Mapping a Path to Profitability:

Tools for Understanding Unit Economics
My Goals

**PROVIDE INSIGHT**: Sharper, strategic understanding of the business problem that many of you are trying to solve in low-income, last mile markets.

**WHET APPETITE**: Intrigued by the potential for operational model mapping and bottom up financial modeling tools to help (your) venture/s reach profitability.

Not giving you an answer to the problem  
Not a training session in application of the tools
The Tone
• All numbers are not created equal—financial models are useful only if they reflect the key underlying drivers of a venture’s economic performance.

• If you’re not modeling the downstream operating unit, you’re driving blindfolded.

• If you can’t show a credible path to profitability on paper, you’re very unlikely to to figure it out in a pilot—and certainly not in an efficient manner.

• Financial models are business model design tools—not justifications for a business model.
• The Problem: The Downstream Profit Squeeze
• The Gap: Modeling Blind Spots
• Modeling for Profitability:
  • Bottom-Up Financial Modeling
  • Operational Model Mapping
• Next Steps: Opportunities to Learn More
1. The Problem: The Downstream Profit Squeeze
Modern Distribution Ecosystem

UPSTREAM

Raw Materials

B2B

Energy, Transport, & Comms

DOWNSTREAM

Media

Movement of Information

Distributor

Sub-Distributor

Retailer

Movement of Product

Movement of Data

Movement of Money

Payments Businesses
The Channel Gap

Total net margins are insufficient to cover costs (Retail Price – Manufactured Cost)

UPSTREAM

DOWNSTREAM

B2B

B2C

Raw Materials

Energy, Transport, & Comms

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The Operating Unit: The Engine of a Business

A Different Business Model

Venture-Level View of CleanStar

The Operating Unit: The Engine of a Business

Corporate Office

Coordination & Scale Economies

Head Office

Coordination & Scale Economies

Operating Unit 1
Product

Operating Unit 2
Product

Operating Unit 3
Product

Operating Unit N
Product

N = x

km = x

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Downstream Profit Squeeze

**Downward Pressure on Operating Unit Revenues**
- Limited geographic reach
- Lower unit sizes & price points
- Lower consumption/use rates
- Slower adoption rates

**Upward Pressure on Operating Unit Costs**
- Smaller operating units with lower economies of scale
- High touch sales to drive sustained adoption
- Low literacy rates and smartphone penetration
- Cash-based payments

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Operating Unit: Foundation Variables

- **Reachable Market** \((R)\): the population of potential customers accessible by the operating unit
- **Customer Base** \((B)\): the percentage of the reachable market that are regular customers of the operating unit
- **Transaction Intensity** \((I)\): the time required to support the sales/service transactions the operating unit conducts with its customer base over the course of a month
- **Customer Load** \((L)\): the number of transactions that one (sales) person can manage in a month
How do these variables relate to your experience? What have you seen?

Operating Unit Performance = REVENUES / COSTS

REVENUES

COSTS

Reachable Market (R)

Customer Base (B)

Transaction Intensity (I)

Customer Load (L)
Filling the Gap: Solving for the Whole System

Model the Whole System

UPSTREAM

DOWNSTREAM

B2C

B2C + ?

?

2. The Gap: Modeling Blind Spots
Conventional modeling approaches conceal **unrealistic assumptions** about RBIL in the downstream operating unit.

Companies go to pilot with products at price points/margins that can’t reach profitability.
Modeling Blind Spots: Causes

**Scope**
Upstream vs Whole System

- Model up to the venture’s customer (e.g., distributor), assuming “traditional” margin structure will eventually work downstream

**Scale**
Top Down vs Bottom Up

- Build sales model at the level of the whole country, calculating costs based on general operating norms & rules of thumb (e.g., 1 salesperson should serve 30 customers)
Piloting the Channel
The Problem

The Traditional Corporate Ecosystem

The Accelerating Treadmill

One Product, Many Performances

Margin Boosting Platform

The Treadmill Effect

- Raises target sales
- Travel further and further away
- Hire more people
- Operating costs escalate
The Operating Unit Penetration Trap

Money You Make

\[\text{Price} \times \text{Margin} \times \text{Penetration} \times \text{Pop.}\]

= Money You Pay Out

Total Costs + Return on Investment

“Fixed” Variables

Fixed Variable

Rising operating unit costs weigh down the cost side of the equation...

To balance out the revenue side of the equation, penetration rates have to rise.

### The Operating Unit Penetration Trap

<table>
<thead>
<tr>
<th>Households</th>
<th>20,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly Operating Unit Costs</td>
<td>1,000</td>
</tr>
<tr>
<td>Cost Increase %</td>
<td>0%</td>
</tr>
<tr>
<td>Monthly Operating Unit Costs</td>
<td>1,000</td>
</tr>
</tbody>
</table>

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Pivots are Hard to Pull Off...Provided The Problem is Discovered

- Political constraints to pivoting model
- Customer constraints to pivoting models
- Pivots are very costly and very time-consuming
Reverse the conventional modeling approach:

- Model bottom-up from a single downstream operating unit
- Set a realistic penetration rate from which to build a realistic cost structure
- Use the operating unit penetration rate and cost structure to calculate required price/margin for "whole system" profitability.

