability of "Low Profit" enterprises**




### 2.3.2. The analytical process to assess the sustainability of sanitation enterprises

We evaluated the sustainability of enterprises on two criteria:

- ability to independently meet their financial needs without external non-market support (i.e., their financial independence); **and**
- ability to continue operations without non-market intermediation (i.e., their operational independence).

*FINANCIAL INDEPENDENCE ANALYSIS*

We assessed an enterprise's ability to pay for recurring annual expenses (e.g., commissions paid to sales agents) without subsidies from non-market actors. We identified enterprises' dependence on the MBS program for such expenses and computed the reduction in cash net profit if the enterprises assumed these expenses. We also evaluated if enterprises would be able to independently provide for longer-term capital expenditure, i.e., replace worn-out equipment or vehicles. We estimated the amount the enterprises would need to set aside annually from their cash net profit to purchase new equipment, based on their replacement cost and the time to replacement.

If an enterprise would experience a significant reduction in their cash net profit after accounting for the above expenses, we considered it financially unsustainable. This assessment is based on the hypothesis that the enterprise will find it challenging to stay afloat if it does not make money, or the entrepreneur will lack the financial incentive to continue operating the sanitation enterprise.

*OPERATIONAL INDEPENDENCE ANALYSIS*

We assessed the operational independence of an enterprise by identifying any non-financial, non-market support from the MBS program and its ability to continue operations if this support was unavailable. Non-market support could take various forms, such as intermediating interactions between enterprises and other market actors or direct participation in the market (e.g., an exclusive supplier of raw material or component). Enterprises that were dependent on such non-market support were likely to face challenges in remaining sustainable operationally.

### 2.3.3. Validation of findings and recommendations with partner MBS programs

We presented the findings and recommendations for each country to the respective partner to test if these resonated with their experience as well as fill knowledge gaps arising from the analyses. We incorporated their feedback and co-developed country-level case studies that present these findings. The supplemental case studies provide the basis for, and complement, the guidance presented in this report.

# 3. KEY FINDINGS ON VIABILITY

Sanitation enterprises adopt business practices to acquire more customers or to increase margins (i.e., the difference between the price and cost of each toilet) to increase profit and thereby improve their viability. The operation of a sanitation enterprise as a standalone entity or one among an entrepreneur's several businesses also impacts its viability and the entrepreneur's incentive to operate the enterprise. External factors, whether positive or negative, originated by non-market actors such as MBS programs or local context, also impact the viability and sustainability of sanitation enterprises (USAID, 2018). In this section, we present key findings spanning the endogenous and exogenous factors that influence the viability and sustainability of sanitation enterprises.

## 3.1. A SANITATION ENTERPRISE IS ATTRACTIVE AS A BUSINESS LINE BUT NOT AS A STANDALONE, FULL-TIME BUSINESS

Implementers have made numerous attempts to set-up sanitation enterprises as standalone businesses, such as the Rural Sanitary Marts in South Asia (Robinson, 2005; Chapin & Jenkins, 2013). These programs often target masons to start sanitation enterprises due to their traditional customer-facing role in the sanitation value chain. These approaches that tend to focus on training and capacity building on technical and business skills, marketing, establishing technical standards, etc. for the most part, have met with little success in terms of enterprise profitability (and viability) and sustained participation (Peal, et al., 2010; USAID, 2018). Enterprise profitability and sustained participation have been primarily limited to entrepreneurs who operate a sanitation enterprise in conjunction with other businesses such as construction and shops observed in Vietnam (Sijbesma, et al., 2010).

Our analysis of 66 rural sanitation enterprises reinforces the experience from South Asia and Vietnam, cited above. We found that while sanitation enterprises, by and large, generate a cash net profit, the amount is generally low. Moreover, income from sanitation enterprises can be highly unstable due to the seasonal nature of toilet sales—sales slowdown during the rainy season and pick up post-harvest.

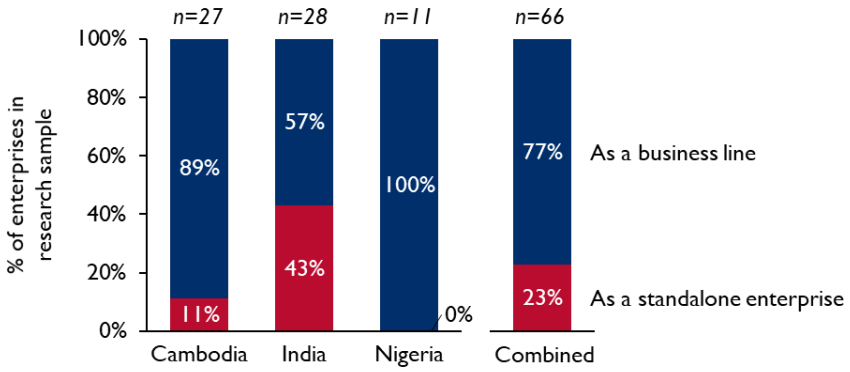
However, a sanitation enterprise is attractive as a source of additional income to rural entrepreneurs when operated alongside a related, existing business. This configuration of multiple, related business lines allows entrepreneurs to reduce start-up and operating costs substantially for sanitation enterprises. This is because the related business lines often share common assets, capabilities, and even customers.

### 3.1.1. A majority of sanitation enterprises operate as business lines alongside entrepreneurs' other businesses

More than three-fourths of the 66 sanitation enterprises that we studied across the three countries operated as business lines alongside the entrepreneurs' existing businesses (Figure 7). Often, the entrepreneurs' existing businesses were in a related line, such as construction materials or concrete products. Among the three countries, standalone sanitation enterprises comprised an appreciable share of our total sample only in Bihar (India), where contextual factors (e.g., large population size and density, Government's Swachh Bharat Abhiyan[5] campaign, large sanitation deficit) generated adequate demand for many sanitation enterprises to operate on a standalone basis.

[5] Swachh Bharat Abhiyan (Clean India Mission) is a campaign by the Government of India to achieve the vision of a "Clean India" by 2019. In rural areas, the emphasis is on eliminating open defecation and building toilets through behavioral change interventions, strengthening implementation and delivery mechanisms, and a sizeable subsidy of USD 200.

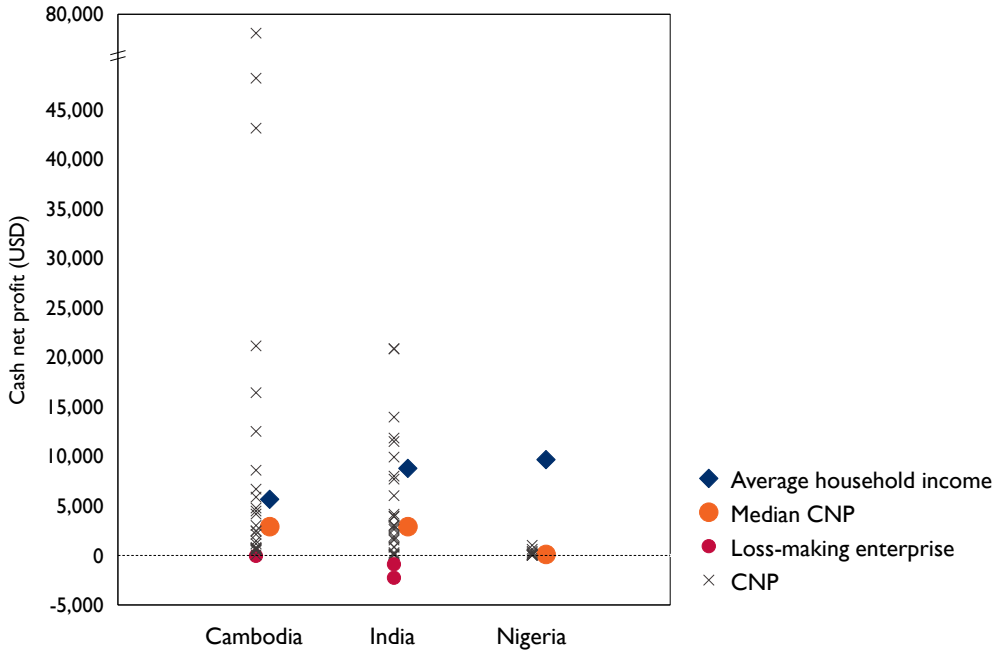
**Figure 7: Sanitation enterprises operated as a business line or a standalone business (2017)**




### 3.1.2. Profit from standalone sanitation enterprises may not attract entrepreneurs; seasonal fluctuations in income further reduces its attractiveness as a standalone enterprise

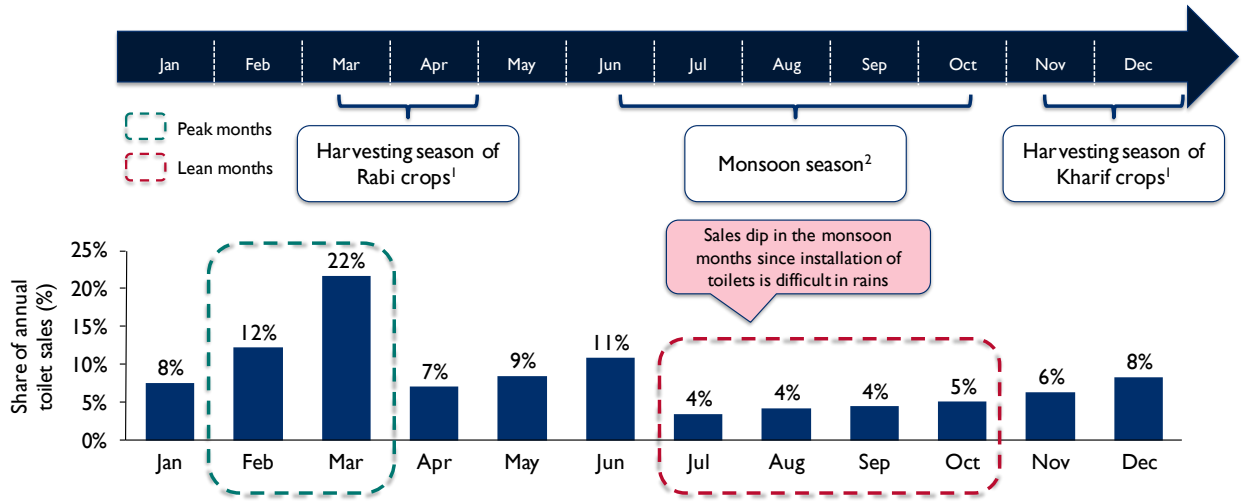
Only three of the 66 enterprises in our study reported a loss in 2017 (Figure 8). Annual profit, however, varied widely—from a low of USD 17 to a high of USD 78,093 (the majority of profits were less than USD 25,000) in 2017 (the year we examined), with a median profit of USD 1,815. To put the income from sanitation into perspective, the median profit (USD 2,907) in Bihar (India) was significantly higher than a skilled mason's annual income (USD 1,350). In Cambodia, however, the median profit (USD 2,496) was marginally more than a construction worker's annual income (USD 2,250), while in Nigeria, the median profit (USD 107) was a fraction of a mason's annual income (USD 940). The wide variation in the amount and the median profits relative to the income from comparable occupations and the average household income in the three countries (Figure 8) indicates that sanitation might not be sufficiently remunerative as a standalone enterprise.

**Figure 8: Cash net profits (USD, 2017) from sanitation enterprises compared with average construction worker/mason income in each study country**



Furthermore, income from sanitation is seasonal because sales are often dependent upon the agricultural cycle and typically dip in the rainy season (refer example of Bihar in India, in Figure 9). In rural markets, households have higher disposable income post-harvest, and they are far more likely to make major purchases during this time (USAID, 2018). Toilet sales typically decrease during the rainy season because pit digging and installation is not only challenging but also dangerous. Seasonal factors, therefore, play an important role in the business, and incomes can drop by as much as 60 percent during the lean months. A business with inconsistent cash flow is less likely to appeal as the sole or primary source of income for most entrepreneurs.

**Figure 9: Seasonality of toilet sales in Bihar (India)**



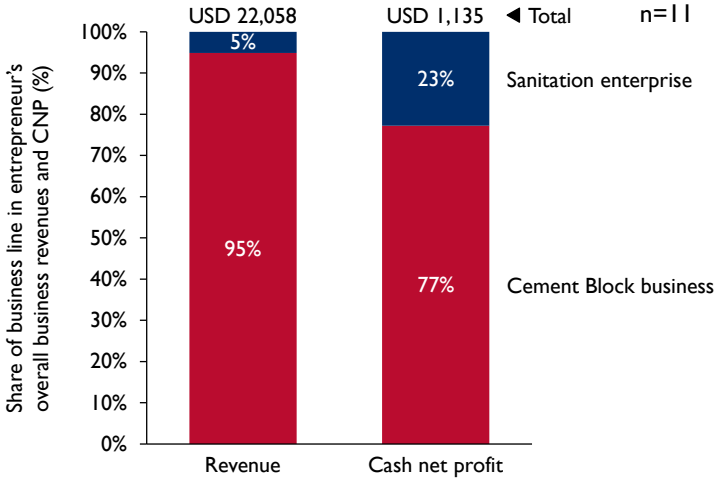

*Notes: Data sourced from PSI sales records from July 2014 to June 2017; 1. Rabi and Kharif are local terms for the two crop seasons in South Asia; harvesting seasons in Bihar sourced from National Food Security Mission, accessible at nfsm.gov.in/nfmis/RPT/CalenderReport.aspx; 2. Monsoon months in Bihar based on the advance and retreat days sourced from Indian Metrological Department, accessible at imd.gov.in/pages/monsoon_main.php.*

### 3.1.3. Sanitation enterprises are attractive as an additional source of income for entrepreneurs with existing businesses

We find that sanitation enterprises can contribute significantly to an entrepreneur's overall business revenue—an average of 34 percent of total business revenues in Cambodia and 51 percent in Bihar (India) for enterprises operated as a business line. In Nigeria, the share of entrepreneurs' revenues from sanitation enterprises was low (average of 5 percent) due to the large scale of their primary business (selling cement blocks for wide-ranging construction needs is a fast-moving, high-volume, low-margin business), the nascent stage of the country's market for improved sanitation products, and limited active demand compared to cement blocks.

Despite the low share of overall revenue from sanitation in Nigeria (a function of low and infrequent sales), it accounted for 23 percent of entrepreneurs' overall profits (Figure 10). The sanitation enterprise is, therefore, attractive as an additional source of income. In Cambodia and Bihar (India), we were unable to get reliable estimates of profits from entrepreneurs' other businesses to make similar comparisons.

**Figure 10: Average contributions of cement block businesses and sanitation enterprises to entrepreneurs' overall revenues and cash net profits in Nigeria (USD, 2017/18)**




### 3.1.4. Sanitation enterprises complement existing, related businesses

Many entrepreneurs we interviewed operated businesses such as manufacturing and retailing a range of non-sanitation concrete products and construction materials along with the sanitation enterprise. These businesses, which we refer to as "sanitation-related businesses" (or "**existing, related businesses**"), shared assets, supply chains, and/or customers with the sanitation enterprise. Sharing existing resources reduces start-up and operating costs and eases the management of the sanitation enterprise.

*START-UP COSTS ARE LOWER FOR ENTREPRENEURS WITH EXISTING RELATED BUSINESSES*

Start-up requirements for a sanitation enterprise often entail a workshop or land, assets (e.g., vehicle or cart for delivery, molds for casting concrete), and the initial batch of raw materials (e.g., cement, sand). In our analysis (see Figure 11), the start-up investment required for a standalone, new sanitation enterprise in Bihar (India) was approximately USD 600. However, the investment for an entrepreneur with an existing, related business could be lower by 65-85 percent because the entrepreneur already owns/leases land or a workshop, has raw materials in stock, and sometimes owns a vehicle.

**Figure 11: Start-up investment for a sanitation enterprise in Bihar (India)**

| Expenditure type | Item | Standalone enterprise (USD) | As a business line, (without vehicle, USD) | As a business line, (with vehicle, USD) |
|---|---|---|---|---|
| Capital expenditure[1] | Land (yearly rent) | 108 | ~~108~~ | ~~108~~ |
| | Manual cart | 108 | 108 | ~~108~~ |
| | 1 mold for cement ring | 77 | 77 | 77 |
| | 1 mold for pit cover | 15 | 15 | 15 |
| Working capital[2] (materials) | Cement (30 bags) | 152 | ~~152~~ | ~~152~~ |
| | Sand (1 trailer) | 62 | ~~62~~ | ~~62~~ |
| | Gravel (1 trailer) | 69 | ~~69~~ | ~~69~~ |
| Total start-up investment | | 591 | 200 | 92 |

*Notes: 1. Capital expenditure: Median of the capital expenditure cost for all entrepreneurs calculated based on their assets; 2. Working capital: Median prices for cement, sand, and gravel across all enterprises; we assumed the minimum quantity that can be purchased from the market for sand and gravel is adequate for producing approximately ten toilets.*

In addition to lowering costs, operating a related business also reduces the time required to set up sanitation enterprises. Entrepreneurs with existing, related businesses possess technical skills (e.g., concrete casting) and business skills (e.g., inventory management) relevant to sanitation enterprises. Further, they have established channels to procure raw materials, which accelerates start-up time.

*RELATED BUSINESSES REDUCE THE WORKING CAPITAL AND COMPLEXITY OF OPERATING SANITATION ENTERPRISES*

Existing, related businesses typically maintain a stock of raw materials (e.g., cement, sand), which, if not used to construct toilets, are consumed for other non-sanitation-related products. Only raw materials such as toilet pans and PVC pipes tie up working capital because these materials typically cannot be utilized for entrepreneurs' existing, related businesses. Thus, the required working capital for raw material for the new sanitation enterprise is lower since it is limited to sanitation-only items (e.g., pans).

*WHEN SANITATION ENTERPRISES AND RELATED BUSINESSES HAVE CUSTOMERS IN COMMON, OPPORTUNITIES EXIST TO INCREASE SALES*

Common customers play an important, albeit, secondary role in improving the viability of sanitation enterprises. Related businesses can bring in customers for the sanitation enterprise, and vice-versa. For instance, in Cambodia, enterprises reported that 10-20 percent of customers who purchased non-sanitation products (e.g., materials and components for home construction) also bought toilets. Similarly, in Nigeria, 10 of the 11 entrepreneurs pitched toilets to customers who came to purchase cement blocks or other non-sanitation products. The opportunity to "cross-sell," i.e., pitch products from several business lines to customers, allows entrepreneurs to grow their overall income.

> ***"When you stock all construction products, including material for toilets, you get more customers because they buy all materials from one place."***
> *– Entrepreneur with a construction material business and sanitation enterprise in Cambodia*

Therefore, starting and operating a sanitation enterprise as a related business line alongside an existing business is more viable for entrepreneurs.

## 3.2. FIVE DRIVERS CAN EXPLAIN THE PERFORMANCE OF SANITATION ENTERPRISES

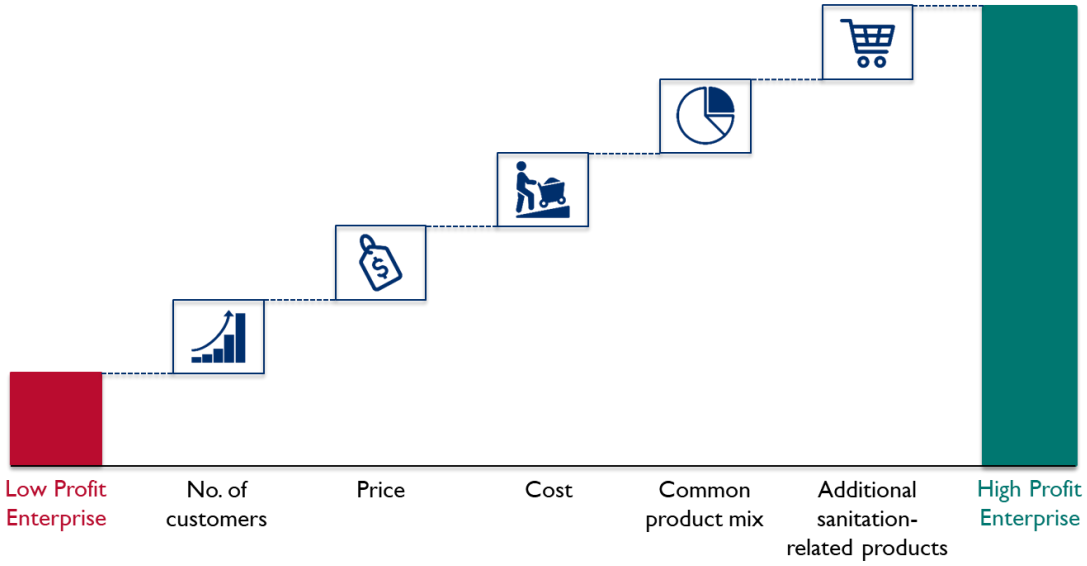
Once an MBS program recruits appropriate entrepreneurs, it needs to ensure that sanitation enterprises generate adequate profits, and potentially grow, for entrepreneurial retention. The WASHPaLS MBS desk review found that enterprises employed tactics such as expanding geographical coverage and discounting prices to gain more customers, or expanding their product portfolio to sell more products to customers—all in a bid to increase revenue and profit. MBS programs have re-engineered products to reduce costs, which in turn increases profits (USAID, 2018). These practices indicate that enterprises leverage a range of drivers—from prices and costs to their product systems design—to improve profitability.

