

Week-04-L-06

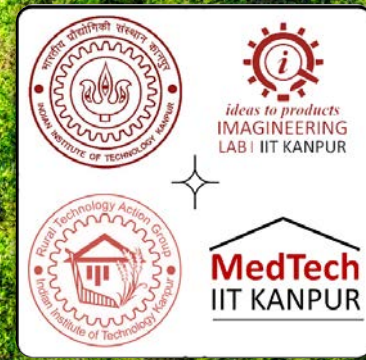
Value Engineering Agricultural Plan

Creative & Evaluation Phase

Evaluation

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Evaluation Methods

	Design/Methods	Requirements	When to apply
Theory-based	Set of assumptions	Scientific experience No data or just monitoring data	Low/no data programme
Quantitative	Experimental or Quasi-Experimentations	High data demand	Mid-term (in case of high programme uptake)
	Non-experimental	Less data demand	
Qualitative	Scientific Techniques (Naïve Estimate)	High resource demand	Any evaluation
Mixed	Qualitative Techniques		
	Combination of Qualitative/Quantitative Methods		



Understanding Evaluation via case study

Step-1: Survey Design and Sample Selection

- Conducted a questionnaire survey to assess proposed agricultural drainage water management methods.
- Selected experts based on three criteria: comprehension of value engineering methodology, competence in drainage water management, and understanding of climate change effects.
- Sent the survey to 106 eligible Egyptian experts, receiving responses from 39, resulting in a 36.8% response rate.

Understanding Evaluation via case study

Step-2: Demographic Profile of Respondents

- 25.6% had less than five years of experience, 59.0% had between five and ten years, and 15.4% had more than ten years.
- Respondents included project managers (23.1%), drainage engineering professionals (48.7%), and water engineers (28.2%).

Understanding Evaluation via case study

Step-3: Rating Methods and Criteria

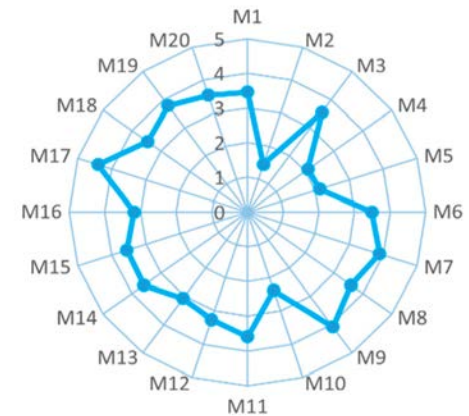
- Experts evaluated **20 agricultural drainage water management *methods*** using five performance criteria:
 - Positive environmental impact
 - Increased crop productivity
 - Water table rise control
 - Excess water removal efficiency
 - Positive impact on groundwater quality.
- Criteria were rated on a 5-point scale, with 1 denoting poor performance and 5 denoting excellent performance.

Understanding Evaluation via case study

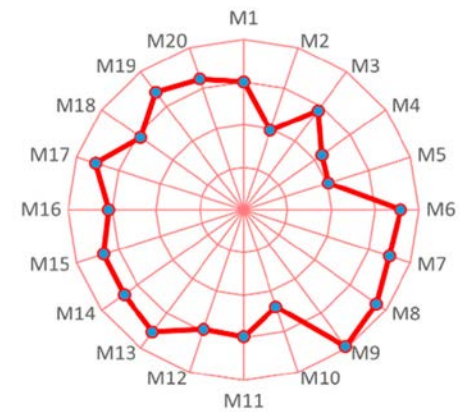
Step-4 Method Evaluation Results

- Displayed the average score for each criterion for all 20 methods & overall score for each method.
- Set the acceptance/rejection threshold at a neutral final score of 2.5 points.
- Rejected four methods (M2, M4, M5, and M10) while allowing the remaining sixteen methods to proceed to the value engineering development stage.

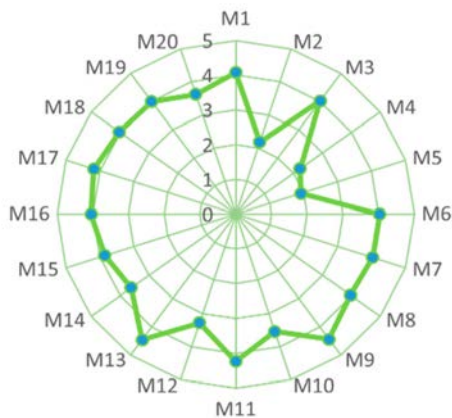
Result of the methods evaluation questionnaire



