Technology development, business models and going to scale

Steven Sugden
Water for People
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It all started with the Gulper......

..... and everything seemed so simple.
My experience of developing technologies

- Stimulating
- Easy
- Intellectually challenging
- Practical – feel like you’re doing something
- Great fun

We had new brilliant ideas every week
If it seems easy, you are doing it wrong
Three years after inventing the Gulper, the only ones being used were provided by NGOs
Something is missing here
Paul Polak, IDE

“In my work with a multitude of affordable technologies over the past 30 years, one key feature has become abundantly clear: If you have met the challenge of designing a transformative, radically affordable technology, you’ve successfully solved no more than 10-20% of the problem. The critical other 80% of the solution lies in designing an effective marketing, distribution, and profitable business strategy that can be brought to scale.”
Who are the Gulper customers?
Two types of pit emptier,

1. Those who **have** to
2. Those who **want** to
Temporary pit emptier (have to)
Temporary pit emptier (have to)

• Unskilled manual labourer, competitive market
• “whilst something better comes along”
• Poorly educated
• Needs the money
• Not entrepreneurial
• Nobody dreams to be pit emptier

Would he buy a Gulper? No
Permanent pit emptier (want to)
Permanent pit emptier (want to)

Recognized it a good way to make a living.

- No capital cost
- No skill, except smiling
- Good money
- Easy work
- No promotion costs
- Monopoly and high demand
- Biggest risk - Alcoholism
Permanent pit emptier (want to)

• Perfect business model

• Advantage to keep it disgusting to prevent new entrants and charge a premium

Would he buy a Gulper? No
So who will buy a Gulper?

Enter the entrepreneur

“An enterprising individual who builds capital through risk and/or initiative”

What is the value proposition?

Total expenditure for emptying a pit = $27
Total income for emptying a pit = $57
Margin = $30
Start up business model

Entrepreneur

Operator

Customer
Start up business model

Operator

Entrepreneur

Instructs operator

Relationship developed

Customer

Pit emptied
Start up business model – Cash flow

Operator

Entrepreneur

Customer

Pays operator

Pays entrepreneur

No cash exchanges between customer and operator
Distance operator handling cash...

...because he will always take your money

• “It’s not a proper job ……”
• He always needs more money
• Family to feed, debts to pay
• Forge receipts – petrol pinched etc
• Private jobs for cash
• Steal the equipment
Expanding the business model

Two operators

Entrepreneur

More Customers

The limits of the entrepreneur to manage
Going to scale 1 – Crowding in
Going to scale – crowding in

Encouraged by –

• Readily available equipment
• Low capital cost equipment
• Easy to repair
• Spare parts available
Going to scale 2 – Employ a manager
Scaling up option 2 - employ a manager

- Usually a relative – less tempting to pinch
- Needs transport – and petrol money
- Mobile phone to keep in contact
- Needs an office

All will increase overheads, which needs more customers, and the more teams. Increased opportunities to embezzle
Equipment cost of scaling up

$400 = 4 \text{ teams for } $1,900

$1,500 = 4 \text{ teams for } $7,500

$4,000 = 4 \text{ teams for } $18,000

What value does a better device bring to the entrepreneur?

• Faster emptying does not enable more pits to be emptied. (Engineers Focus).
• The longest process is transporting to dump site.
• Possibly in a mature market
High cost equipment brings extra risks and costs

- Downtime waiting for spares
- More breakages and more expensive repairs
- Petrol pinching
- Engine pinching
- Guards at night
Scaling up option 3 - Franchising

- Make the best operators in micro-entrepreneurs
- It's hard to steal from yourself
- Operator buy in required

$300 possible, not $3000

Simple low cost equipment
All 3 scale up business models need equipment which is
• Low cost
• Simple to make
• Simple to repair
• Not worth pinching
Do not develop technology in an isolated bubble

Develop technologies that complement business models
Do we need a better mousetrap?

Every technology needs a clear value proposition.
Water for People BDS in Africa

- Enticing and supporting better entrepreneurs to the sanitation sector
- Developing technologies that enable businesses start and grow
- Developing ‘Business in a Box’ idea to allow simple replication
Masons, bloody masons

You cannot work with them, you cannot work without them.
Masons

• Latrines considered a small job
• Work as individuals
• Not interested in growing and developing process
• Will leave a contract to build a house
• Will not promote or seek work – sign of weakness
• Poorly trained and educated
• Often poor relationship with customers
• Build traditional designs with deep pit to maximize income
• Generally use too much material e.g. 4” slabs
Masons

But, projects and households rely on masons build latrines.

Very difficult for an entrepreneur to build a business model based on masons.
Solution ...

Deskill the latrine building so it is not reliant on masons.

Why not a modular solution?

Why not use the IKEA flat pack principle?
Value proposition

• Built by technicians, not masons
• Technicians easy to replace if one leaves
• Cost about the same as mason built latrine
• Built in a day
• No cement on site – nothing to pinch
• All delivered on a pick-up
• Low transaction costs for customer
• Can be easily removed – good for bank loans
• Enable entrepreneurs to develop simple business model which is easy to take to scale.
We have a supply chain problem
Concluding thought: Do we need to

Reinvent the toilet

or

Invent a sanitation industry
Thank you for your tolerance