In our comparative analyses of profit performance using the GMVA method, we identified the following five drivers that can each play a role in improving the gross profit of sanitation enterprises and subsequently, their cash net profit and viability (see Figure 12):

- Increasing the ***number of customers*** that bought different products from the sanitation enterprise;
- Charging higher ***prices*** for different products sold;
- Lowering the ***costs*** of manufacturing different products;
- Improving the ***common product mix***, i.e., increase the proportion (of total sales) of sanitation-related products with the highest profit per unit; and/ or

- Selling ***additional, sanitation-related products*** that are not sold by competitors to capture a higher share of the customer's wallet, i.e., total spend on a toilet (typically, these included superstructure components and materials).

**Figure 12: Five constituent drivers differentiating profit performance between two sanitation enterprises**




The relative importance of one driver over another in accounting for the difference in gross profit between "Low Profit" and "High Profit" sanitation enterprises varied by the enterprise pair selected for comparison (see Box 5 on interpreting a GMVA bridge to identify gross profit drivers). For this study, we analyzed several representative pairs of "Low Profit" and "High Profit" enterprises in each country to understand the full range of drivers differentiating performance and the underlying factors.

GMVA bridges in Figure 13–Figure 17 illustrate how some high profit enterprises predominantly benefited from just one driver compared to a relatively low profit enterprise[6].

**Box 5: Interpreting GMVA bridges**

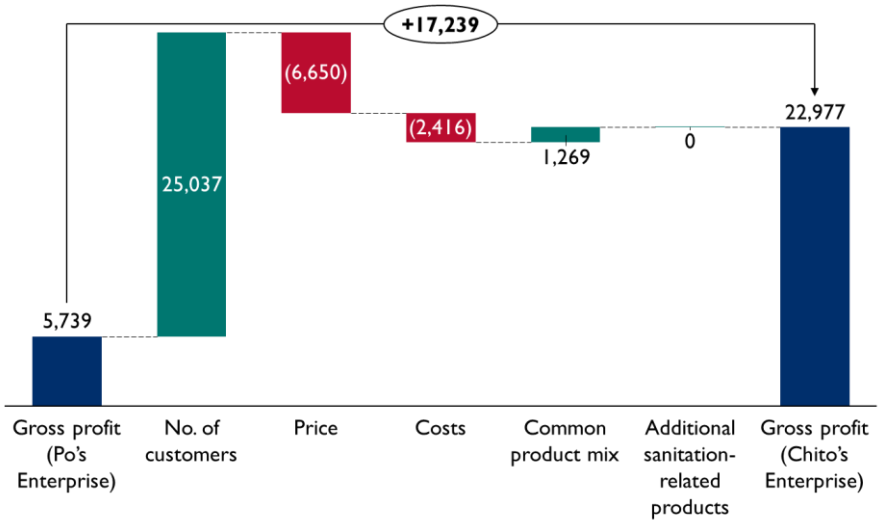
The GMVA "bridge" between two enterprises decomposes the difference between their gross profits into its constituent "drivers". Consider Figure 13, which shows a GMVA bridge for an enterprise pair from Cambodia. The green- and red-colored "floating" bars (between the two blue bars) comprise the ***bridge.*** Each bar's height signifies the relative contribution of the corresponding driver to the difference in gross profit between the two enterprises. The bridge illustrates how the gross profit of a relatively weaker performing enterprise (the blue bar on the left) compares to the gross profit of a better-performing enterprise (the blue bar on the right) for each driver, in order to identify business strategies with potential to increase low gross profits.

The *green* and *red colors* of each bar indicate whether its contribution to gross profit differs *positively* (green) or *negatively* (red), with respect to the enterprise on the right. In this example, the enterprise on the right has a *higher customer base* (more sales) and advantageous *product mix* compared to the enterprise on the left; therefore, the corresponding bars appear *green* because they represent a gross profit advantage to the enterprise on the right. Conversely, the enterprise on the right has *lower prices* and *higher* costs than the enterprise on the left, shown by red bars that represent a gross profit disadvantage.

[6] Detailed analyses of the comparisons are available in the three companion case studies, available at globalwaters.org/WASHPaLS

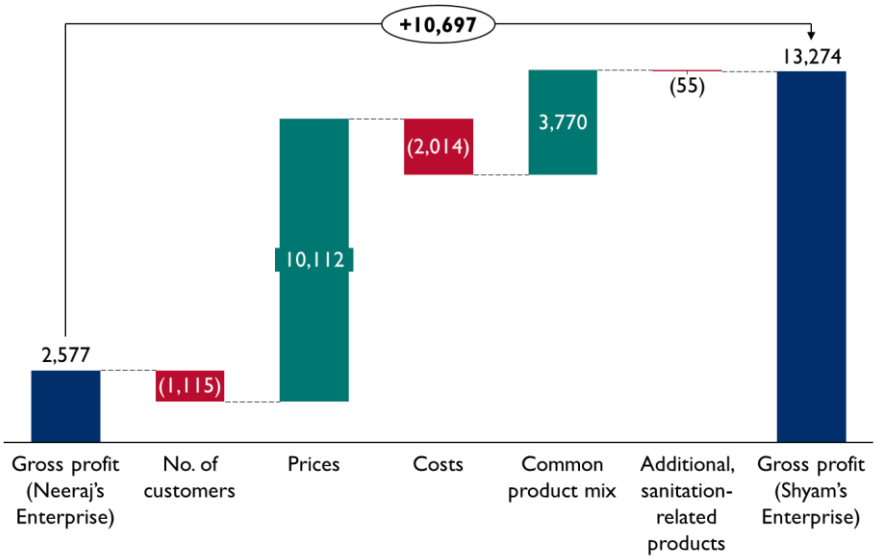
Chito's[7] enterprise predominantly leveraged the ***number of customers*** driver, which more than overcame its lower *prices* and higher *costs* compared to Po's enterprise to generate a higher gross profit

**Figure 13: "Number of customers" as the predominant driver of the differential gross profit (USD 2017, Cambodia)**




Shyam's enterprise benefited significantly from higher ***prices*** and, to a lesser extent, the *common product mix* compared to Neeraj's enterprise. Shyam had a slight disadvantage, serving a fewer *number of customers* and having higher *costs*.

**Figure 14: "Prices" as the predominant driver of the differential gross profit (USD 2017, India)**

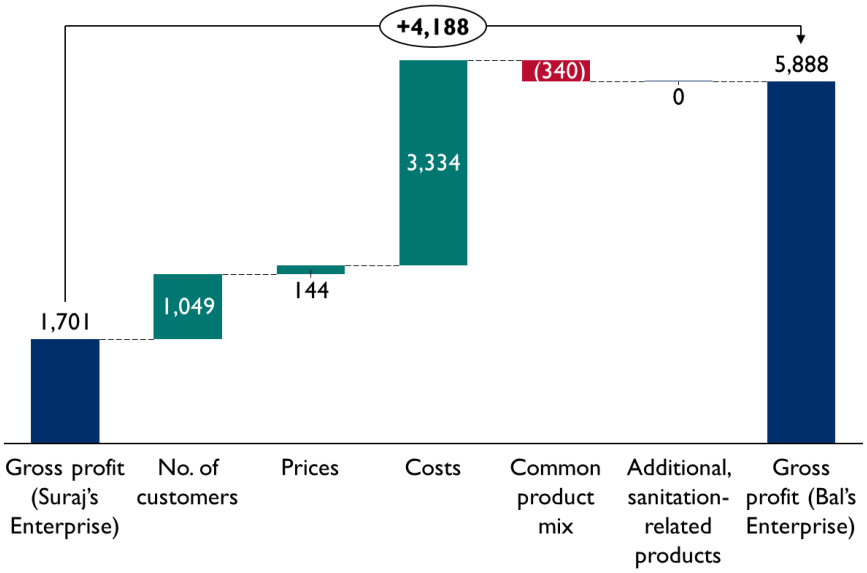



*Note: The sum of the "floating" bars may not be equal to the difference between the gross profits of the two enterprises (blue bars) due to a rounding error*

[7] Names used in this report are fictitious to anonymize the entrepreneurs we interviewed; enterprise details and data are actual

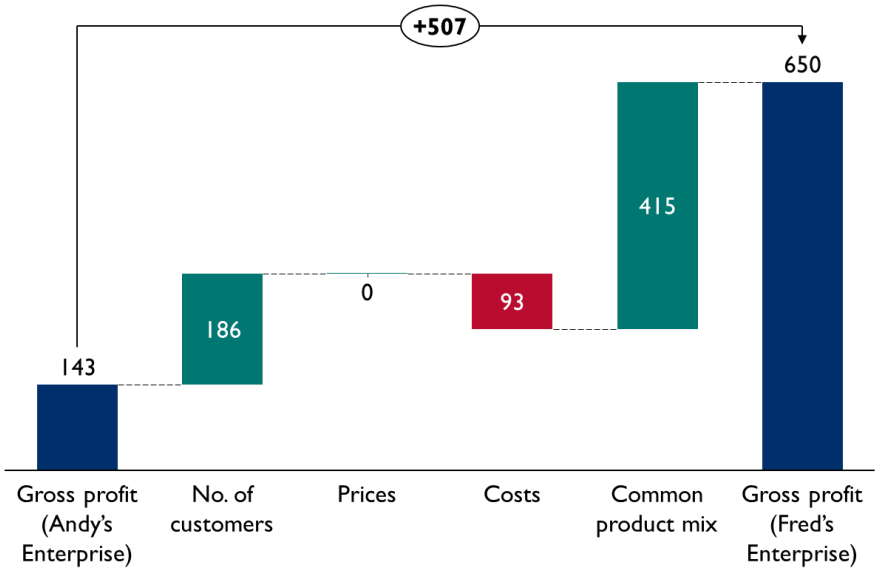
Bal's enterprise predominantly leveraged the ***costs*** driver and had more *customers* than Suraj's enterprise, which helped it generate higher gross profit. The other drivers played a marginal role in driving the gross profit difference.

**Figure 15: "Costs" as the predominant driver of the differential gross profit (USD 2017, India)**




Fred's enterprise had a more favorable ***product mix*** and more *customers* compared to Andy's enterprise. These two drivers together helped it earn a higher gross profit despite having marginally higher costs.

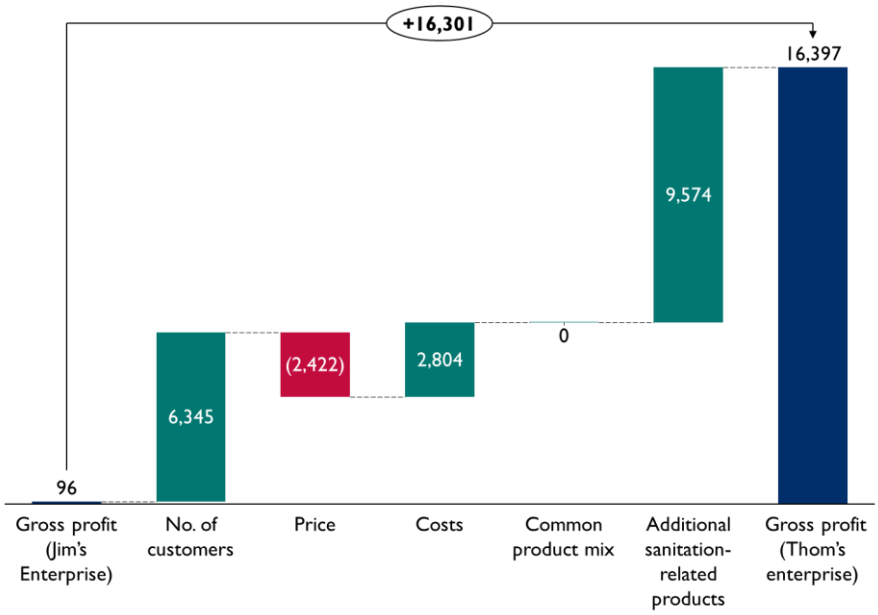
**Figure 16: "Common product mix" as the predominant driver of the differential gross profit (USD 2017/18, Nigeria)**




*Note: The sum of the "floating" bars may not be equal to the difference between the gross profits of the two enterprises (blue bars) due to a rounding error. In Figure 18, the additional sanitation-related products bar is not shown because enterprises in Nigeria did not sell such products.*

The sale of ***additional sanitation-related products*** was the biggest contributor, followed by the *number of customers* to the difference in gross profits between Thom's and Jim's enterprises.

**Figure 17: "Additional sanitation-related products" as the predominant driver of the differential gross profit (USD 2017, Cambodia)**




*Note: The sum of the "floating" bars may not be equal to the difference between the gross profits of the two enterprises (blue bars) due to a rounding error*

In the above GMVA bridges, we highlighted a predominant driver of the differential performance of an enterprise pair to stress that each of the five drivers is important. However, the brief narratives for the bridges also make clear that the gross profit drivers seldom act in isolation. For example, prices and customers are often negatively correlated, such that raising prices can lead to a loss in customers. Take the last bridge in Figure 17, for instance, where *Thom's enterprise* is likely to have more customers, in part, due to his lower prices, while *Jim's enterprise's* higher prices might be a barrier to increasing his number of customers. Furthermore, unlike *Jim's enterprise*, *Thom's enterprise* also sold *additional, sanitation-related products* that increased his average gross profit per customer and total gross profit. Thom's large customer base improved the probability of customers purchasing *additional, sanitation-related products* from his enterprise, which enabled him to take the risk of stocking such products. Therefore, while enterprises can leverage multiple drivers to increase their gross profit, doing so may involve trade-offs.

Identifying the predominant drivers that impact gross profit in a given context is a start. To leverage the drivers, understanding the specific business practices and the enabling conditions underlying each driver is critical. In the next section, we examine the factors that resulted in some enterprises increasing their gross profit, and hence, their viability.

## 3.3. FACTORS THAT CONTRIBUTE (OR LIMIT THE ABILITY) OF ENTERPRISES TO LEVERAGE DRIVERS

Our analysis across the three countries revealed that while enterprises may have leveraged a particular driver, the underlying practices they adopted and the conditions from which they benefited were varied and were affected by contextual factors and the entrepreneur's capabilities and business practices.

***Number of customers***: Enterprises that operated at a relatively larger scale predominantly managed customer acquisition through four key practices:

- Investing in and managing demand activation through sales agents paid on commission as well as unpaid demand activators to market toilets on behalf of the enterprises. Independent demand activation was supplemented, at times, with enterprise-led face-to-face marketing (e.g., village meetings, door-to-door sales);
- Servicing a larger market by entering new geographies;
- Offering credit to customers who faced financial liquidity issues by allowing them to pay in installments; and,
- Taking advantage of opportunities to collaborate with microfinance institutions (MFIs) and subsidy programs when locally present to boost their sales.

***Prices***: Enterprises that marketed their toilets as "high" quality products demonstrated the use of higher-than-recommended raw material quantities as a marker for strength and durability, and charged higher prices in exchange. Other entrepreneurs attributed their ability to charge prices higher than their competitors to the trust they enjoyed in their community—because they were well-known or involved in community affairs.

**Costs**: Enterprises actively managed costs by reducing the two primary constituents of costs, i.e., raw material and labor:

- Enterprises reduced raw material quantities or used lower-cost substitutes, where feasible. By contrast, a few "Large Revenue" enterprises secured volume discounts or lowered unit-level transportation costs by procuring raw materials in bulk from suppliers.
- Enterprises controlled labor costs by substituting paid labor with the entrepreneur's and/or family members' labor. Some enterprises also used casual labor (day or temporary labor) to supplement their permanent workforce and respond to changes in demand and seasonality without incurring a high cost to maintain a workforce fully staffed by permanent workers earning a fixed salary.

***Common product mix***: "Large HP" enterprises benefited from the "common product mix" driver by selling expensive packages targeted at relatively affluent customers or persuading a larger share of their customers to purchase more or all of the basic components offered by all enterprises in their market, from them rather than other suppliers. As a result, they increased the average revenue and gross profit per customer.

***Additional sanitation-related products:*** Enterprises captured a greater share of the customer's wallet by offering "additional sanitation-related products" beyond the common basic products offered by other enterprises. Thus, they monetized the convenience offered to a customer of purchasing most, if not all, components, including superstructure construction materials, from a single supplier.

In the following sub-sections, we draw on **examples from ten specific enterprises profiled** in our three case studies (and occasionally others from our broader sample) to illustrate how business practices, associated capabilities, and contextual factors can be used to leverage the different drivers. Readers are encouraged to review the case studies for details on these enterprises.

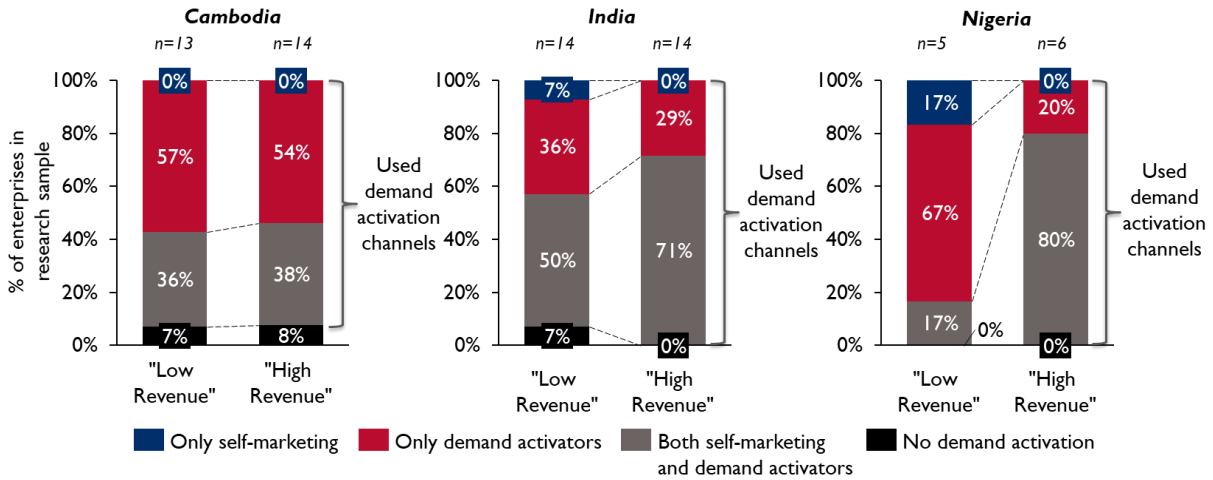
### 3.3.1. Practices to acquire more customers

*INVESTING IN DEMAND ACTIVATION*

Demand activation is the conversion of a customer's interest in a toilet into a decision to purchase from a specific supplier (USAID, 2018). In sanitation markets, demand activation typically involves independent local individuals (e.g., professional sales agents, community health workers, local leaders) visiting and

persuading customers to buy a toilet, often in exchange for a sales commission from the enterprise. We refer to these individuals as demand activators (DAs) and the sub-set that perform this role for compensation as sales agents. In addition, some entrepreneurs also actively self-market their products to activate demand. Nearly all enterprises we studied engaged in some form of demand activation.

**Figure 18: Distribution of enterprises by use of demand activation channels**




The difference in the efficacy of demand activation lies, however, in the enterprises' approach and level of engagement. The "Large HP" enterprises in Bihar (India) and Nigeria actively recruited sales agents and expanded their network beyond those introduced by the MBS interventions. The "Large HP" enterprise in Bihar (India) recruited agents who had significant social influence in their communities. Some enterprises in Bihar (India) also recruited women as sales agents due to their ability to better connect with female members of a household or their networks (see Box 6). Interestingly, the "Large HP" enterprise in Nigeria recruited local plumbers and masons, who could identify potential customers for toilets among households undertaking home construction or improvement. These enterprises actively managed sales agents through periodic meetings to track sales, resolve issues, and adjusted financial incentives to motivate them. While the "Large HP" enterprise in Bihar (India) paid higher commissions than the *3Si* program, the "Large HP" enterprise in Nigeria allowed technically-skilled sales agents to deliver and install toilets and earn the associated delivery and installation fees in addition to the sales commission. Both enterprises reported that sales agents accounted for more than 75 percent of their total sales.

The "Large HP" enterprises in Bihar (India) and Cambodia complemented their sales agents' efforts by convening and/or attending village meetings to pitch their products and following up on sales leads. In Cambodia, both the "Large Revenue" enterprises ("Large HP" and "Large LP") frequently visited commune councilors while making deliveries to inquire about demand and specific leads in the commune. They also went door-to-door to identify households without a toilet. By contrast, the "Small Revenue" enterprises in our case studies were relatively passive. They mainly relied on "walk-in" customers and the DAs, if any, who were introduced by an MBS intervention. Further, they had passive, transactional relationships with their DAs.

