Small-Scale Spirulina Farms

D-Lab Pro I: Final Presentation

Chelsea Supawit, Danielle Maillard, Kia Canning, Lauren Chew
Problem Definition

- We determined the **feasibility** of small-scale spirulina farms in Djibouti.
- Malnutrition affects the health of many Djiboutians.

**Idea:** family-based Spirulina operations
Project Vision
# Methodology

## Needs Assessment & Project Framing
- Client interviewed households

## Alternatives Analysis
- Examining various malnutrition approaches

## Prior Art
- Case studies

## SWOT Analysis
- Conversations with client and online research
Results: Needs Assessment & Project Framing

- 10 households interviewed
- Project framing changed client’s perspective
  - Moved from urban focus to rural focus
  - Client wants to begin awareness initiative
  - Client became more aware of sourcing challenges
## Methodology

<table>
<thead>
<tr>
<th></th>
<th>Needs Assessment &amp; Project Framing</th>
<th>Alternatives Analysis</th>
<th>Prior Art</th>
<th>SWOT Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Client interviewed households</td>
<td>Examining various malnutrition approaches</td>
<td>Case studies</td>
<td>Conversations with client and online research</td>
</tr>
</tbody>
</table>
Alternatives to Spirulina

Brainstorm & Initial Elimination

● Research on malnutrition approaches
● Elimination Reasons

Decision Matrix

● Rated using criteria
Methodology

01 Needs Assessment & Project Framing
- Client interviewed households

02 Alternatives Analysis
- Examining various malnutrition approaches

03 Prior Art
- Case studies

04 SWOT Analysis
- Conversations with client and online research
Results: Case Studies

**Kenya: IIMSAM**
- Successful training programs, production
- Treating vulnerable populations (>200)
- Financial capital
- Market constraints

**India: Murugappa Chettiar Research Centre**
- Resolved inorganic nutrient market constraint
- Food safety
<table>
<thead>
<tr>
<th></th>
<th>Methodology</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Needs Assessment &amp; Project Framing</td>
<td>Client interviewed households</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Alternatives Analysis</td>
<td>Examining various malnutrition approaches</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Prior Art</td>
<td>Case studies</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>SWOT Analysis</td>
<td>Conversations with client and online research</td>
<td></td>
</tr>
</tbody>
</table>
# Results: SWOT Analysis

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Team experience</td>
<td>- Limited communication and direct</td>
</tr>
<tr>
<td>- Passionate client</td>
<td>access to community</td>
</tr>
<tr>
<td></td>
<td>- <strong>Lack of startup capital</strong></td>
</tr>
<tr>
<td></td>
<td>- Lack of construction experience</td>
</tr>
<tr>
<td><strong>OPPORTUNITIES</strong></td>
<td><strong>THREATS</strong></td>
</tr>
<tr>
<td>- Conducive climate</td>
<td>- Community members aren’t aware of</td>
</tr>
<tr>
<td>- Health need for spirulina</td>
<td>malnutrition</td>
</tr>
<tr>
<td>- Grants to apply for</td>
<td>- <strong>Lack of community interest</strong></td>
</tr>
<tr>
<td></td>
<td>- Extreme climate, water scarcity</td>
</tr>
<tr>
<td></td>
<td>- <strong>Lack of local inputs</strong></td>
</tr>
<tr>
<td></td>
<td>- Not initially income generating</td>
</tr>
</tbody>
</table>
Recommendations

● Community Asset Mapping
  ○ Local institutions
  ○ Citizen associations
  ○ Individual aspects

● Education
  ○ Malnutrition
  ○ Spirulina’s benefits

● Partnerships
  ○ Funding
  ○ Resources

● Material Accessibility
  ○ Chemical input “kits”
  ○ Find skilled labor (concrete)
Next Steps

- The project should not continue into D-Lab II
- Questions/Ideas
  - Rural vs urban implementation
  - Sourcing materials
  - Building a team, finding credible leaders for education and delivery
  - Funding
  - Developments in semi-nomadic communities