RBIL Drives the Model
III. Modeling for Profitability:
   Bottom-Up Financial Modeling + Operational Model Mapping (BUFOM)
**Bottom-Up Financial Modeling & Operational Model Mapping (BUFOM)**

**WHAT?**
- Future snapshot of your venture operating profitably at “steady-state,” taken from the perspective of a single operating unit.

**WHY?**
- Ensures a venture can make, sell, & deliver what the customer wants at a price/margin that is profitable
- Surfaces the key pinch points and drivers of profitability that need to be the focus of the innovation process & pilot test (KPIs)

**WHEN?**
- Designed for start-up and early stage ventures working towards proof of concept of a new business model (new cost structure and margin structure)
Relating Costs to Levels of Profitability

- **Investment Profitability**
  - Self-scaling
  
- **Venture Profitability**
  - Subsidize investors

- **Operating Profitability**
  - Subsidize replication

- **Operating Losses**
  - Subsidize operating unit

- **Product Losses**
  - Subsidize product production

- **Running Costs**

- **Product Variable Costs**

- **Investment Costs, I**

- **Investment Costs, II**

- **Competitive interest rate on capital provided**

- **Working capital, development & launch costs, taxes**

- **Human resources, depreciation, & general running (e.g., marketing, advertising, training)**

- **Raw materials, components, packaging, duties/tariffs, shipping**

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A Different Business Model

BUFOM: Bird’s Eye View

Biz Activities

Whole Costs

Corporate Office

Coordination & Scale Economies

Head Office (Country)

Coordination & Scale Economies

S.S. Monthly Sales Transactions

Price/Margin Per Transaction

Operating Unit 1

Operating Unit 2

Operating Unit 3

Operating Unit N

Product

Product

Product

Product

Bottom-up financial modeling

Operational model mapping

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Bottom-Up Financial Modeling

Step 1: Bound the Operating Unit & Head Office

Step 2 (a): Estimate Operating Unit’s Running Costs

Step 2 (b): Estimate & Allocate Head Office Running Costs

Step 3 (a): Estimate Operating Unit’s Investment Costs

Step 3 (b): Estimate & Allocate Head Office’s Investment Costs

Step 4: Calculate Required Price & Margin

TOTAL RUNNING COSTS

TOTAL INVESTMENT COSTS

Steady State

P&L Costs

NPV Costs

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## Bottom-Up Financial Modeling

<table>
<thead>
<tr>
<th>Bound the Operating Unit &amp; Head Office</th>
<th>Estimate Operating Unit’s Monthly Running Costs</th>
<th>Estimate Operating Unit’s Investment Costs</th>
<th>Calculate Required Price &amp; Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much stuff and to how many people will we sell each month?</td>
<td>What would it cost each month to run and support all of our business activities given the amount of time each transaction requires?</td>
<td>What would it cost on a monthly basis to set up and scale the business, and pay the owners the return they require?</td>
<td>What price/margin do we need to charge for each of our products to absorb all of these “whole costs” each month?</td>
</tr>
<tr>
<td>• Customer Base</td>
<td>• Transaction Intensity</td>
<td>• Start-up Costs</td>
<td>• Allocation %</td>
</tr>
<tr>
<td>• Monthly transactions</td>
<td>• Human Resource</td>
<td>• Investment Returns</td>
<td></td>
</tr>
<tr>
<td>• Cap Ex Depreciation</td>
<td>• Debt</td>
<td>• Equity</td>
<td></td>
</tr>
<tr>
<td>• General Running</td>
<td>• Taxes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many operating units will we need?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• # of Operating Units at Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Operating Unit’s Whole Costs Per Month = $100,000

From “Bounding the Operating Unit”