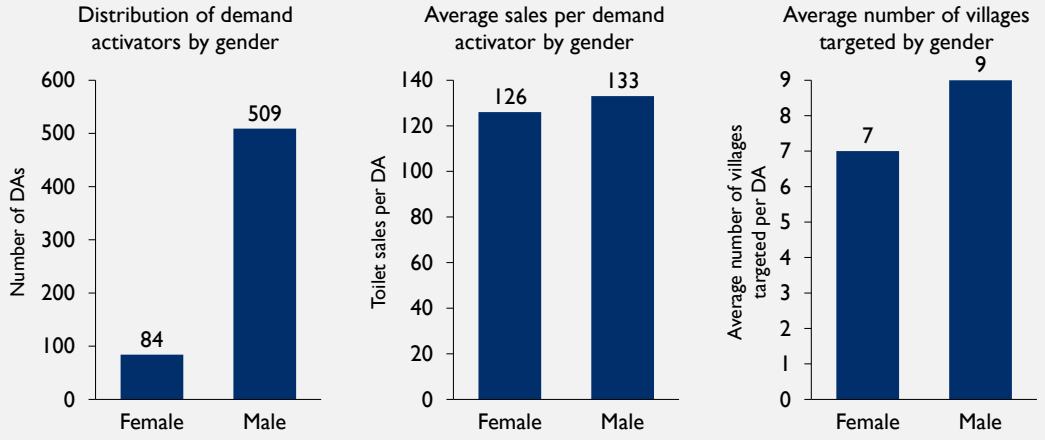
Contextual factors such as the size of the unserved population and poverty rates are likely to have influenced the number of customers an enterprise could acquire. For instance, both "Large Revenue" enterprises profiled in our Bihar (India) case study operated in relatively large markets. Nevertheless, "Small Revenue" enterprises or those operating in relatively smaller-sized markets can still benefit from

DAs. Historical sales for the three enterprises profiled in our Cambodia case study show that DAs accounted for a significant share of sales, even for the "Small HP" enterprise (70 percent to 100 percent in the first three years of its inception). Without the DAs' support, sales for the "Small HP" enterprise could have been even lower.

### Box 6: Role of gender in demand activation

PSI's *3Si* program in Bihar (India) worked with significantly fewer female demand activators than male demand activators, possibly due to challenges with social norms, such as the perceived role of women within and outside the house and their restricted mobility. Nevertheless, our analysis found that female demand activators were as effective, if not more so, in generating sales as their male peers despite social norms limiting their mobility (Figure 19).

**Figure 19: Demand activator performance by gender in Bihar (India)**




Some enterprises in Bihar preferred partnering with women as demand activators because they were well-placed to approach female member(s) of households and discuss sanitation and hygiene-related issues. Societal norms in some areas of Bihar restricted male demand activators from approaching or conversing at length with women, especially those with whom they do not share a familial connection. Moreover, women who felt embarrassed and unsafe defecating in the open were more comfortable discussing such issues with female demand activators. Some enterprises recruited leaders or members of local women self-help groups (locally termed *Jeevika*[#]) that offered both a captive audience of ~150 households per group and consumer financing to their members to purchase toilets. Some *Jeevika* leaders also appeared to have mandates for contributing to open-defecation free (ODF) achievement targets, which they fulfilled by generating sales for the enterprises.

Female demand activators, however, face challenges with mobility to cover distant villages if they do not receive support from their families. The experience amongst younger demand activators (aged 20-30 years) was mixed—some demand activators' families expected them to spend time at home and attend to household responsibilities, which limited their mobility, while others benefited from familial support including instances of spouses driving and helping them with their sales activities. Older women (aged ~40 years) faced less of a challenge in commuting if another family member (e.g., daughter-in-law) was managing the household.

Female demand activators, therefore, appear more effective when factoring their limited time and geographic coverage compared to men. Implementers need to consider societal norms and aim at securing their families' support when recruiting and linking female demand activators with sanitation enterprises.

*#: Jeevika is the Hindi word for "livelihood." It also the official name of a program implemented under a national initiative aimed at empowering rural communities to benefit from self-employment-led livelihood opportunities. Interventions include capacity building, development of supporting institutions, technical and financial support, and skill-development activities.*

*EXPANDING GEOGRAPHICAL FOOTPRINT*

Servicing customers over a larger geographical area, i.e., beyond an enterprise's home market, increases sales but may also be necessary to sustain growth. A toilet is typically a one-time purchase for a household, and as a market saturates, enterprises have to either look for new, unserved markets or scale down their operations.

The "Large HP" enterprise in Bihar (India) expanded its reach by convening sales meetings in villages beyond its home market, enabled in part by the entrepreneur's relationships with community leaders. In Cambodia, a relationship between the number of markets served and toilets sales was discernible over the full research sample of 27 enterprises—the median number of communes serviced by "Large Revenue" enterprises was nine compared to four for "Small Revenue" enterprises. In Nigeria, enterprises respected the geographic restrictions in place due to the research component[8] of the intervention.

DAs can be crucial in helping an enterprise reach new markets because it may not be possible for the entrepreneur to visit secondary markets frequently for product promotion. In Cambodia, the three enterprises received a sizeable share of orders from their secondary markets[9] through DAs—67 percent for the "Large HP" enterprise, 18 percent for the "Large LP" enterprise, and 40 percent for the "Small LP" enterprise.

*ACCEPTING PAYMENTS IN INSTALLMENTS TO HELP CUSTOMERS OVERCOME "LIQUIDITY" CONSTRAINTS*

Offering credit in the form of installment-based payments enables customers who cannot pay the full cost of a toilet upfront to purchase one. Customers receive the toilet after making a downpayment (i.e., partial credit) and pay the balance over time. The practice was fairly widespread in both Cambodia and Bihar (India), with 48 percent and 71 percent, respectively, of the enterprises we interviewed in each country offering this facility.

In Cambodia, the "Large LP" enterprise sold 10 percent of toilets on an installment basis wherein customers typically put a downpayment at the time of delivery and the rest in 2-3 months. The "Large HP" enterprise in Bihar (India) sold 40 percent of toilets with an installment plan, equally split between part and full credit. We note that full credit (i.e., zero downpayment) in Bihar (India) is an exception and offered only in anticipation of customers receiving the *Swacch Bharat Abhiyan* subsidy and paying back the "Large HP" enterprise. We have excluded enterprises in Nigeria because their installment system is technically not "credit," instead it is a "lay away" plan—they collect installments from customers in advance and fulfill delivery after collecting the final installment. We note, however, that none of the enterprises we interviewed reported a sale with this plan.

Among the broader sample of enterprises we interviewed in Bihar (India) and Cambodia, those that offered credit did so because of local commercial norms or found it a necessity to maintain sales, which would otherwise be lower. Other enterprises, such as the "Large HP" and "Small LP" enterprises profiled in Cambodia, were reluctant to offer credit because of the risk of customers defaulting on balance payment.

> ***"Nearly half of my toilets are sold on credit. If I stop giving credit, my sales will definitely drop."***
> – "Large HP" enterprise in Bihar (India)

[8] A Randomized Controlled Trial established geographical/administrative units where either Sanitation Marketing or CLTS was implemented. Sanitation enterprises reported restrictions from selling in markets where CLTS was implemented.

[9] Secondary markets are communes other than the main commune that accounted for the highest sales for an enterprise.

The risk of customer default, however, appears low for enterprises in both countries, and bad debts comprised a small share of the revenue for most enterprises. The median default rate (i.e., the share of credit sales with payment default) was six percent in Cambodia and five percent in Bihar. The median loss due to bad debts was 0.5 percent of revenue in Cambodia and 1.6 percent in Bihar. The low default rate is likely due to entrepreneurs offering credit only to known or trusted customers.

*OPPORTUNISTICALLY COLLABORATING WITH MFIS AND SUBSIDY PROGRAMS*

A strategy of some MBS interventions is to facilitate the provision of micro-credit from MFIs to help customers overcome the affordability and financial liquidity barriers to purchase toilets (USAID, 2018). Another source of financial assistance for customers is subsidy programs operated by the Government or NGOs. Such opportunities are, however, neither ubiquitous nor permanent. Therefore, enterprises can leverage these mechanisms when made available but cannot depend on them. We found an MFI partnership and several NGO-subsidy programs in Cambodia and the government's *Swachh Bharat Abhiyan* (SBA) subsidy in Bihar (India). We did not find any MFI toilet loans or subsidies available to customers of the sanitation enterprises we analyzed in Nigeria.

In Cambodia, some sanitation enterprises took advantage of the micro-credit mechanism facilitated by the *Hands-Off* program (WaterSHED, 2013). Enterprises paid a "*loan origination fee*" in exchange for the MFI agents attending sales meetings and processing sanitation loans. Enterprises passively benefited from MFI-financed sales because the MFI managed customer origination. This sales channel may be short-lived in Cambodia, however, because regulatory changes (i.e., interest rate cap) could dis-incentivize MFIs from issuing sanitation loans, which are consumption (not productive) loans and smaller in size compared to other purposes.

Enterprises also played a passive role as contractors to NGO subsidy programs that identified and directed customers to them. Subsidy programs typically contracted large enterprises in a commune, such as the "Large Revenue" enterprises profiled in the Cambodia case study. The "Large LP" enterprise received orders each year for five years that accounted for between 3 percent and 30 percent of total sales. By contrast, the "Large HP" enterprise received orders for only two years, but these sales averaged 50 percent of annual sales. However, these sales' contribution to revenue and gross profit may not be proportionate because subsidy programs typically sourced toilets that were least-priced (and carried the lowest margin). In Bihar (India), 7 out of our sample of 28 enterprises assisted customers in applying for the SBA subsidy. They helped customers fill forms or worked with local leaders to expedite disbursements to increase sales. But some enterprises faced a challenge because customers mistakenly assumed that the enterprise would process the subsidy and pay them.

### 3.3.2. Factors to leverage to charge a higher price

Across the enterprises we interviewed, product prices were primarily a function of local competition and the enterprises' cost structure. For instance, the "Small LP" enterprise profiled in Cambodia had relatively more competition than the other enterprises and, therefore, had to match competitors' prices. In Bihar (India), the "Large LP" enterprise discounted prices to attract customers away from local competitors but, in doing so, reduced its gross profitability. Within the constraints posed by these factors, some enterprises in Bihar (India) demonstrate ways that enabled them to charge a higher price.

The "Large HP" enterprise in Bihar (India) developed a self-professed reputation for quality by offering product guarantees and marketed the higher amount of cement used in its products as an indicator for durability that may have inspired customer confidence. The entrepreneur claimed quality as a differentiator that enabled him to charge more than local competitors. We hypothesize that the factors that attracted customers as the preferred supplier in his market, such as offering additional services (assistance with subsidy applications and installment schemes) and his social standing in the community, may have also supported his pricing level relative to competitors. Another "Large HP" enterprise in Bihar (India) marketed the quality of its products as a differentiator by increasing the amounts of raw materials used in manufacturing to charge higher prices.

> ***"Despite intense competition in my area, customers buy from me at a higher price because they trust my quality."***
> *– "Large HP" enterprise in Bihar (India)*

The manner in and degree to which a higher price is advantageous for an enterprise depends on the resultant gross profit. For instance, enterprises signaling quality through the tactic above incur higher costs, in which case the higher price serves to maintain gross profitability (i.e., price *less* cost, both of which have increased, expressed as a percentage of price) and continue operating viably despite intensifying competition. When setting a price that is higher than local competitors and more than compensates for the higher costs incurred, the enterprise realizes a price premium over local competition and increases gross profitability. We were unable to quantitatively verify if an enterprise realized a premium or maintained profitability over time because reliable longitudinal financial data was unavailable, and time and budget constraints prevented us from collecting local benchmark prices from competitors.

In Nigeria, enterprises charged the same or similar prices because they mistakenly believed that the prices agreed with WaterAid at program inception were fixed and binding. Without exception, entrepreneurs honored this perceived agreement to the extent that they maintained the prices over time, even when they faced higher costs due to inflation or transportation charges. In fact, a "Large HP" enterprise lowered prices to attract customers by re-engineering to reduce the size, manufacturing, and transportation costs of the toilet designs provided by WaterAid.

### 3.3.3. Cost reduction practices

A few "Small HP" enterprises in Bihar (India) and Nigeria, which had low sales (and low revenues as a result), adopted tactics to reduce the cost of manufacturing and procurement of inputs to improve the gross profit earned per unit. These tactics helped overcome high commodity prices and/or transportation costs in their market, which are hardly in the enterprises' control. These enterprises demonstrated an alternative approach to profit enhancement without altering prices or increasing sales.

*MANUFACTURING AND PROCUREMENT TACTICS TO REDUCE RAW MATERIAL COST*

Two "Small HP" enterprises in Bihar (India) lowered their cost of raw materials (including the transportation cost for delivery from the supplier) during the manufacturing process by reducing the quantities and/or using lower-cost substitutes. The resultant cost per concrete pit ring (a comparable component sold by all enterprises and accounting for a significant share of the total cost of a toilet) for the two enterprises was 33 percent and 21 percent lower compared to the "Small LP" enterprise, which had similar scale (Figure 20).

**Figure 20: Raw material cost per ring for two enterprises from Bihar (India) (USD, 2017)**

| Enterprise | Raw material | Quantity used per ring | | Cost per unit (USD) | | Cost per ring (USD) | | Total raw material cost per ring (USD) |
|---|---|---|---|---|---|---|---|---|
| "Small HP" 1 | Cement | 6.25 kg | x | 0.11 per kg | = | 0.69 | ∑ | 1.50 |
| | Sand | 1.25 tins | x | 0.12 per tin | = | 0.15 | | |
| | Stone | 0.50 tins | x | 1.01 per tin | = | 0.50 | | |
| | Wire | 0.13 kg | x | 1.23 per kg | = | 0.15 | | |
| "Small HP" 2 | Cement | 7.14 kg | x | 0.11 per kg | = | 0.77 | ∑ | 1.77 |
| | Sand | 0.86 tins | x | 0.51 per tin | = | 0.43 | | |
| | Stone | 1.00 tins | x | 0.57 per tin | = | 0.57 | | |
| | Wire | 0.003 kg | x | 1.08 per kg | = | 0.00 | | |
| "Small LP" | Cement | 8.10 kg | x | 0.10 per kg | = | 0.79 | ∑ | 2.23 |
| | Sand | 0.97 tins | x | 0.46 per tin | = | 0.49 | | |
| | Stone | 0.97 tins | x | 0.92 per tin | = | 0.87 | | |
| | Wire | N.A. | x | N.A. | = | 0.08 | | |

Compared to the "Small LP" enterprise in Figure 20, "Small HP" 1 enterprise realized savings by substituting sand with a locally mined variant, costing 70 percent less, and reducing stone by nearly half. The "Small HP" 2 enterprise reduced the cost and quantity of stone by substituting burnt brick chips (waste generated by brick kilns and otherwise discarded) into the mix that reduced the total cost per ring by 21 percent. Similarly, an enterprise in Nigeria used refurbished pipes that were practically free of cost. We note that quantities of raw materials are within the enterprise's control but not prices since these materials are commodities. Instances where prices differ significantly suggest either contextual factors or part-substitution with a lower-cost alternative.

Although the savings in absolute currency terms realized seem insignificant on a per-component basis, the cumulative cost savings for all manufactured components (e.g., pit rings, slab) when applied to total sales in a year can be significant. Taking an example in Nigeria, we estimated that if one of the "Small LP" enterprises profiled in the case study used refurbished pipes, its manufacturing costs would reduce by 12-30 percent, depending upon the toilet package—leading to a sizeable increase in gross profits. "Small HP" enterprises adopting such tactics did not report an adverse impact on sales or after-sales complaints due to lower raw material usage or substitution. However, we were unable to verify their claims. Their customers may plausibly not have discerned changes in quality or durability, considering the cost-reduction measures were applied to sub-structure components.

Transportation costs of procuring raw materials contribute marginally to the overall raw material cost. At least three "Large HP" enterprises in Bihar (India) procured raw material in bulk and secured volume discounts or lower unit transportation costs. A "truck" load of raw materials instead of "trailers," which have lower capacity, reduced raw material transportation costs by 2-3 percent in the case of one "Large HP" enterprise not profiled in the case study. These enterprises had the scale, high inventory turnover[10], and possibly adequate working capital to finance bulk procurement. When combined with the quantities used, and at the scale of these enterprises, the marginal difference in unit procurement costs contributed to their relatively high gross profits.

[10] The number of times an enterprise has sold and replaced its inventory in a given period. High turnover implies fast-moving goods.

*PRACTICES TO LOWER LABOR COSTS*

Across the three countries, several enterprises, both those profiled in-depth and others, managed labor costs by supplementing or substituting paid labor with the entrepreneur (and their family members in some cases) contributing labor.

In Cambodia, an entrepreneur and her spouse operating the "Small LP" enterprise undertook several activities, such as casting concrete components and delivery to reduce overhead. Similarly, entrepreneurs operating the "Small HP" enterprise in Bihar (India) and a "Small LP" enterprise in Nigeria (not profiled in the case study) manufactured toilets themselves instead of paying laborers, given their low annual sales. The "Small HP" enterprise in Bihar (India) hired casual laborers only to dig pits and install toilets, which reduced its labor costs to 17 percent of its price per cement ring—the lowest among the four enterprises in Bihar (India) we studied in detail.

The practice is not limited to small-scale enterprises. While a "Large Revenue" enterprise is likely to have orders above an entrepreneur's capacity to manufacture (and/or deliver and install) toilets alone, they can hire supplementary labor capacity. Examples include the "Large HP" enterprise in Cambodia and the "Large LP" enterprise in Bihar (India)—the entrepreneur operating the latter manufactured approximately 20 percent of toilets sold by his enterprise.

The flexibility to hire casual labor and pay on a variable basis (e.g., per component manufactured) instead of fixed salaries appears to be dependent on the labor demand-supply situation in the enterprises' micro-markets. For instance, the "Large LP" enterprise profiled in the Cambodia case study employed permanent workers and paid fixed salaries in addition to hiring casual labor periodically to augment manufacturing capacity. Skilled laborers in this enterprise's micro-market had access to better opportunities in neighboring Thailand, which warranted the enterprise employing permanent laborers to ensure their retention. As a result, its labor costs were 42 percent of its total product costs—compared to the median of 10 percent for the entire research sample and seven percent for "Large HP" enterprises in Cambodia.

### 3.3.4. Ability to leverage the "common product mix" driver

"Large HP" enterprises had a favorable product mix comprising a higher proportion of relatively more profitable toilets or components compared to "Low Profit" enterprises, and this helped increase their average profit realized per customer. The ability of enterprises to improve their product mix depended primarily on their markets, such as relatively more affluent customers who purchased expensive product systems or customers electing to purchase certain components (e.g., pit covers) from other suppliers.

A "Large HP" enterprises in Nigeria, for example, had a product mix comprising a higher proportion of "dual set" toilets (i.e., double pit with offset interface toilets), priced at USD 100 with a unit gross profit of USD 40. By contrast, "Low Profit" enterprises' sales had a greater share of "offset conversion" toilets (i.e., slab with SATO® pan offset from an existing pit) that sold at USD 20 and had a unit profit of USD 3. Whereas the median share of dual sets in total sales was 40 percent for the "High Profit" enterprises, it was only 11 percent for the "Low Profit" enterprises, resulting in the former realizing higher average gross profit per customer. Such "Large HP" enterprises were likely to operate in markets with relatively more affluent customers and higher tenancy rates—landlords preferred dual sets to provide a separate toilet interface for tenants outside the house.

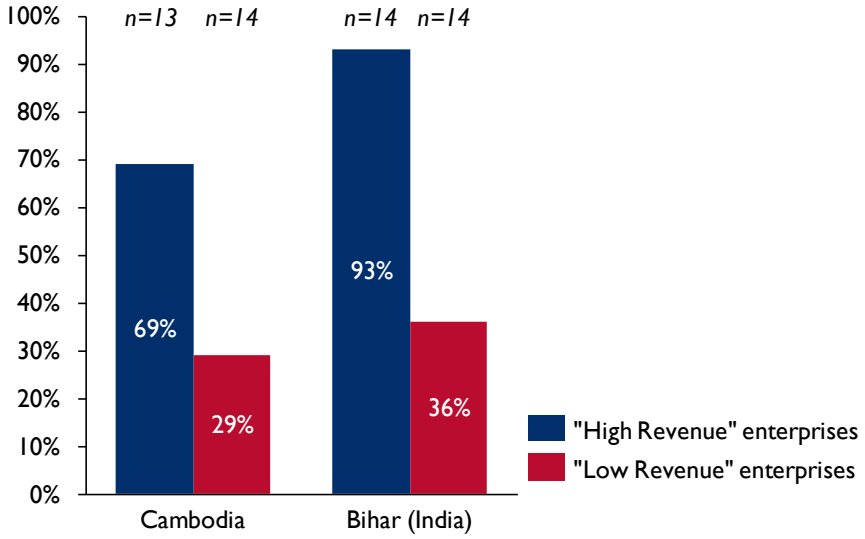
In Bihar (India), all enterprises sold ten rings per customer (i.e., five rings per pit for two pits) in conformance with PSI's recommendation of limiting pit depth to 5 feet and avoid groundwater

contamination. But "Large HP" enterprises sold, on average, more pit covers per customer compared to other enterprises because customers either purchased twin-pit toilets or preferred buying pit covers from the sanitation enterprise instead of masons or other suppliers. Customers of the "Low Profit" enterprises we interviewed looked for a better deal or asked a mason to fabricate covers during installation. A favorable product mix of two pit covers per customer (similar to the "Large HP" enterprise in the case study) could increase the gross profits of the "Large LP" and "Small LP" enterprises profiled by 24 percent and 28 percent, respectively. The "Large LP" enterprise would have realized just an eight percent increase in gross profit because of its narrow margin on pit covers.

