

Week-04-L-05

# Value Engineering Agricultural Plan

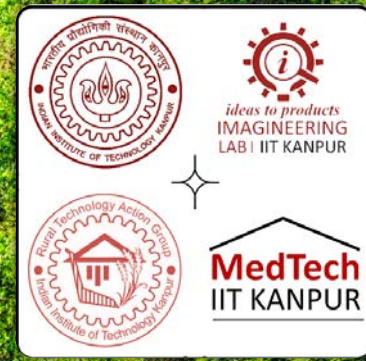
## Creative & Evaluation Phase

## Decision Matrix

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# *Decision Matrix*

- Valuable tool for evaluating & selecting optimal choice among multiple options when considering various factors.
- It's especially useful when faced with complex decisions that involve several considerations. This technique is often referred to by different names, including:
  - Pugh matrix
  - Grid analysis
  - Multi-attribute utility theory
  - Problem selection matrix
  - Decision grid
- When selecting the best crop to plant, for instance, you must consider factors such as climate suitability, soil conditions, yield potential, and crop variety preferences



# General Considerations

- In agriculture, decision-making involves constraints and considerations.
- *Constraints* are essential factors that must be met for a decision to work, while *considerations* are preferences that, while important, are not deal-breakers.
- For instance, when choosing crops to plant, factors like *suitable climate and soil conditions* are **constraints**, whereas preferences for *high yield* and a specific *crop variety* are **considerations** that guide the choice.

## Utilize a decision matrix for:

- Comparing similar options
- Consolidating choices into one decision
- Weighing important factors

	Competency	Cost	Viability	Desirability	Alignment	Total
Criteria rating	3	4	5	4	2	
Idea A	1	3	3	1	1	
Weighted rating						0
Idea B	5	3	5	3	4	
Weighted rating						0
Idea C	0	2	3	1	1	
Weighted rating						0
Idea D	5	1	2	1	1	
Weighted rating						0

# *How to create?*

- Consider you're a commercial dairy farmer looking to invest in new milking equipment.
- You have three different milking machines on your shortlist and need to determine the most suitable one for your farm.
- Key factors to consider include milking speed, equipment maintenance, initial cost, and the manufacturer's reputation.
- By utilizing a decision matrix, you can systematically assess these factors and make an informed choice that ensures optimal milking efficiency for your dairy operation.



# Step – 1

## *Identify your alternatives*

- You're a dairy farmer choosing milking equipment. Start by listing the different equipment options available to you.
- Cheese presses
- Butter churns
- Ice cream makers
- Homogenizers



## *Step – 2*

### *Identify important considerations*

- Determine crucial factors for your decision, such as
  - Milking speed
  - Equipment maintenance
  - Initial cost
  - Manufacturer reputation
  - Milk Volume Handling
  - Durability and Longevity
  - Energy Efficiency

# Step – 3

## Create Your Decision Matrix:

	<i>Equipment maintenance</i>	<i>Milk Volume Handling</i>	<i>Energy Efficiency</i>	<i>Initial cost</i>	<i>Score</i>
<i>Eqp . 1</i>					
<i>Eqp . 2</i>					
<i>Eqp . 3</i>					
<i>Eqp . 4</i>					
<i>Eqp . 5</i>					

- Use a scale of 1-5 in case of large variations or else a scale of 1-3

# Step – 4

## Fill your Decision Matrix

	<i>Equipment maintenance</i>	<i>Milk Volume Handling</i>	<i>Energy Efficiency</i>	<i>Initial cost</i>	<i>Score</i>
<i>Eqp . 1</i>	4	3	5	5	
<i>Eqp . 2</i>	3	4	3	4	
<i>Eqp . 3</i>	5	4	4	4	
<i>Eqp . 4</i>	5	4	4	5	
<i>Eqp . 5</i>	5	4	5	3	



# Step – 5

## Add weights

	<i>Equipment maintenance</i> (4)	<i>Milk Volume Handling</i> (5)	<i>Energy Efficiency</i> (5)	<i>Initial cost</i> (3)	<i>Score</i>
<i>Eqp . 1</i>	4	3	5	5	
<i>Eqp . 2</i>	3	4	3	4	
<i>Eqp . 3</i>	5	4	4	4	
<i>Eqp . 4</i>	5	4	4	5	
<i>Eqp . 5</i>	5	4	5	3	

- *Recognize that some factors are more critical than others. Apply weights (between 1-5) to each consideration, indicating their importance.*

# Step – 6

## Multiply the weighted score

	<b>Equipment maintenance (4)</b>	<b>Milk Volume Handling (5)</b>	<b>Energy Efficiency (5)</b>	<b>Initial cost (3)</b>	<b>Score</b>
<i>Eqp . 1</i>	$4 \times 4 = 16$	$3 \times 5 = 15$	$5 \times 5 = 25$	$5 \times 3 = 15$	
<i>Eqp . 2</i>	$3 \times 4 = 12$	$4 \times 5 = 20$	$3 \times 5 = 15$	$4 \times 3 = 12$	
<i>Eqp . 3</i>	$5 \times 4 = 20$	$4 \times 5 = 20$	$4 \times 5 = 20$	$4 \times 3 = 12$	
<i>Eqp . 4</i>	$5 \times 4 = 20$	$4 \times 5 = 20$	$4 \times 5 = 20$	$5 \times 3 = 15$	
<i>Eqp . 5</i>	$5 \times 4 = 20$	$4 \times 5 = 20$	$5 \times 5 = 25$	$3 \times 3 = 9$	

# Step – 7

## Calculate the total score

	<b>Equipment maintenance (4)</b>	<b>Milk Volume Handling (5)</b>	<b>Energy Efficiency (5)</b>	<b>Initial cost (3)</b>	<b>Score</b>
<i>Eqp . 1</i>	$4 \times 4 = 16$	$3 \times 5 = 15$	$5 \times 5 = 25$	$5 \times 3 = 15$	71
<i>Eqp . 2</i>	$3 \times 4 = 12$	$4 \times 5 = 20$	$3 \times 5 = 15$	$4 \times 3 = 12$	59
<i>Eqp . 3</i>	$5 \times 4 = 20$	$4 \times 5 = 20$	$4 \times 5 = 20$	$4 \times 3 = 12$	72
<i>Eqp . 4</i>	$5 \times 4 = 20$	$4 \times 5 = 20$	$4 \times 5 = 20$	$5 \times 3 = 15$	75
<i>Eqp . 5</i>	$5 \times 4 = 20$	$4 \times 5 = 20$	$5 \times 5 = 25$	$3 \times 3 = 9$	74

Thank You

