

Week-06-L-03

Value Engineering Agricultural Plan

Value Engineering Case Study

✓ Case 1: Harvest Basket

Evaluation, Development & Implementation Phase

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Evaluation Phase

Establishing Cost of Ideas

Ideas are rated as:

- ✓ 'A' – Idea acceptable
- ✓ 'U' – Idea unacceptable

Black → No change

Red → Additional

Blue → Modified

Functional Development Worksheet

Costs in Rs.			
Parts: <u>Body</u> , <u>Straps</u> , <u>Base</u> , <u>Frame</u>			
Functions: <u>Hold Items</u> , <u>Support Load</u> , <u>Provide Stability</u> , <u>Provide Support</u>			
Present Design Cost = 600+250+150+100 = (1100)			
Sl.No	Idea	Status of Idea 'A' or 'U'	Cost if 'A' Reason if 'U'
✓ 1.	Modular Compartments	'A'	600 (Body) +250 (Straps) +150 (Base) +100 (Frame) + 200(Compartment) = 1300 ✓
✓ 2.	Foldable Basket	'A'	500 (Body) + 250 (Straps) +150 (Base) + 200 (Frame) + 300 (Foldable mech.) = 1400 ✓
✓ 3.	Double straps	'A'	450 (Body) + 350 (Straps) +50 (Base) +50 (Frame) = 900 ✓
✓ 4.	Cushion	'A'	450 (Body) +250 (Straps) +50 (Base) +50 (Frame) + 50 (Cushion) = 750 ✓
✓ 5.	Bamboo Treatment	'A'	800 (Body) + 250 (Straps) +150 (Base) + 100 (Frame) = 1300 ✓



Evaluation Phase

Evaluation by comparison

After allocating the cost to the ideas, the ideas are evaluated by comparison by using appropriate criteria of evaluation.

Criteria for comparison

- ✓ A. Weather Resistance
- ✓ B. Durability
- ✓ C. Ease of application
- ✓ D. Ease of implementation
- ✓ E. Cost

These criteria are then numerically evaluated by paired comparison for giving rank or grade to each criterion.

Numerical evaluation of criteria

	B	C	D	E	T. Wt	Adj. Wt
A	A1	A1	D2	E2	2	3
	B	B1	B2	E2	3	4
		C	D2	E2	0	1
			D	E2	4	5
				E	8	9

Key Letter	Criteria for comparison
A →	Weather Resistance
B →	Durability
C	Ease of application
D	Ease of implementation
E	Cost

Comparison Weight Factor (Difference in Importance)	
1	Minor Difference
2	Medium Difference
3	Major Difference

Decision Matrix

- The decision matrix is a tool designed to help in the selection of the most appropriate alternative through a ranking process.

This assessment is done using a five-point scale, as detailed below:

- Excellent = 5 point ✓
- Very Good = 4 point
- Good = 3 point
- Fair = 2 point
- Poor = 1 point



Decision Matrix

- The technique for assigning points to each idea for each criterion involves consulting with experts who have experience in farming.
- The points for cost savings are assigned according to the following scale:

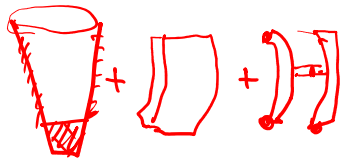
Cost Savings	Points
• Low Costs	5 ✓
• High Costs	0 ✓







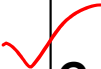





Decision Matrix

Proposed alternatives	Evaluation Criteria	A=3	B=4	C=1	D=5	E=9	Total Score
		(Points) Score	(Points) Score	(Points) Score	(Points) Score	(Points) Score	
Modular		(4) ✓ 4x3 = 12	(2) ✓ 2x4 = 8	(3) ✓ 3	(2) ✓ 10	(1) ✓ 9	12+8+3+10+9 = 42
Foldable Baskets		(4) ✓ 4x3 = 12	(2) ✓ 8	(5) ✓ 5	(1) ✓ 5	(0) ✓ 0	30
Double straps		(4) ✓ 4x3 = 12	(4) ✓ 16	(5) ✓ 5	(4) ✓ 20	(4) ✓ 36	89*
Cushions		(4) ✓ 4x3 = 12	(4) ✓ 16	(5) ✓ 5	(4) ✓ 20	(3) ✓ 27	80*
Bamboo Treatments		(5) ✓ 5x3 = 15	(5) ✓ 20	(3) ✓ 3	(1) ✓ 5	(1) ✓ 9	52

Development Phase

- The proposals with the highest scores are marked with a '*' sign.
- These are the final proposals for value improvement which are passed to the next phases for investigation and recommendation.



Ideas	Advantages
 Double straps	<ul style="list-style-type: none"> •  Reduced Strain •  Improved Posture •  Enhanced Mobility •  Hands-Free Operation •  Balanced Load, etc.
 Cushions	<ul style="list-style-type: none"> •  Enhanced Comfort •  Reduced Pressure Points •  Ergonomic Support •  Shock Absorption •  User satisfaction, etc.

Presentation Phase

- In this phase the cost of existing basket and new proposed basket is compared, and the savings achieved through value analysis methodology is calculated.
- The percentage saving and total saving is indicated in the following table:

Cost break up for the existing Basket

Sr. No	Part Name	Cost
1.	Body	600
2.	Straps	250
3.	Base	150
4.	Frame	100
	Total	1100

Cost break up for the proposed alternative

Sr. No	Part Name	Cost
1.	Body	450
✓ 2.	Double Straps	350
✓ 3.	Cushion	50
4.	Base	50
5.	Frame	50
	Total	950

Cost Savings

$$\begin{aligned}\text{Cost savings after VA} &= \text{Cost before VA} - \text{Cost after VA} \\ &= 1100 - 950 \\ &= \text{Rs } 150 / \text{basket}\end{aligned}$$

- Percentage savings

$$\begin{aligned}&= 150/1100 \times 100 \\ &= 13.64\% / \text{basket}\end{aligned}$$

Thank You