### 3.3.5. Selling additional sanitation-related products

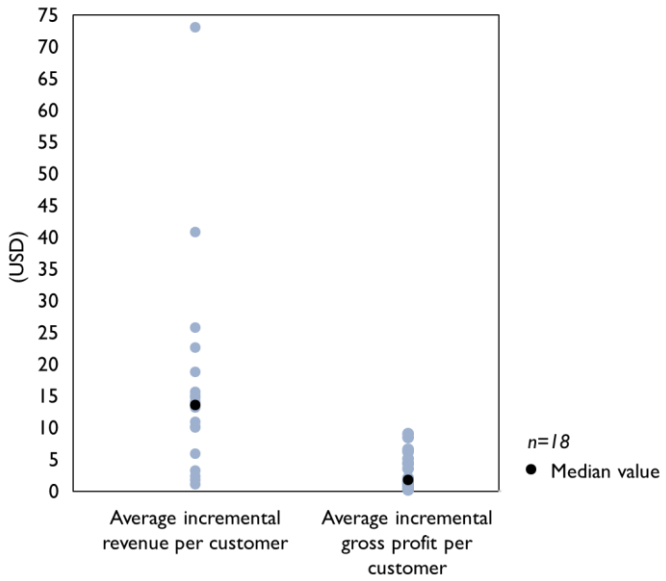
In Cambodia and Bihar (India), a substantial proportion of "High Revenue" enterprises sold additional sanitation-related products (Figure 21), primarily components and construction material for building the toilet superstructure. These included items such as doors, roof panels, and soap shelves in Bihar (India) and doors, cement bags, bricks, and wall tiles in Cambodia. By expanding their product system to include items that the customer would otherwise purchase elsewhere, "High Revenue" enterprises captured a greater share of a customer's total spend (or wallet) on a toilet. In exchange, customers benefited from the convenience of fulfilling their requirements from one supplier instead of self-aggregating from multiple suppliers (USAID, 2018).

**Figure 21: Share of enterprises selling additional sanitation-related products (2017)**




Whereas many enterprises offered additional sanitation-related products, the breadth of their additional products varied substantially, and consequently, so did the additional revenue and gross profit they generated from the sale of such products. In Bihar (India), some enterprises sold only a few low-cost items such as soap shelves, while others offered customers the entire range of products required to build a toilet. The average additional revenue per customer (from the sale of these products) ranged from a low of USD 1 to a high of USD 73 per customer, and the average additional gross profit per customer ranged between USD 0.3 and USD 9 (Figure 22).

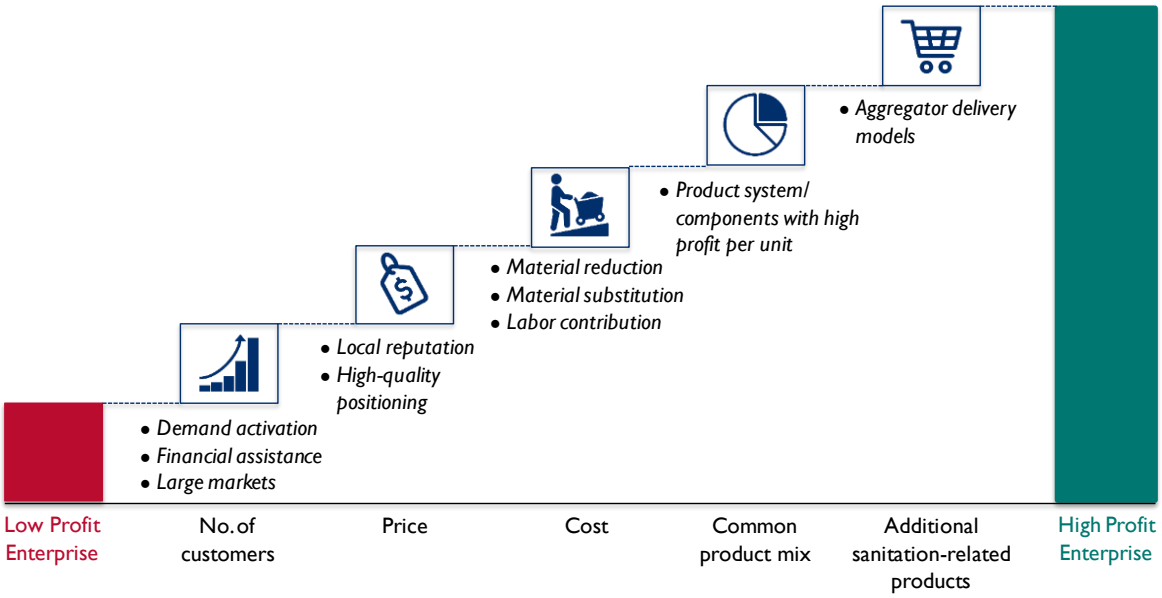
**Figure 22: Average incremental revenue and gross profit per customer earned by enterprises selling additional sanitation-related products in Bihar (India) (USD, 2017)**




Enterprises that adopted aggregator delivery models to leverage the "additional sanitation-related products" driver benefited from favorable market conditions. They successfully catered to customers who valued the convenience of procuring most, if not all, of their toilet-construction-related needs from a single supplier (instead of self-aggregation). These entrepreneurs had either sufficient capital or access to credit to fund increased working capital expenses necessary to stock the additional inventory.

Figure 23 summarizes the range of practices that helped enterprises in the three countries increase gross (and cash net) profits and improve viability by leveraging the five drivers. In the next section, we examine the factors that influence the sustainability (i.e., long-term viability) of sanitation enterprises, which is an equally important facet of sanitation market systems and MBS program design.

**Figure 23: Predominant practices underlying the five gross profit drivers**



# 4. KEY FINDINGS ON SUSTAINABILITY

Sustainability refers to the likelihood that an enterprise remains viable over an extended period (i.e., multiple years) without relying on external, non-market-based support. We assessed enterprise sustainability with respect to two aspects: 1) **financial independence** or the ability to fund recurring expenses and longer-term capital investments independently, and 2) **operational independence** or the ability to operate without non-market intermediation or support.

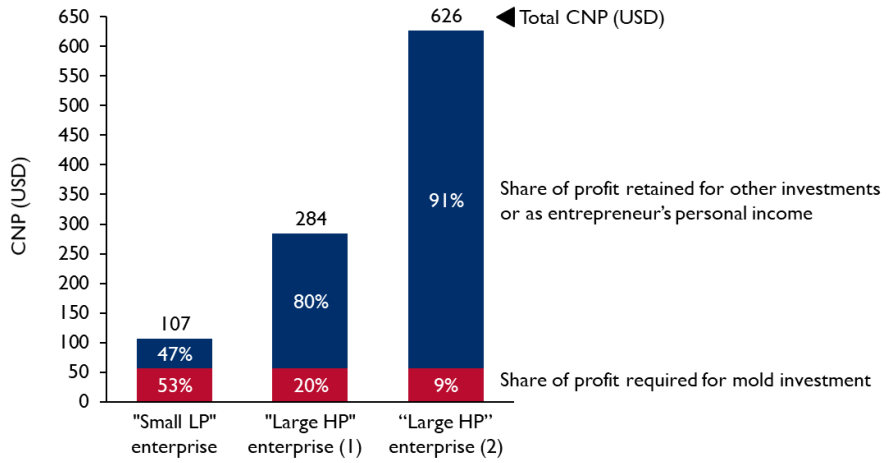
## 4.1. SUSTAINABILITY IS A CHALLENGE FOR ENTERPRISES THAT ARE UNACCUSTOMED TO PAYING OR BUDGETING FOR ALL EXPENSES

Our findings indicate that enterprises reliant upon external, non-market support for capital expenditure (e.g., purchasing and/or replacing equipment) or operational expenditure (e.g., sales commissions) were unable to afford or unwilling to bear such expenses once support was withdrawn (e.g., end of program). By contrast, enterprises accustomed to paying for all costs were more likely to stay in business without external, non-market support. We offer examples from the case studies to illustrate these challenges.

### Case in Nigeria: "Low Profit" enterprises unable to afford future capital expenditure

Most "Low Profit" enterprises in Nigeria struggled to replace molds, which they were technically loaned free of charge by the *STS* program but in practice were not taken back. Molds are critical equipment for sanitation enterprises and need replacement every few years due to wear and tear. In Nigeria, we found that "Large HP" enterprises would need to set aside only a small share of annual profits to fund replacement molds. By contrast, a "Small LP" enterprise would need to set aside more than half its annual profit to afford a mold after three years, the average useful life of a mold (Figure 24). Budgeting a significant share of annual profit, which is low for most enterprises, for reinvestment will severely limit the income of entrepreneurs, thus reducing their financial incentive to operate sanitation enterprises.

**Figure 24: Share of annual cash net profit (USD, 2017/18) required to replace molds in three years for three enterprises profiled in-depth in the Nigeria case study**




### Case in Bihar (India): "Low Profit" enterprises unlikely to afford demand activation

An analysis of enterprises in Bihar (India) demonstrates that "Low Profit" enterprises are unlikely to pay for demand activation once the *3Si* program ends. While 16 of the 28 enterprises covered in our research reported using sales agents, 11 of these 16 depended on PSI for paying commissions to their agents. These 11 enterprises would experience a decline in profits if they were to pay commissions

themselves instead of PSI paying the sales agents. "Low Profit" enterprises are likely to witness potentially debilitating declines in profits, which are estimated between 41 percent and 2,046 percent (an abnormally large reduction resulting in a loss), eroding any financial incentive to remain in the business. "High Profit" enterprises would experience an estimated reduction of 0.3 percent to 16 percent in profit and are likely to remain viable.

**Case in Cambodia: Enterprises are not dependent on non-market actors for any expenses**

WaterSHED in Cambodia, on the other hand, ensured that enterprises met all business costs using their own resources from the beginning of the *Hands-Off* program. While WaterSHED also trained sales agents and facilitated linkages with sanitation enterprises, the onus for managing the relationship and paying commissions was always on the enterprises (USAID, 2020a). As a result, the gradual withdrawal of WaterSHED from active market facilitation in 2017 has not altered enterprise profitability, while sustainability is dependent only on the financial performance of the enterprises.

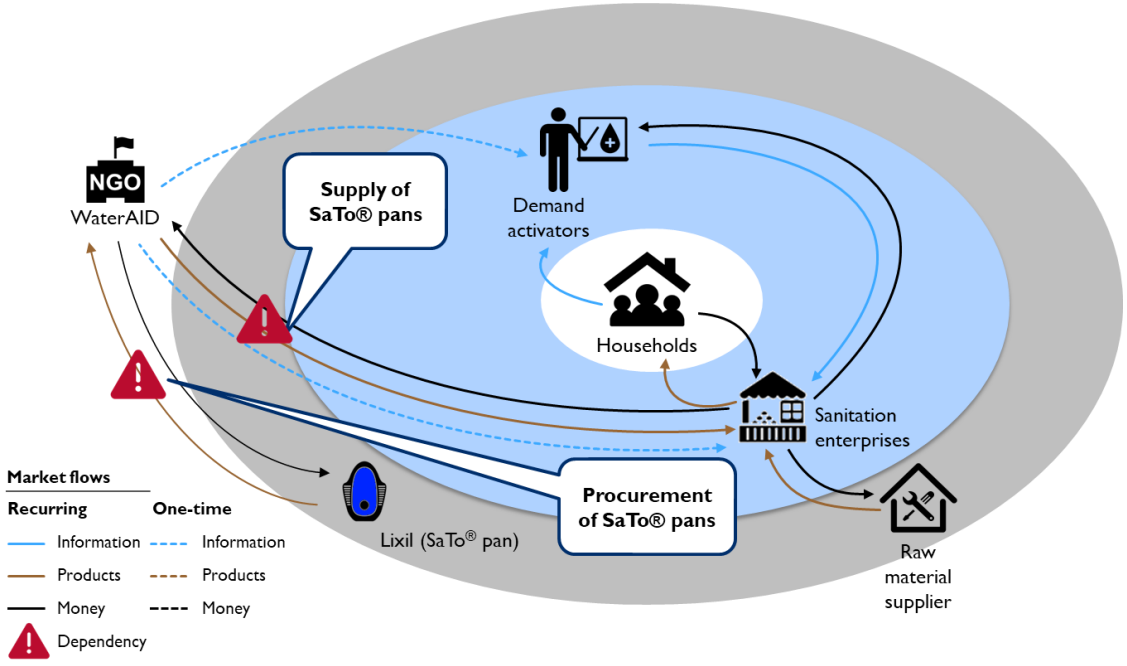
## 4.2. PROGRAMS' INTERMEDIATION OR PARTICIPATION IN MARKET TRANSACTIONS CREATE DEPENDENCIES THAT IMPACT MARKET CONTINUITY

Our research shows that enterprises that are dependent on recurring, external, non-market support for their operational activities will struggle to operate once such support ends.

*DEPENDENCE ON THE MBS PROGRAM FOR CRITICAL SUPPLIES HAS RISKED SUSTAINABILITY OF ALL ENTERPRISES IN NIGERIA*

In Nigeria, enterprises were dependent solely on WaterAid for the supply of SATO® pans—a critical component of the toilet package (refer to bold black and brown lines in Figure 25). Without a similarly priced substitute, and in the absence of a localized supply chain for SATO® pans (at the time of our interviews), even financially independent enterprises were at risk at the end of the MBS program.[11]

**Figure 25: Sanitation market flows in Nigeria**




[11] WaterAid eventually brokered a licensing partnership between Lixil (SATO® pan is a business line of Lixil) and Innoson, a Nigerian manufacturer, to manufacture and distribute SATO® pans in Nigeria.

*Note: Based on field interviews by WASHPaLS with support from WaterAid*

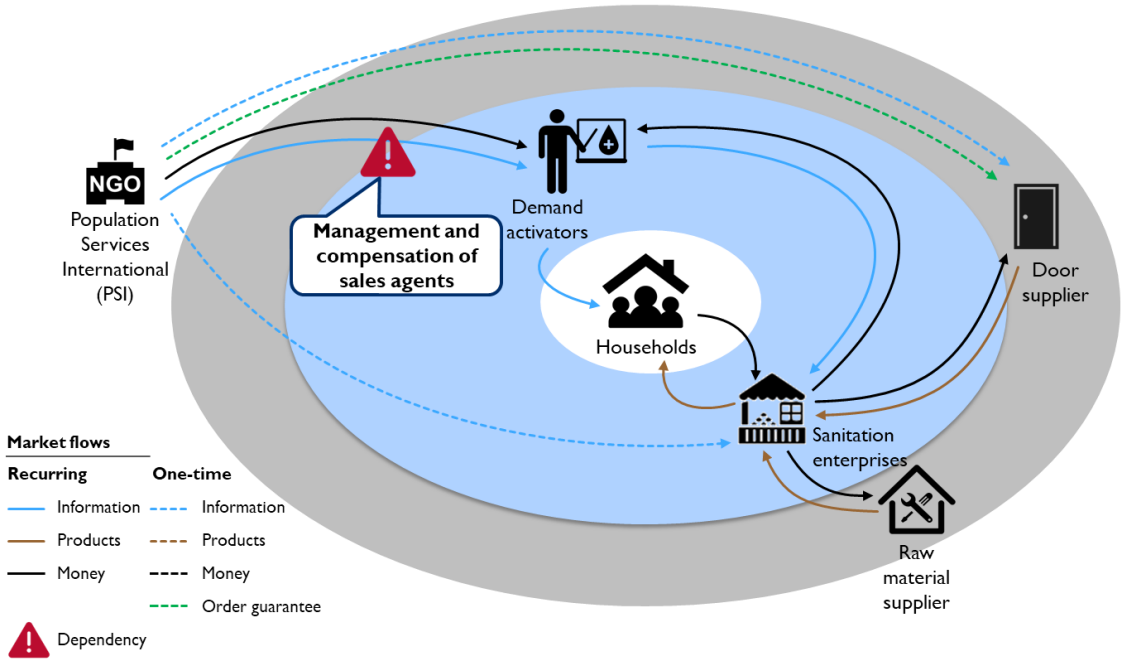
By contrast, enterprises that partnered with *3Si Bihar* or *Hands-Off* in Cambodia are unlikely to face such challenges, as neither program directly participates in the local value chain. PSI, for example, persuaded a local distributor to stock PVC doors, which were not available locally at the beginning of the intervention, instead of becoming a supplier. Similarly, it introduced enterprises to MFIs for working capital loans but did not intervene in their subsequent interactions. In Cambodia, a pre-cast chamber box to transmit waste to the pit was a novel product component. Enterprises received training to fabricate these boxes with the raw materials and skills used for casting other concrete components. Thus enterprises were not dependent on a non-market actor for critical components.

*MARKET ACTORS IN BIHAR (INDIA) GREW ACCUSTOMED TO INTERMEDIATION BY PSI FOR DEMAND ACTIVATION*

Although PSI did not participate in the supply chain, unlike WaterAid, its role as an intermediary in managing, and in many instances, compensating sales agents (refer to the black line in Figure 26) created a dependency for enterprises. Withdrawal from active market facilitation risked undermining the demand activation mechanism because many enterprises and sales agents grew accustomed to PSI's role. When PSI stopped active market facilitation, enterprises did not start paying commissions while sales agents expected PSI to resume its role rather than transact directly with enterprises.

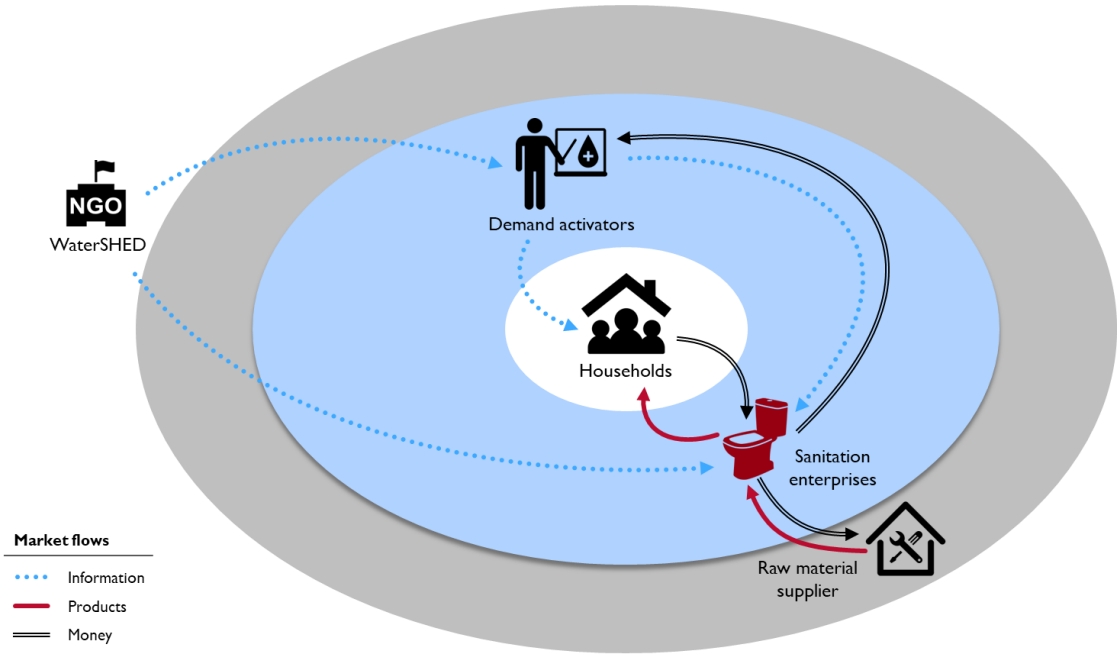
> ***"I haven't asked my partner enterprise to pay me for toilet sales. It did not occur to me because I thought it was PSI's job. I wish that PSI comes back and starts paying us."***
>
> *-Demand activator in Bihar (India)*

**Figure 26: Sanitation market flows in Bihar (India)**



WaterSHED, on the other hand, never was directly involved in any market transaction but played the role of a facilitator (Figure 27). The approach ensured that enterprises and other market actors transacted directly without relying on recurring external support.

**Figure 27: Sanitation market flows in Cambodia**



# 5. TOP-LEVEL GUIDANCE FOR IMPLEMENTERS

Attempts to improve the viability and sustainability of enterprises will be moot if enterprise designs are flawed or certain elements are missing. Programs need to arrive at context-appropriate enterprise designs, i.e., well-defined target market(s), product systems that are appealing and affordable for the chosen target markets, demand activation strategies to persuade potential customers, and delivery models that simplify the customers' buying experience. Programs may not have the final design at the outset, but they should have completed rigorous formative research on both demand and supply, identified entrepreneurs with "best-fit" businesses[12], prototyped and field-tested product systems, designed localized sales & marketing mechanisms, and selected delivery model options suitable for the target entrepreneur(s) profiles [see (Chapin & Jenkins, 2013; Chapin & Jenkins, 2013; Pedi, et al., 2013; USAID, 2018). Iterating to get the "right" design—for example, by projecting the revenue and profitability potential of a chosen enterprise design—is an essential precursor to recruiting entrepreneurs and maximizing the probability that they will be viable and sustainable.

