Remake or Buy? Reconditioning Products at Xtra Power Energy Systems

TEACHING NOTE

Abstract
Pradeep Dutta (Dutta), proprietor of Xtra Power Group, found himself on the horns of a dilemma. Dutta recently reconfigured Xtra Power Energy System’s (Xtra Power) supply chain. The reconfiguration resulted in lowering of lead times and increased production making it difficult to focus on the line of reconditioned batteries. Dutta had two options: 1. Hire Revathi Batteries (Revathi) to manufacture its reconditioned line of batteries. 2. Rent an adjacent facility and start reconditioning the batteries on its own. However, Revathi asked for a contract of at least 3 years for an annual payment as opposed to incurring huge initial cost of procuring machinery and other equipment if the reconditioning of batteries is carried out at the rented facility.

Teaching Objective and Target Audience
The case is designed to enable students understand:
1. Issues related to remake or buy decision (using transaction cost theory)
2. Issues and challenges in sales and operation planning
3. Issues and challenges in managing a reverse supply chain

This case is meant for post graduate level students as part of the Operations Management and Supply chain management curriculum.

Immediate Issues and Basic Issues
The immediate issues before Xtra power are clearly laid out in the case itself:
• Option 1: Give 3 years contract to Revathi for reconditioning batteries based on the contract conditions;
• Option 2: Rent an adjacent facility and recondition used batteries on its own.

1 The names of some people and organizations have been disguised. Some financial data and other figures may have been disguised.
Suggested Session Plan

<table>
<thead>
<tr>
<th>Discussion pastures</th>
<th>Approximate time for discussion (mins)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding Supply Chain</td>
<td>15</td>
</tr>
<tr>
<td>Factors influencing buy decisions</td>
<td>20</td>
</tr>
<tr>
<td>Understanding Transaction cost theory</td>
<td>15</td>
</tr>
<tr>
<td>Calculating costs for each option</td>
<td>15</td>
</tr>
<tr>
<td>Choosing the right option and closure</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total session time</strong></td>
<td><strong>75</strong></td>
</tr>
</tbody>
</table>

Teaching Approach

This case can be used effectively in classroom discussions as well as in distance learning programs. In the classroom mode, the case moderator can initiate the discussion by asking the students general questions on complexities related to supply chain management. From here on, the moderator can directly go to make versus buy trade-off with inputs from the case. The moderator can now discuss with the class advantages and disadvantages of both make and buy decisions. The discussions that would follow will help the moderator to derive the foundation for Transaction Cost Theory.

For more information on this topic, the moderator can refer to the article, “Supply chain sourcing in remanufacturing operations: an empirical investigation of remake versus buy” authored by Martin, Guide Jr., and Craighead, and published in Decision Sciences in 2010.

In the present case, Xtra Power is into the reconditioning business and has earned a good name. They collect used batteries form retailers and recondition them and remarket them via same retailers. For more information on such businesses, the moderator can refer to the article, “Many Happy (Product) Returns” authored by Stock, Speh, and Shear, and published in the Harvard Business Review in 2002.

Following are the key questions to be discussed in the class:

1. What are the key factors that could influence Dutta’s outsourcing decision?
2. In this case, what are the options available to Xtra Power? What are the costs associated with each option?
Data Source for the Case

The case was prepared from field research. The authors conducted extensive interviews of the protagonist and other people related to the case. In addition, secondary research was also done on the industry. Some people’s and organizations’ names have been disguised to protect confidentiality. Some financial figures and other related figures may have been disguised.

Case Analysis

1. What are the key factors that could influence Dutta’s outsourcing decision?

Dutta’s decision related to giving 3 years contract to Revathi batteries could be influenced by following factors:

a) Brand reputation – Xtra power has been reconditioning batteries for a while now and it has earned a good name in this field. Dutta is aware of the fact that if retailers would know that Xtra power is not reconditioning the batteries anymore then they would not promote their batteries as they were doing before. Also, Dutta is not sure about the quality of Revathi’s final product. If the battery reconditioned by Revathi is of lower quality then it would harm the brand image of Xtra Power which could lead to negative word-of-mouth.

b) Core competency assets – Xtra Power has mastered the art of reconditioning in last few years. The knowledge and manpower required for reconditioning has been a part of Xtra Power by now. Outsourcing the process may have adverse effects on the competitive advantage of the company.

c) Direct costs involved – If Xtra Power rents in the adjacent facility then it would have to incur huge cost immediately. Two major costs are: machinery and equipment procurement cost and facility rent.

