Hackathon: the circular diaper

Team 3 - Grappies
Grappies

Diapers and incontinence products

A circular business model

Lavinia Chelini, Paolo Elli, Paul Montet, Harshini Boddireddy
Customers dispose their sanitary products in hygienic and smell-proof bags which are recycled themselves and recognized by the RVM.

Deposit and auto-sorting
In exchange, customers will be provided with a discount on future purchases or in monetary form.

Supermarkets
Kindergartens
Pharmacies & hospitals

Truck unloaded with new sanitary products….
…are then daily reloaded with used ones.
### Reusable

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost (EUR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price premium consumers are willing to spend per diaper</td>
<td>0.20</td>
</tr>
<tr>
<td>RVM’s yearly capital cost (per RVM)</td>
<td>0.0164</td>
</tr>
<tr>
<td>RVM’s yearly operational costs (per RVM)</td>
<td>0.0148</td>
</tr>
<tr>
<td>Paper yearly roll costs (per RVM)</td>
<td>0.0016</td>
</tr>
<tr>
<td>Replacement of compactors (per RVM) (per year)</td>
<td>0.0024</td>
</tr>
<tr>
<td>Yearly labour cost of truck’s driver (2 hours per day)</td>
<td>0.0125</td>
</tr>
<tr>
<td>Operating costs (0.6€ per km)</td>
<td>0.0150</td>
</tr>
<tr>
<td>Costs of counting and dividing organic human waste from cloth diapers</td>
<td>0.0600</td>
</tr>
<tr>
<td>Reconditionning</td>
<td>0.0600</td>
</tr>
<tr>
<td><strong>Marginal profit</strong></td>
<td><strong>0.0173</strong></td>
</tr>
</tbody>
</table>

### Workflow Diagram

1. **Separation & collection from RVM**
2. **Division between organic and chemical waste**
3. **Transported in washing facility**
4. **Sent to recycling facility**
5. **Organic waste ➔ biofuel for our transportation system**
6. **Back on the market**
Recyclable

01. Separation & collection from RVM

02. Division between organic and chemical waste

03. Material breakdown and delivered as inputs for necessitating industries

04. Organic waste → biofuel for our transportation system

Excess materials are re-delivered to manufacturers for the creation of new sanitary products

Price premium consumers are willing to spend per diaper: 0.22
RVM’s yearly capital cost: 0.0164
RVM’s yearly operational costs: 0.0148
Paper yearly roll costs: 0.0016
Replacement of compactors: 0.0024
Yearly labour cost of truck’s driver (2 hours per day): 0.0125
Operating costs: 0.0150
Restructuring plant & washing costs: 0.15
Profit: 0.0073
Some sources:

- https://www.simplegermany.com(pfand-germany/)
- https://www.german-way.com/dont-throw-away-your-cash-how-the-pfand-system-works/
- https://allaboutberlin.com/guides/pfand-bottles
- https://www.youtube.com/watch?v=u3vQzD2lzXU
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