Despite getting the enterprise design "right," a myriad of factors influence the performance of sanitation enterprises in practice, as we found in Sections 3 and 4. To minimize the risk of enterprise failure, which is widespread among MBS interventions, implementers need to understand and address the factors impacting the viability and sustainability of sanitation enterprises in operation. In this section, we build on the research findings presented in the previous sections and offer guidance targeted at MBS program implementers to a) recruit entrepreneurs to setup sanitation enterprises, and b) support partner enterprises in enhancing their viability and sustainability. In particular, we offer a simple framework for implementers to categorize enterprises based on their financial performance and subsequently identify appropriate strategies that can help improve the performance of the "Low Profit" enterprises. We also offer recommendations on MBS programmatic practices that can contribute to the sustainability of sanitation enterprises.

## 5.1. RECRUIT ENTREPRENEURS WITH EXISTING, RELATED BUSINESSES TO START SANITATION ENTERPRISES

Operating a sanitation enterprise as a business line alongside an entrepreneur's existing businesses, especially related businesses, enhances its viability and sustainability (section 3.1). A complementary configuration of operating sanitation enterprises alongside related businesses generates synergies that reduce both start-up and operating costs for entrepreneurs. More importantly, even if the profit from the sanitation enterprise alone is inadequate to incentivize an entrepreneur, it is likely attractive as a supplementary source of income. Thus, the probability of entrepreneurs sustaining long-term supply in sanitation markets increases.

Program implementers should avoid historical practices such as persuading entrepreneurs to set up sanitation enterprises as full-time, standalone businesses. Instead, we recommend that implementers **identify and target entrepreneurs with existing, related businesses** who can utilize existing assets (e.g., land), supply chains (e.g., cement, sand), access to customers, and other attributes of existing businesses to set up and operate sanitation enterprises.

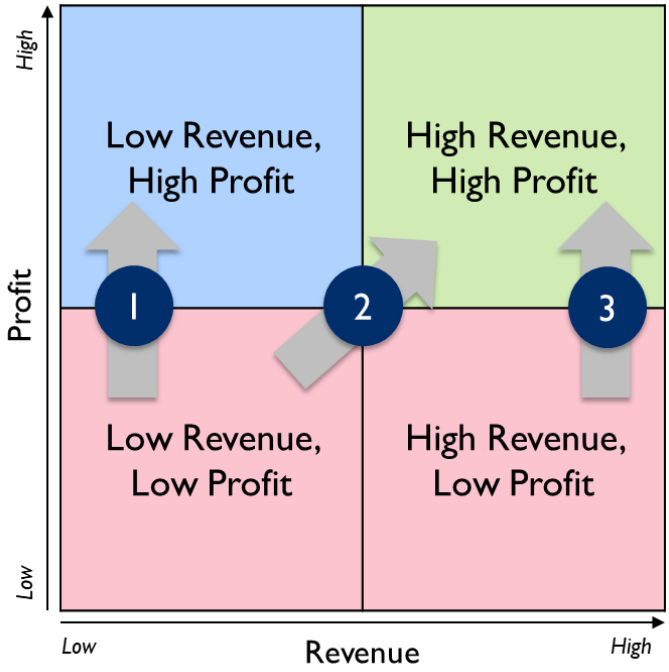
[12] Businesses involving customers, raw materials, and/or technical skills relevant for sanitation

## 5.2. GUIDE ENTERPRISES IN CHOOSING A STRATEGIC PATH TO IMPROVE VIABILITY THAT APPRECIATES THEIR CAPABILITIES AND CONSTRAINTS

While a range of practices exists to leverage each of the five profit drivers discussed in Section 3.2, the relevance and applicability of each driver depend not only on the enterprise's market conditions but also on its capabilities and the entrepreneur's aspirations. Implementers need to understand well the micro-markets within an intervention's geography and the drivers and corresponding practices adopted by relatively higher profit enterprises in micro-markets with similar characteristics. More importantly, the nuanced interactions and inherent tradeoffs among the drivers must be appreciated to develop one or more strategies. Knowledge of the strategies and the conditions under which they are applicable will equip implementers to set enterprises along a path to improve viability that is appropriate for the enterprises' capabilities and constraints.

In line with this guidance, we offer a simple framework that can help MBS programs assess enterprises' financial performance and identify the optimal strategies to improve their viability and sustainability (Figure 28). Our guidance specifies three Strategic Paths that "Low Profit" enterprises can choose from, depending on their financial situation, capabilities, and context. "Small LP" enterprises with limited potential or aspirations to grow sales can opt for Strategic Path 1 and implement a cost-reduction strategy. "Small LP" enterprises operating in favorable markets and with access to financial resources can select Strategic Path 2 by focusing on a revenue-led strategy. "Large LP" enterprises that have high sales but sub-optimal profits can adopt a margin-expansion strategy, i.e., Strategic Path 3. Table 2 (at the end of this sub-section) summarizes the guidance for quick reference.

**Figure 28: A framework to assess enterprise performance and identify an appropriate path(s) to improve its viability**




In theory, a fourth path to improving viability also exists, wherein a "Large LP" enterprise can afford to lose some customers in exchange for increasing prices and thus the margin per sale (see USAID, 2020b for an example). However, we did not examine this path because the entrepreneurs we interviewed were reluctant to risk sacrificing sales in a bid to increase profits (and thereby improve viability).

### 5.2.1. Strategic Path 1: Enterprises in low-volume markets or those content to remain small-scale should adopt a cost-reduction strategy

A cost reduction strategy is relevant for "Small LP" enterprises operating in conditions that limit their potential to scale or those not interested in scaling up. Limitations on an enterprise's potential to scale could be a function of **low demand** in their target market, a severe **shortage of skilled labor**, or their **inability to increase market share** because of intense competition. Alternatively, some entrepreneurs might **not aspire to scale** their sanitation enterprise, preferring to remain small. The following sub-sections outline the practices from which enterprises can choose to implement a cost-reduction strategy.

*RE-ENGINEER RAW MATERIAL QUANTITIES AND COMPOSITION TO REDUCE RAW MATERIAL COSTS*

Enterprises can reduce their raw material costs by **lowering the quantity of raw material** used to manufacture toilet components. Enterprises often over-engineer toilets to (mistakenly) improve quality or due to poor production skills, which provides opportunities to lower costs through re-engineering (USAID, 2018). In such a scenario, re-engineering may be possible without affecting the structural integrity of the toilet. MBS programs can help enterprises manage raw material costs by recommending standard specifications and periodically conducting technical checks of product durability and quality. For instance, *3Si* conducted the Schmidt Hammer test (a non-destructive test to assess the strength of concrete) on cement rings as part of its Enterprise Capacity Assessments. MBS programs can also recommend more efficient designs such as round instead of square pits or slabs, or concrete skirting to mount on existing wood or mud floors instead of a full slab.

**Switching to lower-cost substitutes** also reduce raw material costs. Examples include using burnt brick chips to reduce the quantity and cost of stone in the concrete mix, refurbished instead of new pipes, or plastic instead of ceramic pans. Many such innovations, except a new component like plastic pans, emerge from sanitation enterprises. MBS programs can monitor, assess, and disseminate these innovations to partner enterprises in other locations as well as work with manufacturers to introduce new, lower-cost substitutes.

In competitive markets where **customers consider the amount or type of raw material as quality markers**, enterprises risk an erosion in sales if the majority of customers opt for competitors who market and fulfill these expectations. Depending on market conditions, the loss in sales could negate savings from reducing raw material costs. Markets with **challenging geographical conditions** such as hilly terrain or poor road conditions that **warrant higher raw material quantities** to minimize breakage during transportation or installation also limit the use of such practices.

*OPTIMIZE LABOR CAPACITY AND VARIABLE PAY TO REDUCE LABOR COSTS*

"Small LP" enterprises can reduce costs also by targeting labor expenses. The **contribution of "unpaid" labor** by the entrepreneur (and/or family members) can substitute or supplement paid labor to reduce costs. However, this practice limits scale because it constrains manufacturing capacity and is, therefore, feasible for "Low Revenue" enterprises. An enterprise aiming to increase sales will face challenges meeting demand if the entrepreneur does not hire paid laborers. Other challenges include competing demands on the entrepreneur's (and/or family's) time. Strenuous labor might be physically challenging or unappealing to some entrepreneurs.

**Employment of casual labor** (day or temporary labor)**,** whose pay is proportionate to their output, to supplement the enterprise's permanent labor capacity can optimize labor costs as demand fluctuates. Casual workers typically work as seasonal or part-time employees and increase an enterprise's production capacity to meet higher demand. This flexibility is crucial for a seasonal business such as sanitation and allows enterprises to manage costs, particularly during the lean period (e.g., the rainy season when fewer sales occur). However, in markets with a shortage of skilled labor, enterprises will be compelled to offer higher wages, permanent employment, or both to ensure they have adequate capacity to fulfill demand. MBS programs can share information about seasonal sales patterns in their micro-markets with enterprises, which can optimize labor capacity and composition (i.e., casual or permanent) in keeping with their scale and knowledge of local labor market conditions.

### 5.2.2. Strategic Path 2: Enterprises with the capacity to invest and an appetite for risk should focus on a revenue-led strategy


To increase their profits, we recommend "Small LP" enterprises operating **in high-demand markets** pursue a **revenue-led strategy**. A revenue-led strategy requires enterprises to invest in **customer acquisition** (to leverage the "number of customers driver"), aim for **premium positioning** (to leverage the "price" driver)**, target affluent customers** (to leverage the "product mix"), and **expand their product system** (to leverage the "additional sanitation-related products" driver). Implementing several practices together, however, requires investment and is fraught with significant execution risk that can potentially reduce instead of increase profit. Enterprises pursuing a revenue-led strategy should **prioritize investing in demand activation**, which is (or should be) essential for MBS interventions. However, growing the customer base with low profitability (i.e., profit per customer) could result in "Small LP" enterprises becoming "Large LP" enterprises. Therefore, we also present an alternative path in Box 7 that prioritizes profitability before scale.

*INVEST IN DEMAND ACTIVATION, OFFER FINANCIAL ASSISTANCE SERVICES, AND/OR EXPAND TO NEW TARGET MARKETS*
Enterprises can acquire more customers by investing in **demand activation mechanisms** to complement or substitute entrepreneurs' marketing efforts. Enterprises can also increase their addressable market by expanding **geographically** to micro-markets in the vicinity. **Offering installment payment schemes** can differentiate them from competitors and expand their target market to include less affluent customers who would otherwise refrain from purchasing toilets due to cash flow constraints. They can also **opportunistically partner with MFIs** to complement their installment schemes and with **market-compatible subsidy programs** to target **poor households** if such mechanisms are present in their micro-markets.

- **Invest in demand activation**

  Enterprises should **engage demand activators** to substitute or complement the entrepreneur's marketing efforts. The potential upside of additional sales and the limited downside—an upfront financial investment is not required if demand activators are paid on a commission-basis—makes the demand activation mechanism suitable for all enterprises, including those in markets with limited demand. Independent demand activators amplify an enterprise's reach in both their home and new micro-markets. The mechanism is critical for customer acquisition, especially when entrepreneurs are unwilling or unable to undertake high-

touch, enterprise-led, active marketing activities (e.g., door-to-door sales, village meetings). An entrepreneur's reticence may stem from the opportunity cost, muted demand in the market, or gender-related constraints. MBS programs can help enterprises by initially training demand activators and sharing templates for marketing material (e.g., posters, pamphlets, flip-books), which incorporate tried-and-tested messaging.

- **Expand geographical footprint to reach a larger number of customers**

  Enterprises can increase the size of their addressable market by **expanding to new geographies**. Geographic expansion is dependent, however, on several factors beyond the entrepreneur's control. Accessibility of new markets is dependent on a **good quality road network to transport products** without damage. The **intensity of competition** from entrenched local sanitation enterprises may limit new customer acquisition and the ability to price at levels that compensate for **increased logistics costs**. Such a strategy is, however, **unlikely to require significant additional investment in assets** because entrepreneurs with existing businesses most likely own a vehicle for delivery. MBS programs can assist entrepreneurs in targeting new micro-markets by sharing market intelligence as a public good.

- **Assist customers overcome financial liquidity constraints**

  Enterprises can increase sales by **selling toilets on installment plans**. Offering financial assistance helps customers tide over **cash flow constraints,** typically a function of the agriculture cycle in rural markets, and **avoid deferring their purchase**. Our research shows that repayment defaults are low and manageable, and offering credit is often a necessity in markets where it is an established transactional norm. MBS programs can inform enterprises about customers' preferences (or constraints) for financing the purchase of toilets based on formative or other research. For example, WaterSHED encouraged many enterprises to offer installment plans based on research that ascertained a sizeable demand for this service among potential customers (Pedi, et al., 2014).

- **Partner with MFIs and market-compatible subsidy programs to boost sales when such mechanisms are available**

  Enterprises averse to assuming the risk of default can **collaborate with lenders** (e.g., MFIs) if they operate locally and offer sanitation loans to facilitate access to credit. Such partnerships can assist enterprises in targeting population segments that would otherwise be unable to afford a toilet. However, enterprises are unlikely to actively establish such partnerships by themselves. MBS programs can assist enterprises by facilitating the presence and participation of MFIs in sanitation markets.

  Enterprises can also opportunistically boost sales by **partnering as suppliers to subsidy programs** if present in their markets. Although subsidy programs risk distorting markets, they offer opportunities to improve enterprise viability if they are market-compatible, i.e., fulfill demand through private sector supply and have accurate targeting mechanisms. Phasing their introduction into a micro-market also helps to reduce market distortions. For example, Cambodia's policy mandates that subsidies target only poor households and should be introduced in a commune only when improved sanitation coverage crosses 60 percent to avoid market distortions to unsubsidized demand (Ministry of Rural Development, 2016). MBS interventions could facilitate partnerships between subsidy programs and sanitation enterprises, especially if subsidy programs are likely to recruit entrepreneurs independent of a program's

point of view. Active engagement by MBS programs can help ensure the appropriate design of subsidy programs and issues, primarily market-distortion, are addressed relatively early in the lifecycle of a subsidy program.

*TEST OPPORTUNITIES TO OPTIMIZE PRODUCT PRICES*

"Small LP" enterprises are advised to explore opportunities to raise prices if they are significantly below the market average. Monitoring local competition to match the average market price can improve both revenue and profit. Alternatively, enterprises can market their products as **"high-quality"** toilets by demonstrating product strength and durability to justify raising prices. The impact of higher prices on gross profit margins depends significantly on the intensity of local competition and the additional cost for enhancing quality. Raising prices, at best, will expand gross profit margins (i.e., a price premium over competitors) or, at most, help maintain margins. In highly competitive markets, however, raising prices carries a significant risk of lowering sales since customers will have ample choice. Considering "Small LP" enterprises have low sales, to begin with, a more pragmatic approach is to focus on increasing the number of customers before affecting any price changes. MBS programs can assist such enterprises by periodically evaluating the efficacy of pricing changes in improving profits.

*TARGET NICHE MARKETS TO REORIENT THE PRODUCT MIX TOWARDS HIGHER PROFIT PRODUCTS*

"Small LP" enterprises can target niche markets comprised of **affluent households with preference and willingness to pay** for relatively more expensive toilets (e.g., double or deeper pits instead of single-pit toilets). Enterprises can adopt modular product system designs that allow bundling additional substructure (e.g., additional pit) and interface (e.g., dual-set toilets in Nigeria) components to target affluent households. Modular product systems do not increase an enterprise's investment because only the product configuration changes, but the technology and components are the same.

Increasing the sales of products that carry high profit per unit as a proportion of total sales raises the average profit per customer, and consequently, the total profit of the enterprise. The practice is most effective in markets with a sizeable base of affluent-yet-unserved households. However, even in other markets, enterprises can target a limited base of affluent customers because the sale of each expensive toilet, even if infrequent, can significantly raise the average profit per customer. MBS programs can develop modular product system designs as a public good and advise enterprises on expanding their product range using such systems.

*INCREASE SHARE OF WALLET BY EXPANDING THE PRODUCT SYSTEM*

Enterprises can increase their share of the customer's wallet (i.e., customer's total spend on a toilet distributed among one or more suppliers of sanitation-related components) by offering them the **convenience of purchasing more or most, if not all, toilet-related components** together (i.e., the "one-stop-shop" or "turnkey solution provider" model (USAID, 2018)). Expanding the product system, typically by offering components and construction material for the superstructure (e.g., doors, roof panels, floor, wall tiles), increases the average revenue and average profit realized per customer. Additionally, the added convenience can help the enterprise capture market share from competitors offering fewer components.

The feasibility of this practice is predicated on customer preferences and willingness to procure all supplies from a single supplier instead of self-aggregating from multiple suppliers, for instance, to seek a bargain. Further, a critical mass of customers willing to fulfill their needs from one supplier is needed to justify stocking the additional components. Enterprises need to have adequate financial resources, i.e., equity or credit, to fund the higher working capital expense for the additional inventory. Implementers

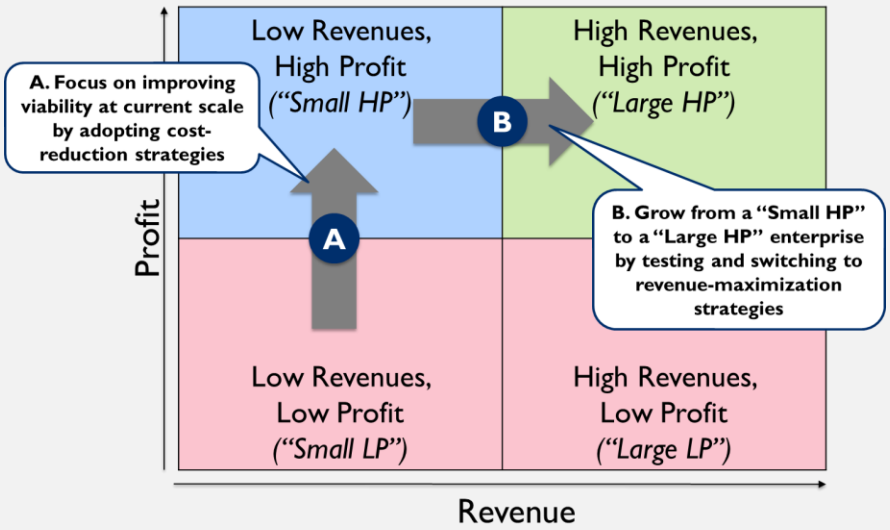
can help enterprises make decisions on expanding their product system based on formative research on customers' buying preferences, especially the propensity to self-aggregate.

**Box 7: A pragmatic alternative to Path 2: Scaling "Small LP" enterprises**

A major limitation of strategic Path 2 to scale "Small LP" enterprises is the execution risk of implementing several business practices simultaneously. The revenue-led strategy can severely test managerial capabilities and stress their financial resources. Failure to implement some or all aspects of a revenue-led strategy properly is fraught with risk, and the enterprise may find its profit and viability eroded.

Implementers could consider a potential **pragmatic, two-step approach** for "Small LP" enterprises. First, they can implement a cost-reduction strategy to increase profits and build their investment capacity. Next, they can assess market conditions and explore opportunities to adopt a revenue-led strategy and scale (Figure 29).

**Figure 29: An alternative two-step process to grow "Small LP" into "Large HP" enterprises**




However, transforming from a "Small HP" to a "Large HP" enterprise has inherent tradeoffs. For instance, the cost-reduction strategy that is characteristic of a "Small HP" is incompatible with the business practices associated with a revenue-led strategy. We recommend that enterprises consider the benefits and tradeoffs between operating a high-profit margin, low volume business and scaling as a means to increase profit.

### 5.2.3. Strategic Path 3: "High Revenue" enterprises operating with sub-optimal profit should focus on a margin expansion strategy


The third path is suitable for "Large LP" enterprises that have **high sales** but **sub-optimal costs or prices**, resulting in low profits (and low viability). We recommend such enterprises focus on improving margins or the profit earned per sale. Such enterprises can target the profit drivers of **costs**, **prices**, **product mix**, **additional sanitation-related products**, or all depending upon their unique circumstances.

A **cost-reduction strategy** for a "Large LP" enterprise is distinct from the strategy recommended for "Small LP" enterprises. While cost-reduction practices such as raw materials optimization or substitution are options if they are not detrimental to sales, substituting paid labor is not feasible given their scale. More importantly, "Large HP" enterprises can take advantage of their scale by procuring materials in bulk to secure volume discounts from suppliers.

"Large LP" enterprises also differ from "Small LP" enterprises in their capacity to **raise prices**. "Large LP" enterprises have a demonstrated ability to acquire customers and, therefore, can afford a moderate decline in sales (in response to higher prices). For instance, we estimated that a "Large LP" enterprise in Bihar (India) could transform into a "Large HP" if it matched the average market price with just 40 percent of its existing number of customers. Such enterprises will require assistance in evaluating the tradeoff and understanding the extent to which they are willing to sacrifice a reduction in their customer base.

"Large LP" enterprises can improve their **common product mix** or sell **additional sanitation-related products** recommended in the revenue-led strategy. These practices are appropriate in markets where customers value the convenience of one-stop shops or turnkey solutions over self-aggregation from multiple suppliers. The higher profit realized per customer combined with their existing scale has the potential to amplify their profit significantly.