Dutta has to take a crucial decision whether to give contract to Revathi (buy decision) or to rent an adjacent facility for in-house reconditioning (remake decision). It is worth-mentioning Transaction cost theory here. Transaction cost theory accounts for the actual cost of outsourcing production of products or services including transaction costs, contracting costs, coordination costs, and search costs. Essentially this theory illustrates the make versus buy decision for companies. For more information, the moderator can refer to the article, “Transaction cost economics” authored by Williamson published in Handbook of industrial organization in 1989.

2 http://www.businessdictionary.com/definition/transaction-cost-theory.html#ixzz3KYhbjgiJ
2. In this case, what are the options available to Xtra Power? What are the costs associated with each option?

Option 1

Remake (Rent out adjacent facility)

Option 2

Give contract to Revathi Batteries

Following table provides detailed calculations related to reconditioned batteries for both options.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Option 1</th>
<th>Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct material cost (INR)</td>
<td>4788000</td>
<td>-</td>
</tr>
<tr>
<td>Direct labor (INR)</td>
<td>364368</td>
<td>-</td>
</tr>
<tr>
<td>Variable manufacturing cost (INR)</td>
<td>1272000</td>
<td>-</td>
</tr>
<tr>
<td>Fixed manufacturing cost (INR)</td>
<td>612000</td>
<td>-</td>
</tr>
<tr>
<td>Facility rent (INR)</td>
<td>1380000</td>
<td>-</td>
</tr>
<tr>
<td>Machine and equipment procurement (INR)</td>
<td>4128000</td>
<td>-</td>
</tr>
<tr>
<td>Inbound Logistics cost (INR)</td>
<td>4920000</td>
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<tr>
<td>Outbound logistics cost (INR)</td>
<td>4272000</td>
<td>5745600</td>
</tr>
<tr>
<td>Purchase price (INR)</td>
<td>-</td>
<td>15582000</td>
</tr>
<tr>
<td>Total cost for next 1 year (INR)</td>
<td>21736368</td>
<td>21327600</td>
</tr>
<tr>
<td>Total cost for next 3 years (INR)</td>
<td>56953104</td>
<td>63982800</td>
</tr>
</tbody>
</table>

Cost Calculation for Option 1

\[ \text{Total cost for next 1 year (INR)} = \text{Direct material cost} + \text{Direct labor cost} + \text{Variable manufacturing cost} + \text{Fixed manufacturing cost} + \text{Facility rent} + \text{Machine and equipment procurement} + \text{Inbound logistics cost} + \text{Outbound logistics cost} = 21736368 \text{ INR} \]

\[ \text{Total cost for next 3 years (INR)} = 21736368 + 2 \times (21736368 - 4128000) = 56953104 \text{ INR} \] (for first year Xtra power will incur additional cost of procurement, but for next 2 year this cost will not feature in the calculation).
Cost calculation for Option 2

\[
\text{Total cost for next 1 year (INR) = Outbound logistics cost + Purchase price = 5745600+15582000 = 21327600 INR (Please refer to Exhibit 1 in the case for the values of outbound logistics cost and purchase price).}
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\[
\text{Total cost for next 3 years (INR) = 21327600*3 = 63982800 INR (cost in this case will remain same for next 3 years).}
\]

What Happened Next

Xtra Power ended up selecting option 1, i.e. renting adjacent facility and reconditioning used batteries on its own. Dutta explained:

“Renting the adjacent facility would incur us huge immediate costs. We will have to procure machinery and equipment immediately as well as pay out rent for the facility. Three months ago, we reconfigured our supply chain which increased our cost significantly. Renting a new facility would increase the burden. But, looking at next 3 years horizon, the option of reconditioning the battery at Xtra Power looks better as total cost will be less than the buy option. One added advantage of the former option is that we could keep our know-how and intellectual property protected. Also, our brand reputation will not be at stake.”

Suggested Reading and References