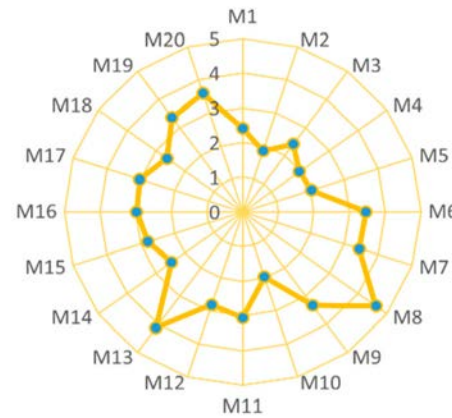
(c) Control of water table rise



(f) Total Score

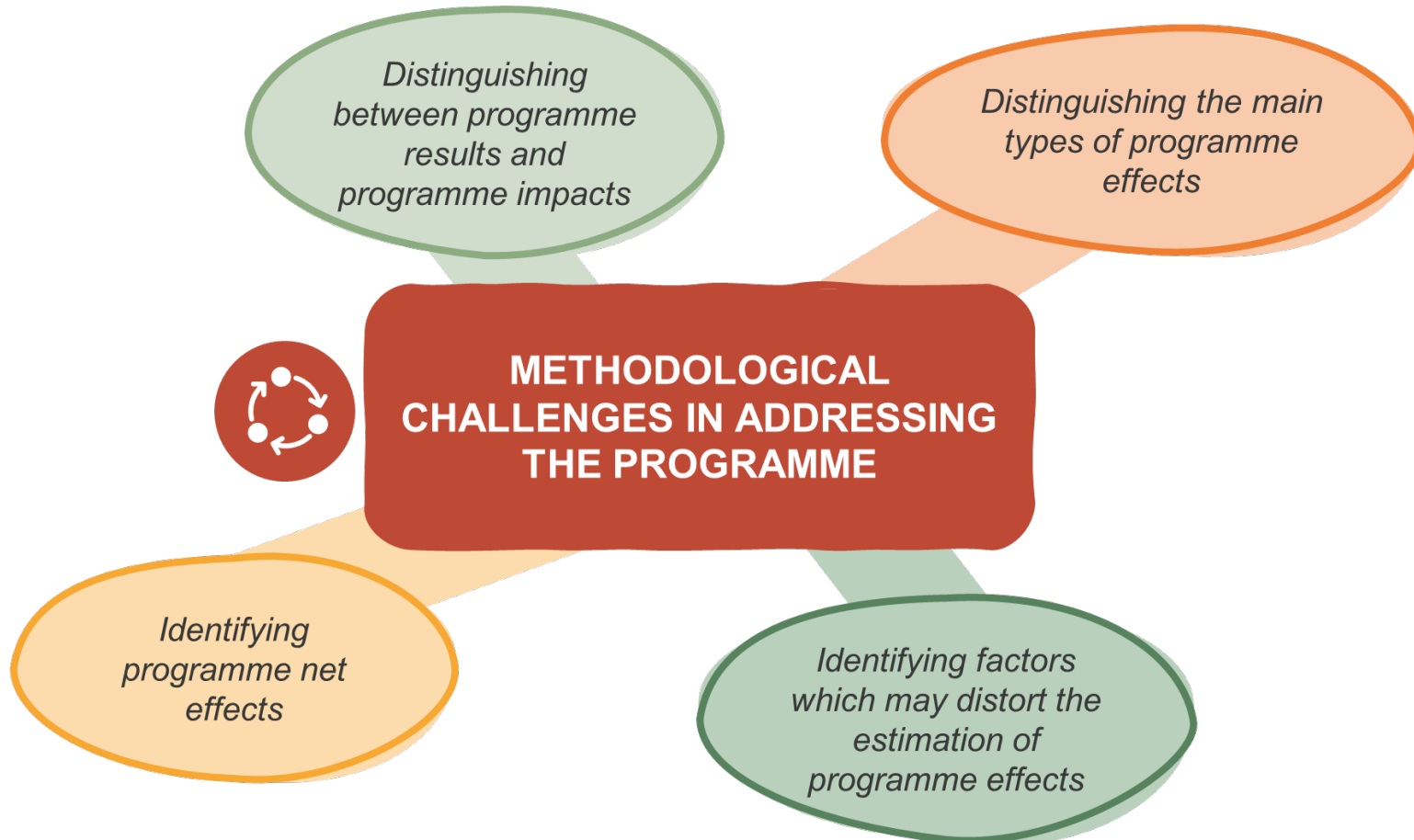


(d) Excess water removal efficiency



(e) Positive effect on groundwater quality

Word of Caution



Thank You