**Table 2: Summary of guidance to improve enterprise viability**

| STRATEGIC PATH | GUIDANCE | ENABLER | LIMITATIONS |
|---|---|---|---|
| | ***Cost Reduction Strategy to improve the viability of "Small LP" enterprises at small-scale*** | | |
| ***Cost Reduction Strategy*** | Re-engineer raw material quantities and composition to reduce raw material costs | • Over-engineered existing product designs<br>• Suitable lower-cost substitutes available locally<br>• Manufacturing processes un-optimized for the most expensive components | • Risk of reduced sales if customers associate product quality with quantity or type of raw material<br>• Over-engineering may be a necessity in unfavorable geographies |
| | Optimize labor capacity to reduce labor costs | • Limited demand or infrequent sales<br>• Entrepreneur's capable and willing to undertake physical labor<br>• Availability of casual, skilled labor | • In labor-scarce markets, hiring workers on commercially unfavorable terms to maintain capacity may be necessary |
| | ***Strategy Limitation: Enterprises following this strategy might not be able to scale*** | | |
| | ***Revenue-led Strategy to improve the scale and profitability of "Small LP" enterprises*** | | |
| ***Revenue-led Strategy*** | Invest in demand activation | • Commission-based system appropriate for most markets, including low-demand markets | • Overhead to recruit, train, and manage demand activators<br>• Shortage of skilled labor might limit the enterprise's ability to service demand |
| | Offer financial assistance to customers (installments or loan/subsidy referrals) | • Financial capacity and risk appetite to extend credit<br>• Credit providers (e.g., MFI) present in the market | • Credit is not a differentiator in markets where it is a norm |
| | Service more markets | • Limited additional investment required<br>• Good road network to access other markets<br>• Low competition in new target markets | • Challenging road infrastructure and geographic conditions could impede or raise the cost of transportation |
| | Partner with subsidy programs to opportunistically boost sales | • Local presence of market-compatible subsidy programs | • Subsidy programs could prefer engaging a few, relatively large enterprises<br>• Targeting lower-income households could limit sales to low-priced, low-margin toilets |
| | Charge higher prices by signaling better quality | • Customers willing to pay more for perceived quality<br>• Entrepreneur's reputation for quality / high level of trust enjoyed in the community | • Increase in costs due to higher usage of raw materials to signal better quality might limit the margin expansion |
| | Target niche markets to sell higher profit products | • Large affluent population without sanitation coverage | |
| | Increase share of wallet by expanding the product system | • Customer willingness to pay for convenience | • Increase in working capital requirement |
| | ***Strategy Limitation: Requires strong managerial competence and resources to implement multiple practices simultaneously*** | | |
| | ***Margin Enhancement Strategy to improve the profit of "Large LP" enterprises that operate at scale*** | | |
| ***Margin enhancement strategy*** | Procure raw material in bulk | • High sales volumes to justify bulk procurement and financial capacity | |
| | Raise prices | • Entrepreneur reputation and ability to differentiate based on quality | • Markets with intense price competition |
| | Improve product mix by targeting niche markets | • Large base of affluent, unserved households<br>• Modular product systems to target diverse customer segments | |
| | Increase share of wallet by expanding the product system | • Customer willingness to buy from one supplier and pay for the convenience | • Increase in working capital requirement |

## 5.3. RECOGNIZE THAT SOME (INDEED MANY) SANITATION ENTERPRISES MAY NOT HAVE A VIABLE OR SCALABLE PROPOSITION

Implementers should recognize that failure or exit of some enterprises is not unique to sanitation and is a characteristic of most, if not all, markets. Such enterprises may not have the potential to improve profit or scale due to internal and/or external factors. For instance, an entrepreneur may choose to focus on their primary business and lack the motivation to identify and undertake measures to improve the viability of the sanitation enterprise. Market conditions such as intense competition combined with limited unserved demand (e.g., markets with high sanitation coverage) can force some enterprises to exit.

We recommend that when recruiting entrepreneurs with existing businesses, implementers focus on entrepreneurs who are successful in their current business and are willing to start sanitation enterprises, and not their stated growth aspirations. But as performance data emerges over time, implementers should concentrate their limited resources to advise and support enterprises that have a demonstrated desire and potential to improve their viability.

Where market conditions impede creating and/or maintaining viable sanitation enterprises, implementers need to assess if MBS needs to be supplemented with complementary approaches such as CLTS and/or bolstered through subsidies (USAID, 2018). In all conditions, we recommend that demand should still be fulfilled by sanitation enterprises to ensure that the solution takes into account customers' needs and preferences and the long-term market sustainability is not distorted through short-term interventions.

## 5.4. FACILITATE THE DEVELOPMENT OF A SANITATION MARKET SYSTEM INSTEAD OF DIRECT PARTICIPATION

While the recommendations to improve the viability of sanitation enterprises place the onus, largely, on the enterprises, we found that enhancing sustainability is largely a function of the design of MBS programs. Our analysis indicates that programs can substantially enhance the sustainability of enterprises and market supply by minimizing dependencies on external, non-market actors. To achieve this, MBS programs need to implement three practices to enhance enterprises' financial and operational independence.

### 5.4.1. Help enterprises account for all short- and long-term expenses in their pricing

Enterprises **do not account for all costs—operational and capital investment, e.g., commissions to sales agents, cost of molds used in casting components—if they are borne by an MBS program**. While these interventions may be intended as one-time or temporary, the sustainability of the enterprise will be impacted if enterprises find these expenses unaffordable or significantly lower their profit and, thus, their financial incentive. "Low profit" enterprises, in particular, will be impacted if they do not generate profits adequate to finance the additional costs.

Implementers should **ensure that enterprises account for all costs in their pricing** to avoid experiencing a decline in profit once non-market support is withdrawn. More importantly, full costing should be encouraged as early as possible in the program cycle. For instance, WaterSHED's *Hands-Off* program in Cambodia initially trained demand activators and introduced them to sanitation enterprises. However, enterprises were encouraged to pay commissions directly to demand activators from the start. As a result, even after the program withdrew from active market facilitation, enterprises continued paying demand activators because they had ascertained the value of this mechanism and factored their costs in product prices.

### 5.4.2. Extend product design methodologies to lower the cost of capital equipment

The experience in Nigeria shows that the cost of molds—a vital capital asset for sanitation enterprises—is prohibitively high for sanitation enterprises. While WaterAid Nigeria loaned the molds free of cost to incentivize entrepreneurial entry, we estimate that most enterprises are unlikely to generate profit adequate to finance replacement molds.

Implementers can extend design principles such as re-engineering, which are conventionally applied to product system design, to manufacturing equipment and methods (USAID, 2018). These may range from adopting low-cost materials, developing modular designs for molds so that only damaged parts need replacement, or extending the life of molds through improved maintenance (e.g., applying a coat of oil before casting concrete).

### 5.4.3. Localize the value chain at the onset or early in the program

Implementers often intervene to fill critical gaps in sanitation value chains by directly participating in the market (e.g., supplying components, managing demand activators) or providing non-market support to upstream suppliers (e.g., order guarantees). Such interventions create operational dependencies on implementers and risk market continuity once support is withdrawn and alternatives are unavailable.

Implementers need to localize the value chain as early as possible not only to eliminate the dependency but also to observe if interactions between market actors are occurring properly and intervene if necessary. Deliberate efforts to localize the value chain early will improve the likelihood of enterprises accustomed to independently interacting with other market actors without intermediation.

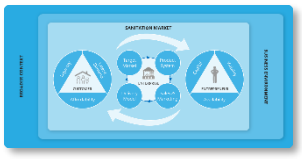
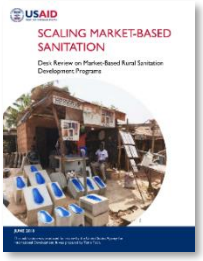
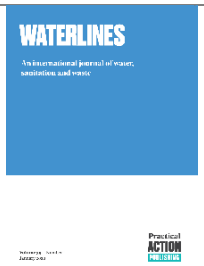
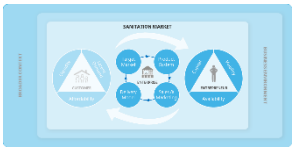
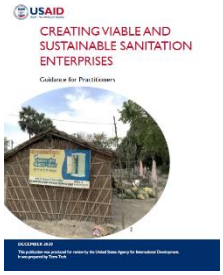
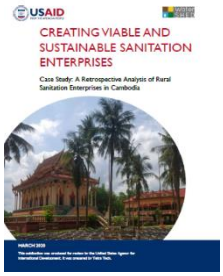
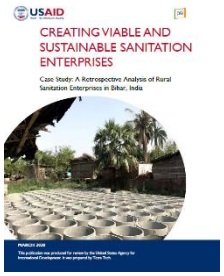
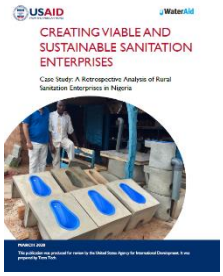
## 5.5. TRACK ENTERPRISE PERFORMANCE BEYOND SALES METRICS

The financial performance of enterprises, in any line of business, not only in sanitation, provides a starting point to assess their viability, diagnose issues, and make strategic choices to enhance performance. While our partner programs did not track financial metrics, they had a cursory understanding of enterprises' performance by monitoring periodic sales volumes and the program staff interactions with entrepreneurs. However, the lack of actionable data is widespread and a severe challenge in the broader sanitation sector. In our experience of analyzing MBS interventions, few programs track toilet sales, if at all, and even where they do, reporting metrics are inconsistent—ranging from toilets built, households "reached," or individuals "reached" (USAID, 2018; Agarwal, et al., 2020).

To address the paucity of data required for this study, we conducted detailed interviews with entrepreneurs and built Profit and Loss (P&L) statements for their sanitation enterprises. This data enabled us to conduct comparative analyses and understand the drivers of enterprise performance. Funders and implementers desiring to improve MBS programming and outcomes should expand the scope of monitoring and evaluation systems to include enterprise performance metrics. A rich repository of performance metrics such as revenue and profit margins at different levels, i.e., gross, operating, and cash net margins (see Annex B.3.1.1), will enable implementers to investigate the factors influencing the viability and sustainability of enterprises in their contexts and provide the advisory support enterprises require to grow and thrive. Financial performance metrics, especially a longitudinal series, will not only help implementers develop strategies in their contexts but also contribute to the global knowledge base.

USAID/WASHPaLS has developed a toolkit to aid implementers in understanding the viability and sustainability of sanitation enterprises under their purview. The toolkit, based on the methods used in this study, consists of in-depth explanations of concepts, guides on collecting and analyzing data, and customizable templates. Visit WASHPaLS for this and other resources located at USAID Globalwaters.

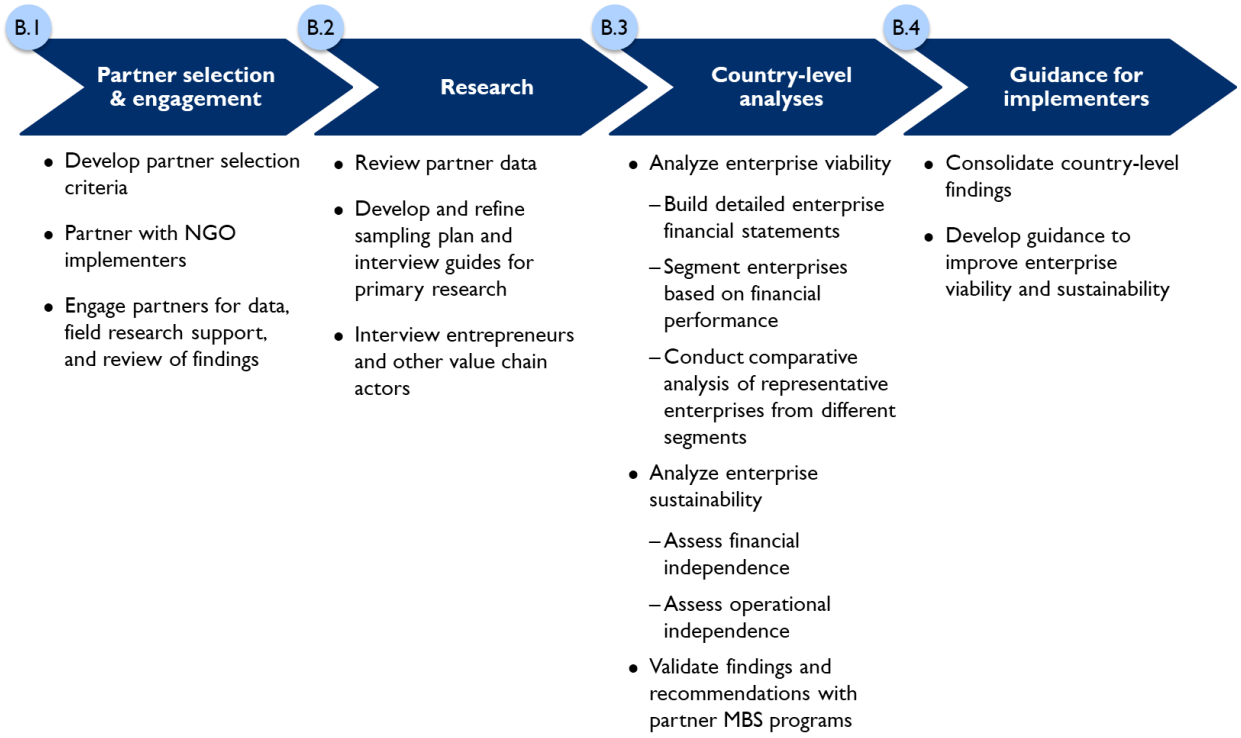
# ANNEX A: USAID/WASHPaLS MBS RESOURCES

| Domain | Resources |
|---|---|
|  <br>**Sanitation Market System** |  <br>[Desk Review: *Scaling Sanitation Markets*](#)<br>  <br>[Article: *Global Assessment of grant-funded, MBS projects*](#) |
|  <br>**Sanitation Enterprise & Entrepreneur** |  <br>**Report**: [*Creating Viable and Sustainable Sanitation Enterprise—Guidance for Practitioners*](#)<br>**Country Case Studies**<br>  <br>[*Cambodia*](#)<br>  <br>[*Bihar (India)*](#)<br>  <br>[*Nigeria*](#)<br>  <br>[Training Tool: *Designing Viable Sanitation Enterprises*](#)<br>  <br>**Toolkits**: ***Enterprise Recruitment & Viability and Sustainability Diagnostic*** (forthcoming) |

# ANNEX B: DETAILED METHODOLOGY

We adopted a multi-stage process (Figure 30) to identify sanitation enterprises for a detailed analysis that would help us answer the research questions. In this annex, we detail the steps described briefly in Section 2.

**Figure 30: Methodology for the retrospective study of rural sanitation enterprises**




## B.1. PARTNER SELECTION AND ENGAGEMENT

### B.1.1. Develop partner selection criteria

Adequately addressing the research question required that our partner, MBS programs (or interventions), demonstrate characteristics that would enable the analysis of as diverse a base of enterprises and contexts as possible. We, therefore, identified the following characteristics of our potential partners:

- ***Varying contexts:*** Each of the selected interventions should be in different countries to maximize our ability to explore trends across contexts.
- ***Range of sanitation enterprise viability***: The intervention selected should have sanitation enterprises across a spectrum of viability—positive deviants (entrepreneurs who outperformed their peers), entrepreneurs who have exited the sanitation market, and entrepreneurs who did not enter the sanitation market.
- ***Diverse sanitation entrepreneur profiles***: There should be a range of entrepreneur profiles, including diversity in experience, existing assets and capabilities, and other business lines they operate.

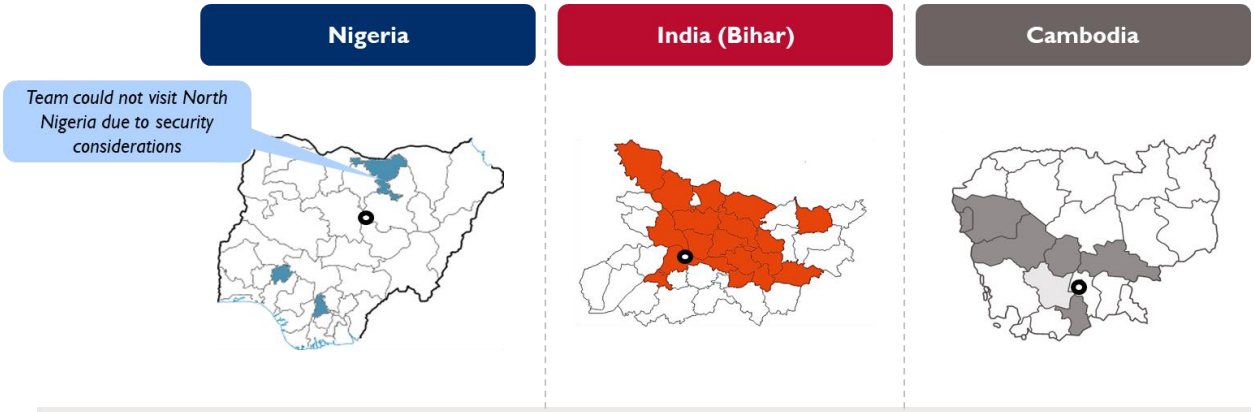
- ***Levels of supply chain penetration***: The selected geographies should have entrepreneurs present in areas where supply chains are well-penetrated, as well as in those where supply chains are under-penetrated (e.g., areas away from the district center).
- ***Different delivery models***: There should be a variety of delivery models and the number of services offered.
- ***Range of product system offerings:*** There should be a range of different product system components (substructure, interface, and superstructure) offered.
- ***Access to enterprise finance***: The target geographies should have the presence of financial institutions (e.g., non-banking financial institutions, MFIs, cooperative banks), and some entrepreneurs should have access to finance (can be formal and informal).

### B.1.2. Partner with NGO implementers

Based on the above criteria, we identified and partnered with three interventions (Figure 31), which were also part of the 13 intervention case studies in *Scaling Market-Based Sanitation* (USAID, 2018):

- PSI's Supporting Sustainable Sanitation project, India;
- WaterSHED's *Hands-Off* project, Cambodia; and
- WaterAid's Sustainable Total Sanitation project, Nigeria.

**Figure 31: Partner interventions**




| Intervention | STS<br>*WaterAid Nigeria* | 3Si<br>*PSI India* | Hands-Off<br>*WaterSHED* |
|---|---|---|---|
| **Geographical scope** | 3 states | 19 districts | 8 provinces |
| **Number of active sanitation enterprises** | 11 | ~700 | ~400 |

### B.1.3. Engage partners

Our program partners engaged with us on multiple fronts:

1. ***Data sharing***: The MBS program partners supported the retrospective study by sharing available data on sanitation enterprises as well as on contextual factors such as sanitation coverage from their Management Information System (MIS), Monitoring and Evaluation (M&E) system, or any other previous research studies. In addition, we interviewed key program staff

members for their perspectives on the diversity of performance amongst the enterprises they supported.

2. ***Support during field research***: Our partners helped coordinate field research by identifying and scheduling interviews with enterprises and associated supply chain actors as per the sampling plans prepared by WASHPaLS staff whilst advising on logistics to ensure efficiency. Partners provided a field support team comprising of 2-3 staff members to make introductions to enterprises, which was critical since interviews required 1.5 – 2 hours of entrepreneurs' productive time. In Cambodia, interviews were conducted by partner staff in Khmer with real-time translation to facilitate WASHPaLS staff's interaction with the interviewees.
3. ***Review of findings***: Following the analysis, partners reviewed and contributed their perspectives on the findings.

## B.2. RESEARCH

### B.2.1. Review partner data

We received data from partners to inform the field research plan and support the subsequent analysis phase. Across the three interventions, partners shared partial or complete data on:

1) **Enterprises:**
   a) Enterprise details such as the name of entrepreneur, location, date of recruitment
   b) Reported sales of an enterprise by date and customer location
   c) Quantitative data on profile (e.g., share of sanitation in livelihood) for select enterprises
   d) Qualitative data on the profile of enterprise (e.g., experience) for select enterprises
   e) Qualitative interviews notes about the experience of female entrepreneurs (only in Cambodia)
2) **Demand activators:**
   a) Details such as name, location, associated sanitation enterprise, gender, and age
   b) Sales made by demand activators by date and customer
3) **Location characteristics:**
   a) Sanitation coverage
   b) Unique contextual factors (e.g., the propensity of flooding in a geographic unit in Bihar, India)

Considering there were gaps or inconsistencies in data due to multiple sources (e.g., enterprise details and sales), we collaborated with partners to clean and standardize data to the extent possible. The data was used to a) create a sampling plan that represented diversity in enterprise performance and broader context; b) identify knowledge gaps and accordingly prepare interview guides; and c) to analyze in conjunction with data collected during field research.

### B.2.2. Develop and refine sampling plan and interview guides for research

*B.2.2.1 SAMPLING PLAN*

We created the sampling plan for sanitation enterprises and other value chain actors. We conducted a few pilot interviews to validate our sampling plan and had to change our sampling plans substantially for Cambodia and Bihar following the pilot interviews.

To identify an interview sample that was diverse and representative, we first developed the key dimensions to segment the base of sanitation enterprises supported by the MBS programs:

- **Location diversity within a program**: We intended to interview enterprises in locations with varied contextual factors in order to understand their impact on enterprise viability.

