EMD Millipore: Sustainable Packaging Assessment

Company Overview
EMD Millipore is a leading life sciences company based in MA, specializing in the following business areas:

**Process Solutions**
- Pharma Chemicals Solutions
- Bio-pharma Process Solutions

**Lab Solutions**
- Lab Essentials
- Lab Water
- Bio-monitoring

**Bioscience**
- Life Sciences
- Discovery & Development Services

**Reusable Totes Program**
- Developed for the Millistak® Pod Disposable Depth Filter System
- Designed to be a sustainable alternative to corrugated cardboard packaging
- Launched pilot program for 2 customers using customized packaging

Problem Statement and Project Scope
Totes program has higher carbon footprint than disposable cardboard due to additional transport needed to send empty totes back to EMD (excluding those customers located nearby).

**Comparison**

<table>
<thead>
<tr>
<th></th>
<th>Customer A</th>
<th>Customer B</th>
<th>Customer C</th>
<th>Customer D</th>
<th>Customer E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tote DC vs. Corrug. DC</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Tote Direct vs. Corrug. DC</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

- Tote process has less total GWP (kg CO₂ equiv.) than corrugated process
- Tote process has more total GWP (kg CO₂ equiv.) than corrugated process
- Tote process has similar total GWP (kg CO₂ equiv.) to the corrugated process (within +/- 10%)

**Project Scope**
- Evaluation of reusable totes program from environmental, financial and operational sustainability perspectives
- Literature review of sustainable packaging best practices
- Recommendations of optimal packaging options for EMD, given its customers’ needs
- Development of decision-making tools to help EMD identify optimal packaging choices

**Packaging Decision Tools**

**Qualitative Scorecard**

<table>
<thead>
<tr>
<th>Easy of Use</th>
<th>Cost</th>
<th>Logistics</th>
<th>Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reusable Plastic Tote</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Corrugated Cardboard</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Bulk Cardboard</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Non-Cardboard</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Scorecard ranking packaging options along 4 characteristics:

**Quantitative Packaging Decision Model**

- Excel-based tool with customer- and product-specific inputs, to assess various packaging options

**Recommendations**

**Finding**
Logistical challenges hinder scaling of totes program

**Recommendation**
- Suggestions include: RFID chips on totes to improve tracking, working closer with customers to coordinate returning of totes

**Finding**
Development of tote was costly and time consuming

**Recommendation**
- Identify high-volume products that would be better candidates for a bulk shipping program
- Stay abreast of innovative, off-the-shelf packaging solutions

**Finding**
Many stakeholders throughout EMD have an interest in sustainability but limited opportunities to work with CSR team

**Recommendation**
- In future projects perform LCAs earlier on to help inform logistics decisions
- Form a cross-functional team tasked with designing sustainable initiatives

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