Whole Costs Per Trans. = $1

Variable Costs per Trans. = $1

Total Product Cost = $100,000

# Trans/Mo = 100,000

• 50%
• $1.00

Price = $2.00

Product Cost

Revenues/Mo = $200,000

Whole Costs Per Month = $100,000

Fixed Costs

Single Product
### Monthly Whole Costs

<table>
<thead>
<tr>
<th></th>
<th>C</th>
<th>$</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OPERATING UNIT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Resource Costs/Mo</td>
<td>40,320</td>
<td>42,739</td>
<td>38%</td>
</tr>
<tr>
<td>Depreciation Costs/Mo</td>
<td>1,219</td>
<td>1,292</td>
<td>1%</td>
</tr>
<tr>
<td>Running Costs/Mo</td>
<td>18,406</td>
<td>19,510</td>
<td>17%</td>
</tr>
<tr>
<td>Start Up Costs/Mo</td>
<td>8,382</td>
<td>8,885</td>
<td>8%</td>
</tr>
<tr>
<td>Investment Returns/Mo</td>
<td>1,783</td>
<td>1,890</td>
<td>1.7%</td>
</tr>
<tr>
<td>Tax/Mo</td>
<td>535</td>
<td>567</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total Operating Unit Costs/Mo:</strong></td>
<td>70,644</td>
<td>74,883</td>
<td>66%</td>
</tr>
<tr>
<td><strong>HEAD OFFICE ALLOCATION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Resource Costs/Mo</td>
<td>8,096</td>
<td>8,582</td>
<td>8%</td>
</tr>
<tr>
<td>Depreciation Costs/Mo</td>
<td>59</td>
<td>63</td>
<td>0%</td>
</tr>
<tr>
<td>Running Costs/Mo</td>
<td>6,947</td>
<td>7,364</td>
<td>6%</td>
</tr>
<tr>
<td>Start Up Costs/Mo</td>
<td>2,714</td>
<td>2,877</td>
<td>3%</td>
</tr>
<tr>
<td>Investment Returns/Mo</td>
<td>14,283</td>
<td>15,140</td>
<td>13.3%</td>
</tr>
<tr>
<td>Tax/Mo</td>
<td>4,285</td>
<td>4,542</td>
<td>4.0%</td>
</tr>
<tr>
<td><strong>Total Allocated Corporate Costs/Mo:</strong></td>
<td>36,384</td>
<td>38,567</td>
<td>34%</td>
</tr>
<tr>
<td><strong>Total Whole Costs:</strong></td>
<td>107,028</td>
<td>113,450</td>
<td>100%</td>
</tr>
</tbody>
</table>
Operational Model Mapping

Systematic approach to detailing the activities needed to fulfill the three core functions of all businesses.

Flow of Product

Flow of Money

Flow of Information & Data
STEP 1:
List out operating flows on sticky notes

STEP 2:
List out Actors & Sites on sticky notes
STEP 3: Map the Flows Between & By the Sites, Right to Left

STEP 4: Flesh out the business processes & HR

Production & Dist

HR

Sales & Marketing

HR

Delivery & Aftersales

HR
Example: Primary Eye Care
One sales office (i.e., business unit) serves five central markets, with each central market serving an area of 5 wards.

Salespeople make weekly visits to the approximately 150 outlets — such as cosmetic shops, mid-range jewelers, and ready-made clothes (tbd) — across the 5 central markets carrying Fresh Focus glasses and accessories. Salespeople collect cash and re-stock the displays in each of the outlets. Outlets receive a commission on sales of glasses and components.

Activation Agents conduct monthly, approximately 2-hour long demonstrations at each of the outlets to support sales. Demonstrations highlight the broad functionality of the glasses (e.g., eye protection, low light vision, glare reduction, vision correction) and how glasses can be styled (using accessories and arms sold separately) to match outfits.

Mobile Store Front Agents operate “pop-up” shops inside the wards to create a local presence for the business and drive consumer awareness of the brand and value proposition. In addition to highlighting the glasses’ broad functionality and range of, Mobile Store Fronts can incorporate taking photos of consumers modeling glasses and post to social networking sites to help build buzz and create a brand community. A Mobile Store Front remains in place for 30 days before relocating to another ward. It returns to the ward after 3 months (i.e., 3 rotations in each ward in a year).

Consumers from the wards traveling to the central markets for larger, periodic purchases (typically monthly) purchase Fresh Focus glasses and components in one of approximately 30 outlets carrying the glasses.

The customer purchasing the glasses calls the toll-free number included with the glasses to schedule a free, in-home screening for the whole family by an Ophthalmic Technician.

The Ophthalmic Technician responsible for serving a specified territory travels to the customer’s home and screens the entire family. If the customer who purchased the glasses requires refracting, the refraction is also conducted at the same time at no cost. Any additional members requiring refraction will be done so at a small fee. The cost of the refraction will be deducted from the price of the glasses if and when they are purchased in the central market (the customer would receive a receipt from the Ophthalmic Technician to be presented at the outlet). During the screening, anyone diagnosed with an eye condition requiring more specialized attention will be referred to a partner tertiary hospital.

The Ophthalmic Technician Support Person collects daily all prescriptions from their assigned Ophthalmic Technician and takes the prescription and frames to the Lens Lab. The OT Support Person collects the finished glasses, and calls the customer to schedule an in-home fitting.
Example: Primary Eye Care

Business Unit Reach:
1,000,000 people
(5 markets x 5 wards/mkt x 40,000 people/ward)

Business Unit Start Up Cost:
Cap Ex: £27,100
Working Cap: £36,800
Example: Primary Eye Care

1,000,000 People Reached

42% of whom have Vision Impairment

85% are at Target Income Level

+ 25% Mass Market Adjustment

BUSINESS UNIT TARGET MARKET: 446,250

Business Unit Target Penetration: 8%

= 35,700 Eyeglass Customers per Business Unit

= 178,500 (5 x 35,700) People Screened per Business Unit

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Example: Primary Eye Care

1,620,485
Eyeglass Customers
(45 BU x 35,700 per BU)

~ 8,102,485
Screened
 Customers x Family Members
IV. Opportunities to Deepen the Learning
Next Steps in Planning

1. Technical Document
2. Financial Modeling Template
3. Regional Roadshows
Thank You!
Mapping a Path to Profitability: 
Tools for Understanding Unit Economics

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