- **Enterprise performance diversity within a program**: Ideally, we wanted to study positive deviants to compare and contrast their practices with a cohort of low to moderate performers.

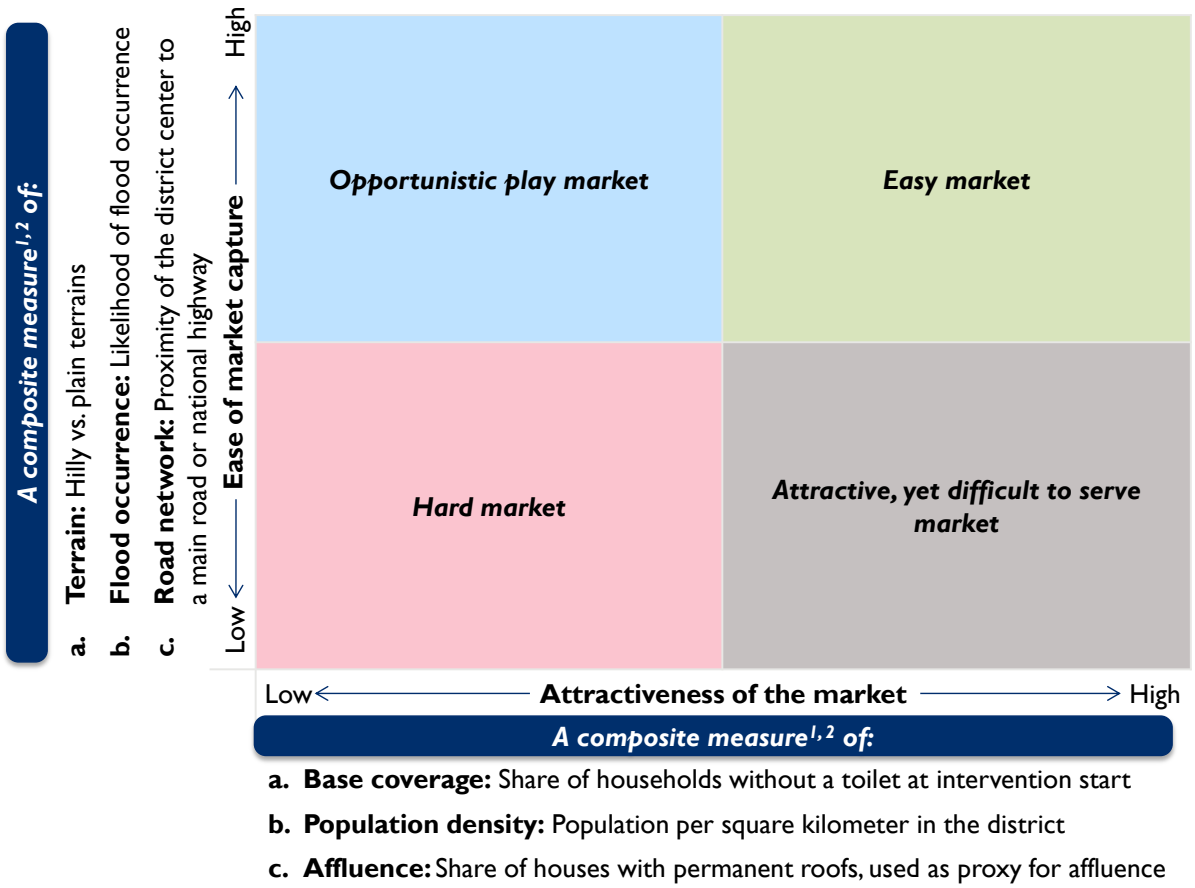
### Location diversity

To assess the relative ease of operating in a location, we gathered data (using both the partner data shared as well as other secondary sources) at the level of the relevant administrative/geographical unit on two broad parameters:

1) ***Attractiveness of the market***: This indicates the market size for toilets and included factors such as population density, base coverage, presence of demand generation campaigns, or customer affluence, and
2) ***Ease of market capture***: This includes factors that might make serving a market difficult, such as road connectivity, the tendency of the geography to flood, or challenging terrain.

Based on the above two factors, the locally-relevant geographical units [communes in the case of Cambodia and blocks in the case of Bihar (India)] were segmented into four types of markets, as shown in the example of Cambodia in Figure 32.

**Figure 32: Location segmentation in Cambodia**




*Notes: 1. The scores for each variable are on a scale from 0 to 1, with 1 being the highest and most favorable score; 2. A weighted average of the individual scores for the variables was taken to arrive at the composite measure, with each variable assigned an equal weight*

## Enterprise performance

We assessed enterprise performance based on the data provided by the partners. We considered sales, sales growth, and length of business experience as parameters to assess the "success" of enterprises. For example, enterprises that had high monthly sales on average (based on a cutoff decided in consultation with partners) with a positive or mixed sales growth trend were considered top performers. Similarly, enterprises with low monthly sales on average and with positive or negative sales growth were designated as low performers.

Based on the location segmentation and enterprise performance, we created a sampling plan to balance the diversity of location and performance characteristics. The sampling plan for Cambodia is provided in Figure 33 as an illustration.

**Figure 33: Initial sample for Cambodia**

Ease of market capture: Low → High

Attractiveness of the market: Low → High

***Opportunistic play market***

| Enterprise group[1, 2, 3] | No. |
|---|---|
| Top performers[4] | 3 |
| Low performers[5] | 3 |
| Exited - low sales[2, 6] | 1 |
| Exited - moderate sales[2, 6] | 1 |
| Moderate performers[7] | 4 |
| Unstable, despite high sales[8] | - |
| **Total** | **12** |

***Easy market***

| Enterprise group[1, 2, 3] | No. |
|---|---|
| Top performers[4] | 4 |
| Low performers[5] | 3 |
| Exited - low sales[2, 6] | 1 |
| Exited - moderate sales[2, 6] | 1 |
| Moderate performers[7] | 4 |
| Unstable, despite high sales[8] | 1 |
| **Total** | **14** |

***Hard market***

| Enterprise group[1, 2, 3] | No. |
|---|---|
| Top performers[4] | 5 |
| Low performers[5] | 1 |
| Exited - low sales[2, 6] | - |
| Exited - moderate sales[2, 6] | 1 |
| Moderate performers[7] | 3 |
| Unstable, despite high sales[8] | 1 |
| **Total** | **11** |

***Attractive, yet difficult to serve market***

| Enterprise group[1, 2, 3] | No. |
|---|---|
| Top performers[4] | 3 |
| Low performers[5] | - |
| Exited - low sales[2, 6] | - |
| Exited - moderate sales[2, 6] | 1 |
| Moderate performers[7] | 2 |
| Unstable, despite high sales[8] | |
| **Total** | **6** |

*Note: 1. Historical sales performance was assessed using WaterSHED data; 2. High sales: >14 toilets per month; Moderate sales: 5-14 toilets per month; Low sales: <5 toilets per month; 3. Positive sales growth: Increasing sales volume year-on-year trend; Negative sales growth: Decreasing sales year-on-year trend; Mixed sales growth: Both increasing and decreasing sales year-on-year trend; 4. Top performers: Active enterprises with high sales and positive or mixed sales growth; 5. Low performers: Active enterprises with low sales; 6. Exited: Inactive entrepreneurs with >12 months without a sale; 7. Moderate performers: Active enterprises with moderate sales; 8. Unstable, despite high sales: Enterprises with high sales but remained inactive for at least 12 consecutive months*

The sampling approach was developed only for Bihar (India) and Cambodia. In Nigeria, all the active enterprises were interviewed since the program had only 11 active enterprises.

## Modifications to the initial sampling plan

Several limitations of the sampling plan became apparent in our initial interviews. As a result, we had to modify our approach. First, the data gathered from secondary sources, such as the coverage data, was different from ground realities in a few geographical units. Second, even though we attempted to interview enterprises in "hard" and "easy" markets, the conditions were not drastically different—for instance, road connectivity was not a challenge in most places; even in challenging locations such as hilly terrain, enterprises were situated closer to the plain. Third, while we had segmented performance by

sales growth and duration, they seemed to be less important factors as we judged the business acumen of enterprises on the field. Therefore, we decided that the focus of interviews should be on *high sales* and *low sales* enterprises.

Further, due to logistical constraints, we made minor adjustments to the sampling plans. Additionally, we also interviewed demand activators, input suppliers, masons, lenders, and implementer staff in order to gain a comprehensive perspective of enterprise viability and sustainability. The types of market actors that we interviewed are listed below.

**1)** Entrepreneurs: We interviewed enterprises across three categories to ensure that we captured the diversity in enterprise performance:
   a) Active enterprises: entered the market and displayed a range of performance
   b) Inactive enterprises: were approached but did not enter the market
   c) Exited enterprises: entered the market but had exited

**2)** Associated supply chain players: We interviewed different supply chain actors and credit providers to validate data from entrepreneur interviews and to deepen our understanding of the broader sanitation ecosystem in each context. These actors included:
   a) Input suppliers: distributors and wholesalers of toilet inputs and/or components
   b) Demand activators: independent sales agents or other sanitation demand activators who account for a sizeable share of sales for sanitation enterprises supported by the three intervention partners
   c) Masons: specific to toilet installation and maintenance, where relevant
   d) Financial institutions: specific to institutions (e.g., MFIs) that extend credit to sanitation entrepreneurs, where relevant

3) Implementers: We also conducted interviews with the implementing staff to understand the context and gather additional insights:
   a) Agency leads: national or regional program leads of partner implementers
   b) Field staff: local-level staff of partner implementers

#### *B.2.2.2 INTERVIEW GUIDES*

For each actor indicated above, we developed comprehensive interview guides containing a mix of quantitative and qualitative questions. The areas of inquiry for each actor are listed below:

**ENTREPRENEURS IN THE MARKET**

- Entrepreneur profiles and timeline in sanitation
- Product and business model offerings of entrepreneurs
- Target market(s) of entrepreneurs
- Business experience and existing capabilities at the time of entry into sanitation
- Investments made by entrepreneurs
- Sanitation revenues and costs and the importance of sanitation in overall business
- Types of assistance from funders/implementers
- Financing options that entrepreneurs avail of and reasons for availing the options
- Entrepreneur's reasons for entering and retention
- Challenges faced in the business and methods to overcome challenges
- Future opportunities

**ENTREPRENEURS WHO EXITED THE MARKET**

- Entrepreneur background
- Sanitation products offered and business model

- Sanitation business line revenues and costs
- Relative importance of sanitation in overall business/income-generating opportunities
- Reasons for exiting sanitation business
- Current business and reasons for joining the current business
- Other opportunities considered but not pursued and reasons for not pursuing them

**INPUT SUPPLIERS**

- Terms of providing trade credit
- Criteria for providing trade credit
- Revenue and net earnings of key input suppliers

**DEMAND ACTIVATORS**

- Background of demand activators
- Total and net earnings of demand activators
- Strengths of demand activators – network, sales experience, etc.
- Reasons to start selling sanitation products compared to other available opportunities
- Relationship with sanitation entrepreneur(s)

**MASONS**

- Background of masons
- Total and net earnings of masons
- Strengths and challenges of masons – experience, etc.
- Reasons to start serving the sanitation sector
- Relationship with sanitation entrepreneur(s)

**LENDERS**

- Terms of loans offered to sanitation businesses
- Criteria for lending
- Source and costs of funds for lenders
- Challenges faced in lending to sanitation businesses

WASHPaLS experts reviewed the guides, and their suggestions were incorporated into the guides. We also piloted the interview guides by interviewing 1-3 actors in each category and country. Our experience with the pilot led to further refinement of the interview guides.

### B.2.3. Interview entrepreneurs and other value chain actors

All interviews were conducted by WASHPaLS staff except in Cambodia, where WaterSHED staff conducted interviews in the Khmer language with real-time translation to facilitate WASHPaLS staff's interaction with the interviewees. Each entrepreneur interview lasted for 1.5-2 hours, on average. We conducted field research over a period of two months across the three countries.

The data collected from field research was combined in a comprehensive MS Excel-based data capture template, which contained fields for both quantitative and qualitative data parameters, including for responses to open-ended questions. Qualitative data were coded/categorized, where possible and appropriate, to create an efficient analysis process.

## B.3. COUNTRY-LEVEL ANALYSIS

For each country, we conducted two sets of analyses—viability and sustainability—to identify the underlying factors that led to better or poor viability of enterprises, as well as practices that impacted the sustainability of enterprises and sanitation market systems.

### B.3.1. Analyze Enterprise Viability

#### *B.3.1.1 BUILD DETAILED ENTERPRISE PROFIT AND LOSS (P&L) STATEMENTS*

We used the data from field research to develop P&L statements for all the 66 enterprises to assess the profits made by sanitation enterprises. A P&L is a financial statement that shows an entity's revenues, expenses, and profit earned (or lost) during a particular period (see Table 3). It also enables a comparison of performance across periods and by line item. In this study, the P&L tool was used to ascertain the revenues, expenses, and profits for 66 sanitation enterprises in 2017 (2017-18 in Nigeria).

**Table 3: Definitions of P&L line items for sanitation enterprises**

| | |
|---|---|
| **REVENUE** | Revenue generated by selling toilets, toilet components, delivery, or installation services |
| **(-) COST OF GOODS SOLD** | |
| Raw Material Costs | Costs of procuring raw materials such as cement, sand, pans, pipes, etc. In most cases, this includes the delivery cost from input supplier to the enterprise |
| Direct Labor Costs | Cost of labor for casting, delivery, pit digging, installation |
| Transport (raw material procurement costs) | Cost of transporting raw material from input supplier to the enterprise, if not including in raw material cost |
| **(=) GROSS PROFIT** | |
| **(-) SELLING, GENERAL AND ADMINISTRATIVE EXPENSES** | |
| Transport (transport costs to customer/ channel) | Delivery cost incurred in delivering toilets to customers. This could be transport rent in the case of rented transport or cost of fuel in the case of owned transport |
| Marketing (commissions) | Commissions paid to demand activators for sale of toilets |
| Marketing (non-commissions) | Non-commissions expenses such as marketing collateral or meeting expenses incurred |
| Repairs | Repairs of assets, such as molds, etc. |
| **(-) OTHER OPERATING EXPENSES** | |
| Land Rent | Rent paid for operating the business from a location, apportioned by share of sanitation in overall business revenue |
| Utilities | Costs of electricity, water, apportioned by share of sanitation in overall business revenue |
| **(=) EARNINGS BEFORE INTEREST, TAXES, DEPRECIATION, AND AMORTIZATION** | |
| **(-) DEPRECIATION** | Non-cash expense of allocating the cost of an asset, such as molds or trucks over its useful life, apportioned by share of sanitation in overall business revenue |
| **(-) BAD DEBT** | Credit offered to a customer of the toilet business that cannot be recovered |
| **(-) INTEREST EXPENSE** | Interest on loans taken by the business, apportioned by share of sanitation in overall business revenue |
| **(=) NET PROFIT** | |
| **(+) DEPRECIATION** | Non-cash expense not typically recognized by informal enterprises |
| **(=) CASH NET PROFIT** | Cash income earned (or lost) by the enterprise in the period |

### Computing cash net profit from a P&L statement

The conventional P&L statement computes net profit depicted in Table 3. Our analysis, however, went further to compute cash net profit for segmenting enterprises based on performance. This is because small rural sanitation enterprises typically understand profit in terms of cash. Enterprises receive revenue in the form of cash from customers who purchase toilets. Similarly, all expenses (except depreciation) involve cash payments by the enterprise.

Depreciation, however, is an accounting method for expensing long-term assets (e.g., production equipment) that does not entail the enterprise making a cash payment annually for these assets. The cost of a long-term asset is spread over its useful life because its value is "expended" or "consumed" over multiple years, unlike other expenses that are incurred during the year. However, many, if not most, entrepreneurs operating informal businesses do not consider non-cash expenses such as depreciation. For this reason, we compute cash net profit by adding back the depreciation amount that is deducted when calculating net profit (see Table 3).

### Key limitations of the P&L limitations created for this analysis

First, since the P&L tool was created only for 2017, it is possible that some enterprises currently classified as "High Profit" or "Low Profit" would have a different categorization in another year. However, since the interviews were time-bound and based upon the entrepreneur's memory, we determined that creating P&Ls for the most recent year was the only feasible option.

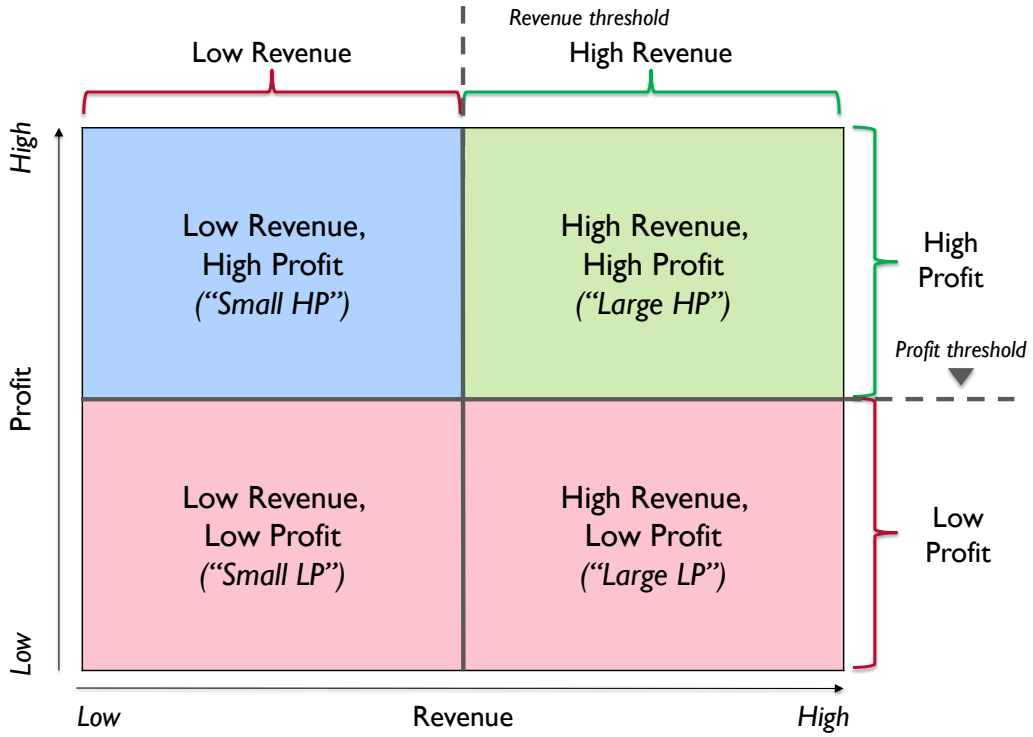
Second, we made assumptions on the calculation of the depreciation line item because it was not easily understood by some enterprises. Therefore, in interviews, we collected data on the life of an asset or made reasonable assumptions when unavailable and distributed the asset purchase value over the life of the asset. For instance, assumptions about the operating life of a vehicle or a mold were based on data provided by other entrepreneurs. Further, if we were unable to gather a particular data point, say labor rate for casting a ring, we have assumed a value by analyzing enterprises located in close proximity.

Third, after creating the P&L statement, it was not possible to discuss the results with all enterprises because calculations were time-consuming and we faced language constraints in Cambodia. We were also conscious of the additional demand we would place on our respondents' time, who had already spent 1.5-2 hours with us during the interview.

#### *B.3.1.2 SEGMENT ENTERPRISES BASED ON FINANCIAL PERFORMANCE*

We segmented enterprises into four categories on the basis of their revenue and cash net profit (CNP): "Small HP," "Large HP," "Large LP," and "Small LP" (Figure 34).

