Choosing By Advantages Fact Sheet

“Choosing By Advantages is a decision-making system that acknowledges all decisions are essentially subjective – but then guides the participants towards basing the subjectivity on objectively discovered and documented facts.” – LCI (2015)

What is Choosing By Advantages (CBA)?

- A sound and simple decision making method developed by Jim Suhr while at the U.S. Forest Service to guide people towards better decisions based on the advantages of alternatives through a reasoned, clear process using well-defined vocabulary (everyone “speaking the same language”).
- In simpler terms, it is a sound decision making method based on the advantages of the attributes of the alternative choices available. Disadvantages are not considered as they are considered as an advantage of the alternatives.
- The most important criteria (attributes) are identified. The alternative with the greatest number of advantages or highest weighted advantage is then chosen as the best alternative.
- The important terms used in CBA are:
  - **Alternatives** are possible decisions, people, things, or plans from which one is to be chosen.
  - A **Factor** is an element, or component of a decision.
  - The **Criterion** is a decision, rule or guideline that is divided into “must” (essential) or “want” (preference) by one or more stakeholders.
  - **An attribute** is a characteristic, quality, or consequence of one alternative (e.g. weight, durability, cost)
  - **An advantage** is the difference between the attributes of **two** or more alternatives.

Where can CBA be used?

- Anywhere decisions need to be made in our life (e.g. buying a house or a car) or in work (e.g. hiring employees, selecting team members, evaluating proposals, selecting materials, design of systems and construction decisions).
- In set-based design to allow team members to evaluate multiple alternatives (choosing building systems, rebar alternatives, floor coverings, etc.)

How to use CBA:

1. Identify potential alternatives to be evaluated for each alternative.
2. Define factors – differentiate between alternatives, not what is most important.
3. Define must/want criteria for each factor.
4. Summarize the attributes of each alternative
5. Decide the advantages including paramount advantage (the most important) and assign maximum weight.
6. Determine and the importance of each advantage and weight each advantage relative to the paramount advantage
7. Evaluate the cost data.
8. Choose the alternative with the most important set of advantages (highest points vs. cost data).

“Decision-making methods influence people’s decisions, decisions trigger actions, and finally actions cause outcomes” – Jim Suhr
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“A way of creating solution alternatives, soundly deciding on the best alternative to implement, and completing this chosen alternative in a collaborative and effective way” - Mark Johnsen, U.S. Forest Service

The CBA process can be used to evaluate structural system options on a project:
1. What are the advantages of each structural system alternative?
2. How important are the advantages of each attribute?
3. Are those advantages worth their associated costs?

Sample Structural System CBA Chart (used at San Diego Community College District):
The table below is a simple pass/fail CBA chart where each factor is weighted evenly (+1). The criteria for each factor is pass (+) or fail (0). In the CBA table below the steel brace frame system had the highest number of pass factors shaded in green (+7) and was then chosen as the structural system during design.

<table>
<thead>
<tr>
<th>Structural System Alternatives</th>
<th>Construction Schedule</th>
<th>Flexibility</th>
<th>Durability (Life Cycle)</th>
<th>Sustainability</th>
<th>Sound Attenuation</th>
<th>Floor Vibration</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Steel Brace-Frame System</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>6</td>
</tr>
<tr>
<td>2 Concrete System</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>4</td>
</tr>
<tr>
<td>3 Masonry System</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>4 Wood-Frame System</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

+ Meet: “Should” criteria
0 Does Not Meet: “Should” Criteria

Key Factors for CBA Success:
• Apply to all team decisions to build trust but avoid gaming the system to bias decisions.
• Having all the relevant people in the room to make decisions (e.g. assigning factors, criteria, attributes and importance of advantages) so they can explain and defend the outcomes.
• Rate the most-important advantage of each factor against the paramount advantage
• Treat cost separately from other factors – do not treat cost as a criterion.
• Only consider advantages. Disadvantages of one alternative are the advantages of another alternative.
• Weight the advantages (paramount advantage most heavily weighted, no advantage = 0)

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