Pit Emptying Businesses to Facilitate City Scale FSM
Lessons from Kigali, Rwanda

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Maximize volume of Fecal Waste Managed
Minimize Cost and Human Exposure
Pit Vidura by the numbers

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- Households Served: 233
- Average volume extracted/Pit: 1.5 m$^3$
- FS removed from communities: 350 m$^3$
- Current service price: $97 USD
Most of Kigali uses pit latrines

- Population: 1,132,686
- No sewer system
- 67% of Kigali’s residents live in dense unplanned settlements
- Majority of slum households use pit latrines
- When pits fill in dense areas, most commonly emptied using manual methods
Manual Emptying compromises public and environmental health

Full Pit Latrine → Manual Emptying → Disposal in Environment
Pit Vidura is an affordable and safe pit emptying service
Pit Vidura creates a win-win-win value proposition
Benefits to Customers
Households

• Reliable emptying service at competitive prices
• Reduced diarrheal disease due to safe waste removal and disposal
• Social status and pride associated with using a modernized service
Benefits to Service Providers

Pit Emptiers

- Expansion of potential market via branding and marketing
- Steady supply of jobs
- Reduction in risk of occupational accidents and illnesses with use of improved tools and equipment
- Increased social status
- Legalization of business

Manual Emptying

Pit Vidura
Benefits to Backend Users

Pivot Waste-to-Fuel Factory

• Access to a waste stream that will drive commercial viability

• Increased social and environmental impact
Pit Vidura operations are driven by data

- Data on logistics, location, customer attributes, and sludge quality informs
  - design and engineering of new tools
  - pricing strategy
  - marketing strategy
  - scale-up
Pit Vidura operations are focused on minimizing costs

• Goal: Break even on operational costs of emptying and transporting sludge to Pivot Works factory

• Bootstrap approach: operating revenue drives service design
Pit Vidura is focused on household, emptier, and backend user satisfaction

- Customer satisfaction surveys and service help line
- Focus groups with workers
- Monitor quality of sludge delivered to waste-to-fuel factory
Emptying logistics are complicated by the topography...Land of a thousand hills!

- 45% of empties are uphill from pit to road
- 80% of empties have a pit to road distance >20 meters
Work on a Pit-to-Road Pump that can speed up process, reduce labor, and increase pits emptied per day.
Cost Recovery is improving due to higher prices and more streamlined low touch marketing.
Determining optimal pricing & targeted marketing strategies is key to scaling services

- Working with local marketing firm to refine a value proposition that speaks directly to target customer needs

- Determination of price elasticity and generation of demand curve via willingness-to-pay study
Thank You