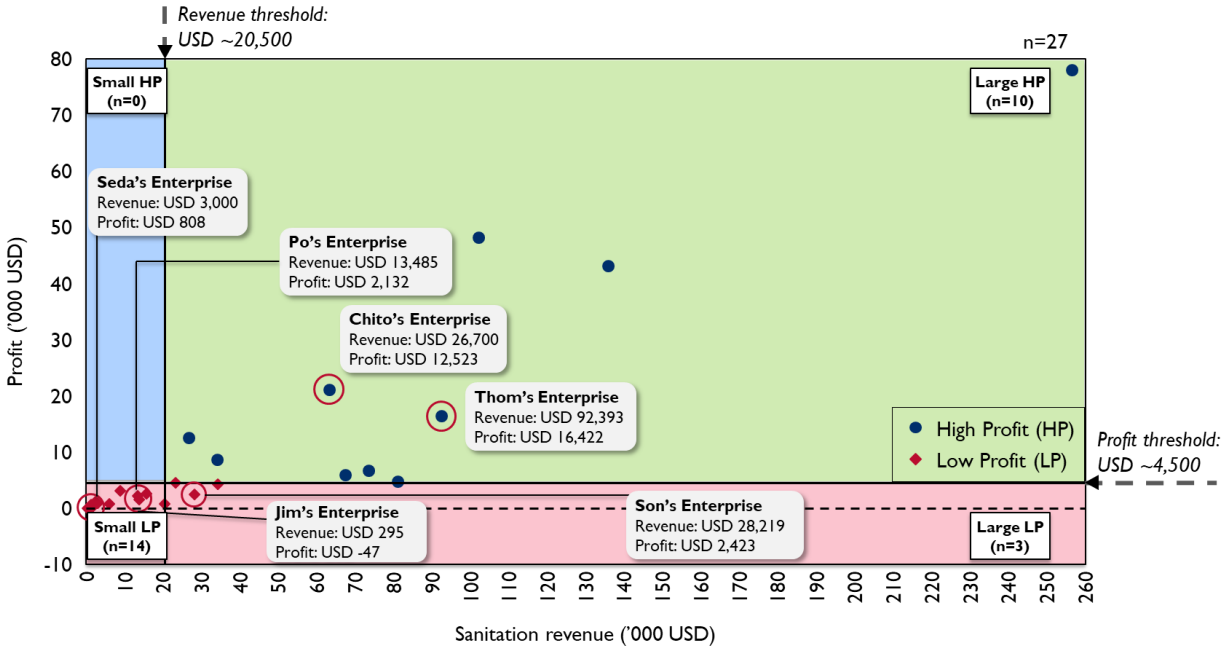
**Figure 34: Enterprise performance categories**




Enterprises were classified as "Low Revenue" or "High Revenue" depending upon their revenues being below or above the median revenue for the sample in their geography, respectively. Similarly, enterprises were classified as low profit ("LP") or high profit ("HP") on the basis of their CNP being below or above a certain threshold for their respective geography. The CNP threshold for Cambodia was USD 4,500 (twice a typical construction worker's annual income); it was USD 2,700 (double a typical mason's annual income) for Bihar (India). We assumed that entrepreneurs would expect a significantly higher profit than these comparable occupations, which employ the technical skills required for a sanitation enterprise but entail lower investment and risk. In Nigeria, the CNP threshold was the median profit generated by the 11 enterprises we interviewed, given the small sample size. This threshold is a small fraction of annual full-time mason income and represents the minimum profit expected from the sanitation enterprise, considering that the majority of entrepreneurs we interviewed spent a small part of their time on the sanitation enterprise. We chose to use these thresholds as they met our objective of identifying enterprises that differed significantly in terms of performance and studying their differences.

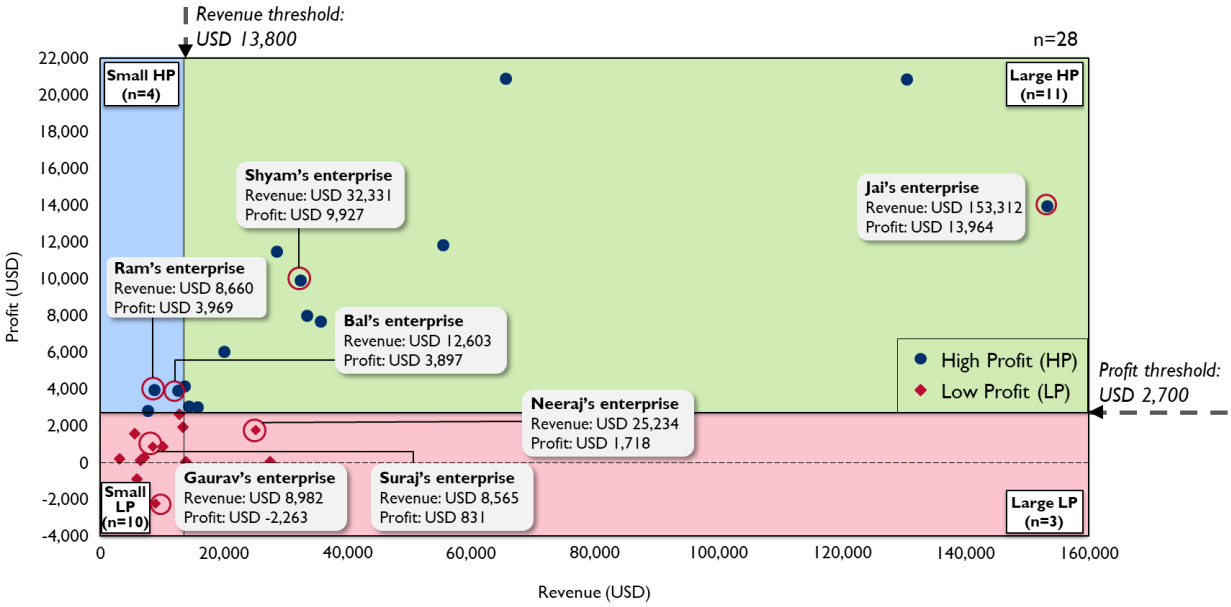
To understand the strategic choices that drive enterprise performance, we selected one or more enterprises from each category for deeper study. Our selections were meant to identify a range of lessons for improving viability, conditioned on our hypothesis that enterprises in different categories employed distinct business practices under different business conditions. The segmentation and sample enterprises selected for each country are depicted in Figure 35 – Figure 37.

**Figure 35: Enterprise segmentation in Cambodia**



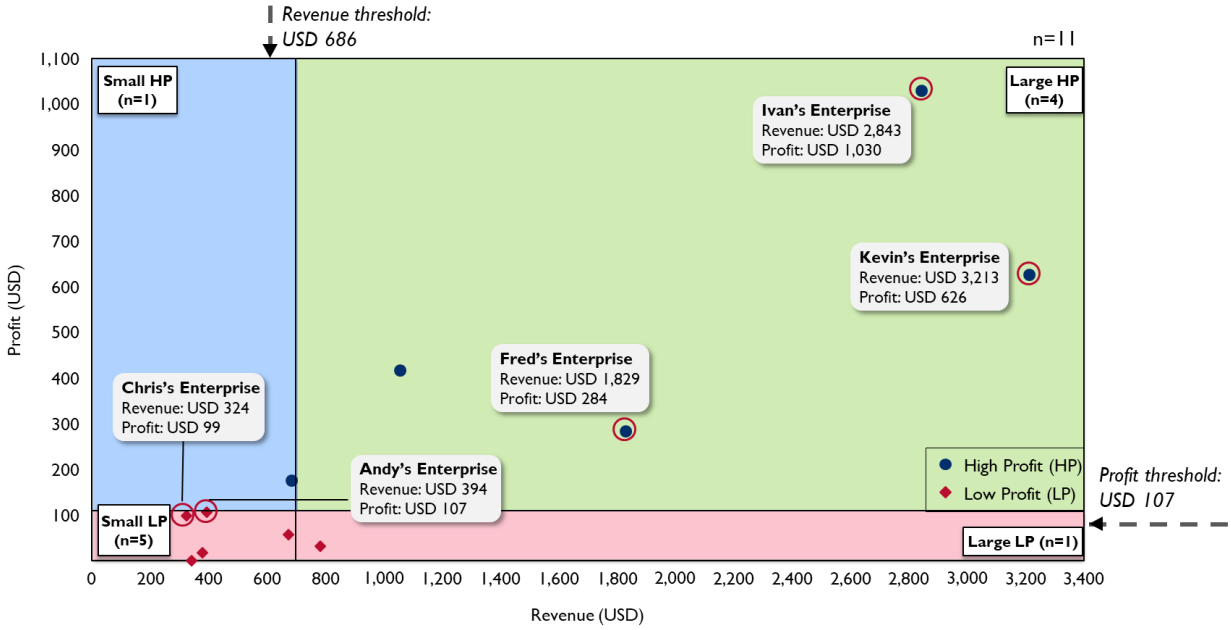

*Note: 1. Enterprises with cash net profits higher than USD 4,500 (twice an average construction worker's wages over a year) are considered 'High Profit". Other enterprises are considered 'Low Profit; 2. Cash net profit = Net profit + Depreciation; 3. P&Ls were constructed for CY-2017, 1 USD = 4,000 KHR exchange rate used throughout this report*

**Figure 36: Enterprise segmentation in Bihar (India)**




*Note: 1. Enterprises with cash net profits higher than USD 2,700 (twice an average mason's income over a year) are considered 'High Profit". Other enterprises are considered "Low Profit"; 2. All figures for enterprises were calculated for CY-2017, 1 USD = 65 INR rate used throughout this report*

**Figure 37: Enterprise segmentation in Nigeria**




*Note: 1. Enterprises with cash net profits higher than USD 107 (the sample median) are considered 'High Profit". Other enterprises are considered "Low Profit"; 2. All figures for enterprises were calculated for the financial year April 2017-March 2018, 1 USD = 350 NGN rate used throughout this report*

### *B.3.1.3 CONDUCT COMPARATIVE ANALYSIS OF PERFORMANCE ACROSS ENTERPRISE SEGMENTS*

For each country, we then used a business tool called "Gross Margin Variance Analysis" to compare a pair of enterprises (one less profitable than the other) at a time. Gross Margin Variance Analysis (GMVA) is a business analysis tool used to identify drivers of the differences between gross profits. The tool is conventionally used by a single business or business division to analyze the differences in performance between two periods, or else between planned/budgeted and actual performance. GMVA can help prioritize factors that drive differences in gross profits and guide subsequent responses. For instance, if the size of the customer base is the most important driver, then a business can analyze activities that influence and bolster customer acquisition.

We repurposed GMVA to compare the gross profits of two enterprises for identifying the contribution of each of the five drivers of profitability to the difference in gross profits earned by two enterprises. In our analyses, we compared enterprises with relatively weak and strong financial performance (as assessed by their respective gross profits). Analyses at the level of gross profit rather than net profit were deemed appropriate since the cost of goods sold (or manufacturing toilets), which determines gross profit, accounted for the bulk of costs across all enterprises. GMVA identified the predominant drivers behind the difference in gross profits between each pair and guided the subsequent (quantitative and qualitative) analyses for underlying explanatory factors. To ensure findings were broad-based, we conducted the GMVA analyses for several pairs of enterprises in each country depicted in Figure 35 – Figure 37.

#### Calculation of Gross Margin Variance Analysis

To illustrate the process and interpretation of the GMVA, we present an illustrative example. Consider two widget manufacturers, Company 1 and 2. Assume that Company 1 sells widget A and widget B and

that Company 2 sells widget A, widget B, and a third widget, widget C. Now consider the following set of assumptions:

**Table 4: Assumptions for GMVA example**

| | COMPANY 1 | COMPANY 2 |
|---|---|---|
| | **CUSTOMERS** | |
| | 100 | 200 |
| | **VOLUMES SOLD PER CUSTOMER** | |
| Widget A | 5 | 10 |
| Widget B | 1 | 2 |
| Widget C | - | 2 |
| | **PRICE PER PIECE** | |
| Widget A | 5 | 6 |
| Widget B | 4 | 4 |
| Widget C | - | 4 |
| | **GROSS MARGIN (%)** | |
| Widget A | 24% | 20% |
| Widget B | 25% | 20% |
| Widget C | - | 30% |
| | **COST PER PIECE (USD)** | |
| Widget A | 3.8 | 4.8 |
| Widget B | 3.0 | 3.2 |
| Widget C | - | 2.8 |
| **Total gross profit (USD)** | **700** | **3,200** |

*Note: Total gross profit calculated as the sum of (Price per piece – Cost per piece) x (Units sold per customer) x (Number of customers) for each widget.*

Company 1 generates an annual gross profit of USD 700, while Company 2 generates a gross profit of USD 3,200. GMVA allows us to decompose the gross profit difference between the two companies (see Table 5 for the list of variables used for the subsequent equations).

First, we consider the effect caused by the difference in the customer base. This calculation entails increasing the number of customers only; if Company 1 sold widget A and B to 200 customers instead of 100, at its current prices, costs, and volumes sold to each customer, the company would make an additional USD 700 in gross profit.

Mathematically,

(1) $Variance\ (customers) = (\boldsymbol{customers_2} - \boldsymbol{customers_1})\text{x}\ GPPC_1$

where GPPC1 is the gross profit per customer of Company 1.

With the adjusted number of customers for Company 1, the next source of gross profit difference is the difference in prices charged by Company 2 for the two products; if Company 1 sold widget A for USD 6 (instead of 5) and widget B for USD 4 (same price as currently charged, so no impact for widget B) to

200 customers (the customer base of company B), at its current volumes sold per customer, it would results in a USD 1,000 increase in gross profits.

Mathematically,

(2) $Variance\ (price) = [(\boldsymbol{price_{2A}} - \boldsymbol{price_{1A}})\ \text{x}\ customers_2\ \text{x}\ volume_{1\text{A}}] + [(\boldsymbol{price_{2B}} - \boldsymbol{price_{1B}})\ \text{x}\ customers_2\ \text{x}\ volume_{1\text{B}}]$

Similarly, the differences in the cost of production lead to a difference in gross profits as well. The signs are reversed (compared to the price equation) as higher costs reduce gross profit, whereas higher prices increase gross profit. The impact is computed by multiplying the difference in cost of goods sold for each product with Company 1's number of volumes sold per customer to the adjusted customer base, i.e., the same number of customers as Company 2. In this example, Company 2 has higher costs than Company 1; hence the impact (USD 1,040) will be negative, i.e., the higher costs reduce Company 2's gross profits relative to Company 1.

Mathematically,

(3) $Variance\ (cost) = [(\boldsymbol{cost_{1A}} - \boldsymbol{cost_{2A}})\ \text{x}\ customers_2\ \text{x}\ volume_{1\text{A}}] + [(\boldsymbol{cost_{1B}} - \boldsymbol{cost_{2B}})\ \text{x}\ customers_2\ \text{x}\ volume_{1\text{B}}]$

The three equations above consider Company 1's sales volumes sold per customer. We also have to consider the difference in volumes sold per customer of widget A and B (the common products sold by both enterprises), referred to as the "common product mix" effect. This effect would assume that Company 1 sells 10 and two units of widget A and B, respectively, instead of 5 units and one unit, respectively, to the adjusted customer base of Company 2, at Company 2's prices and costs. This results in a USD 1,360 increase in gross profit.

Mathematically,

(4) $Variance\ (common\ products\ mix) = [(\boldsymbol{volume_{2A}} - \boldsymbol{volume_{1A}})\ \text{x}\ (customers_2)\ \text{x}\ (price_{2\text{A}} - cost_{2A})] + [(\boldsymbol{volume_{2B}} - \boldsymbol{volume_{1B}})\ \text{x}\ (customers_2)\ \text{x}\ (price_{2\text{B}} - cost_{2\text{B}})]$

Finally, there is also a difference in gross profit attributed to the sale of widget C, an additional product sold only by Company 2. This results in a USD 480 gross profit increase.

Mathematically,

(5) $Variance\ (additional\ products) = customers_2\ x\ volume_{2\text{C}}\ x\ (price_{2C} - cost_{2C})$

The GMVA "bridge" for this example is offered in Figure 38.

**Figure 38: GMVA bridge of Company 1 and Company 2**

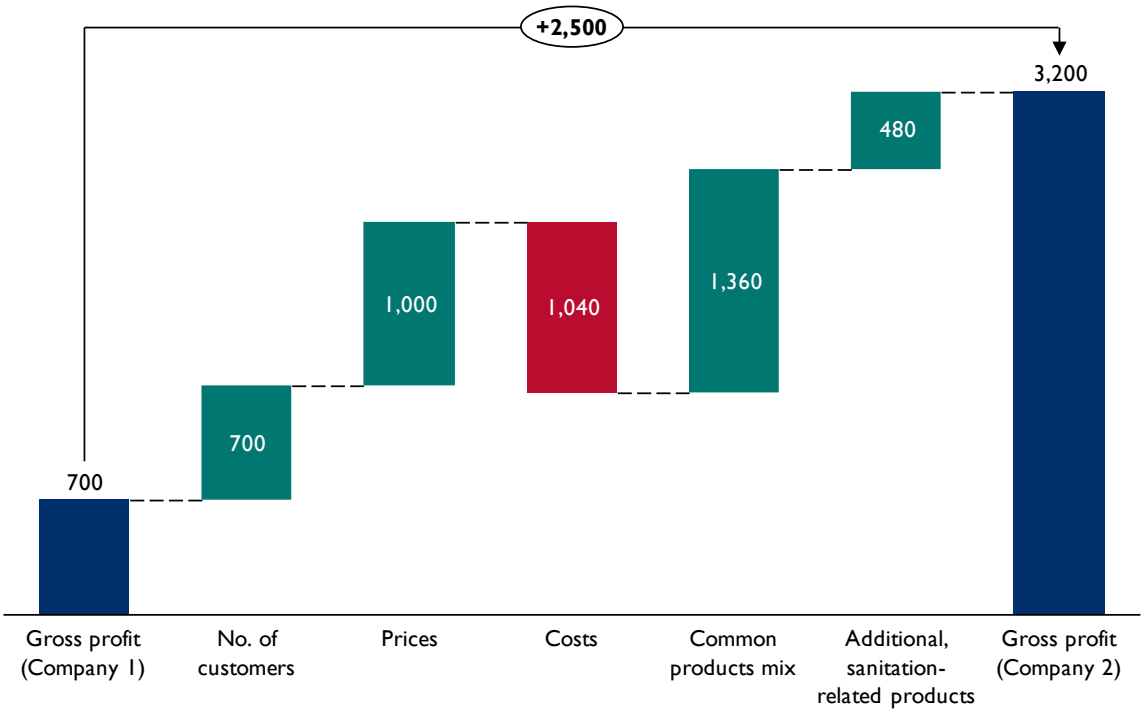



**Table 5: Definition of variables used in the GMVA example**

| VARIABLE | DEFINITION |
|---|---|
| **$customers_1$** | Number of customers of Company 1 |
| **$customers_2$** | Number of customers of Company 2 |
| **$GPPC_1$** | Gross profit per customer of Company 1 |
| **$GPPC_2$** | Gross profit per customer of Company 2 |
| **$volume_{1A}$** | Product (widget A) volumes sold per customer of Company 1 |
| **$volume_{2A}$** | Product (widget A) volumes sold per customer of Company 2 |
| **$volume_{1B}$** | Product (widget B) volumes sold per customer of Company 1 |
| **$volume_{2B}$** | Product (widget B) volumes sold per customer of Company 2 |
| **$volume_{2C}$** | Product (widget C) volumes sold per customer of Company 2 |
| **$price_{1A}$** | Unit price for widget A product of Company 1 |
| **$price_{2A}$** | Unit price for widget A product of Company 2 |
| **$price_{1B}$** | Unit price for widget B product of Company 1 |
| **$price_{2B}$** | Unit price for widget B product of Company 2 |
| **$price_{2C}$** | Unit price for widget C product of Company 2 |
| **$cost_{1A}$** | Unit cost of goods sold for widget A for Company 1 |
| **$cost_{2A}$** | Unit cost of goods sold for widget A for Company 2 |
| **$cost_{1B}$** | Unit cost of goods sold for widget B for Company 1 |
| **$cost_{2B}$** | Unit cost of goods sold for widget B for Company 2 |
| **$cost_{2C}$** | Unit cost of goods sold for widget C for Company 2 |

### B.3.2. Analyze Enterprise Sustainability

To understand sustainability (viability in the long-term), we evaluated the financial and operational independence of the selected (representative) enterprises. We assessed the enterprise's financial independence by evaluating if it would be able to finance business needs independently, and operational independence by evaluating if it could manage operations after implementers exit the market.

#### *B.3.2.1 ASSESS FINANCIAL INDEPENDENCE*

We compared its annual profit with recurring (annual) business needs—both in terms of the working capital required (capital invested in keeping the goods readily available and providing credit to customers) and the capital expenditure (e.g., the annualized cost of assets such as molds, trucks).

To evaluate an enterprise's ability to meet its recurring expenses, we assessed its dependence on external, non-market support (e.g., MBS programs) to meet these expenses and the likely impact on its profits if the support were withdrawn. Similarly, we assessed the enterprise's ability to incur capital expenditure by calculating the investment required to replace its capital assets when needed. We then calculated the share of the annual profit that the enterprise would need to set aside every year so that the accumulated savings could finance the replacement of equipment when required.

"Low profit" enterprises that would need to set aside a large proportion of their profits to finance recurring expenditure as well as to save for future capital expenditure are likely to face challenges to their sustainability, as the residual income is unlikely to incentivize entrepreneurs to stay invested in the business sufficiently.

#### *B.3.2.2 ASSESS OPERATIONAL INDEPENDENCE*

We assessed the operational independence of an enterprise by evaluating whether it benefitted from any ongoing non-financial, non-market support from the MBS program (e.g., the supply of raw material by the MBS program), and the enterprise's ability to continue operations if this support were withdrawn. We assessed the ability to continue operations by identifying any alternate local market actors who could provide the same support after the exit of non-market actors. We rated an enterprise as having low operational independence if the market lacked such actors or if they were less likely to replicate the non-market support to enterprises.

We also note that in some instances, enterprises may receive one-time operational support (e.g., one-time initial training on manufacturing toilets). We did not consider such support for assessing operational independence since enterprises are unlikely to need support again in the future.

### B.3.3. Validate findings and recommendations with partners

We presented the findings from each country to the respective partner to test if these resonated with their experience as well as fill knowledge gaps arising from the analysis. We incorporated their feedback and co-developed country-level case studies that present these findings. The companion case studies provide the basis and complement the guidance presented in this report.

## B.4. GUIDANCE FOR IMPLEMENTERS

At the culmination of this exercise, we consolidated the major findings from the three country case studies and derived guidance directed at MBS practitioners as well as sanitation enterprises, outlining the strategic choices and related practices they could implement in order to improve enterprise viability and sustainability.

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