Introduction to Operations Research

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By the end of this session, participants will have a better understanding of

- What is an Operations Research
- Rationale for OR
- Steps in OR
- Types of OR
- Designs and Methods in OR

OR

is a process, a way of identifying and solving program problems.

Any research producing practically-usable knowledge (evidence, findings, information, etc) which can improve program implementation (e.g., effectiveness, efficiency, quality, access, scale-up, sustainability) regardless of the type of research (design, methodology, approach) falls within the boundaries of Operations Research.

- **OR** is a process used in identifying and studying possible solutions to programme problems
- Programmatic or action research
- It looks for causes and possible solutions to problem affecting service delivery
- Is used to study factors under the control of managers

Rationale for OR

- To provide programme managers with research-based information for making decisions to:
  - Improve programme operations
  - Select “best practices”
  - Choose between alternative strategies
  - Design and test new strategies

If the subject of the research is not under the control of a programme manager and the study results do not contribute to achieving programme objectives, the research is not **OR**.

Steps

OR starts with a programmatic problem.

The need for **OR** arises when three conditions exist:

- There is a perceived discrepancy between what is and what should be
- There is a question about why the discrepancy exists
- There are at least two plausible and possible answers to the question

- Problem identification and diagnosis
- Generate Solutions
- Test Intervention
- Evaluation
- Information dissemination
- Information utilization

Examples - Identifying the problem

- Despite patients offered ARVs, OIs like diarrhea and pneumonia were high among them
- Why are STI clients experiencing poorer health outcomes
- Problem of adherence to regimens

- Why despite intervention, utilization of services and/or commodities remains low and in another place is good
- Why the uptake of commodities remains low despite increased funding and services
- Why the environment is not enabling, despite policies in placed

Example- Considering the reasons

- Poor communication between clients and staff
- Low income clients do not have enough money for transportation – refill their prescriptions
- Clients can not afford to miss their work to come to clinic
- Perceived stigma
- Frequent drug stock outs

Characteristics of OR

- It addresses specific problems within specific programs, not general health issues;
- It addresses those problems that are under control of managers, such as program systems, training, pricing and provision of information;

- It requires collaboration between managers and researchers in identification of the research problem, development of the study design, implementation of the study and analysis and interpretation of results; and

- It succeeds only if the study results are used to make program decisions; publication alone is not a valid indicator of successful **OR**.”

Types of OR Studies

- Diagnostic / Exploratory (descriptive) studies
- Intervention
- Evaluation
- Cost- Effectiveness Studies

These four categories of **OR** studies are not mutually exclusive. Frequently a single **OR** study will begin with an exploratory/diagnostic phase to identify key variables of importance. During the second phase, a field intervention might be initiated to test different program solutions to overcoming the problem.

Subsequently, an evaluative phase might be implemented to determine the impact of the intervention. Finally, a cost-effectiveness analysis might be undertaken to examine the cost required to obtain a particular unit of effect

- **OR** is successful *only if the results are used to make program decisions*
- Published papers are *not valid indicators of* **OR** *success*

OR Designs and Methods

- The methods of **OR** range from the qualitative to the quantitative, and the study designs from the non-experimental to the true experimental . There is no single set of methods or designs unique to operations research.

- Indeed, it is not the application of a particular set of methods or the use of one design over another that distinguishes OR from other forms of research. Rather, it is the focus or objective of the research.

- The objective of operations research is to improve the delivery of services. While OR studies may use experimental or non-experimental designs and may include a quantitative analysis of outcome measures

- Or a qualitative consideration of health issues, the central objective always is to obtain a better understanding of the “operations” of programs so that needed improvements can be made.

Some examples of designs

- Descriptive Studies
- Observational Studies (Cross-sectional , case- control and cohort)
- Intervention Studies (Experimental – Pre-Post Test or Post Test Only Design)

Methods

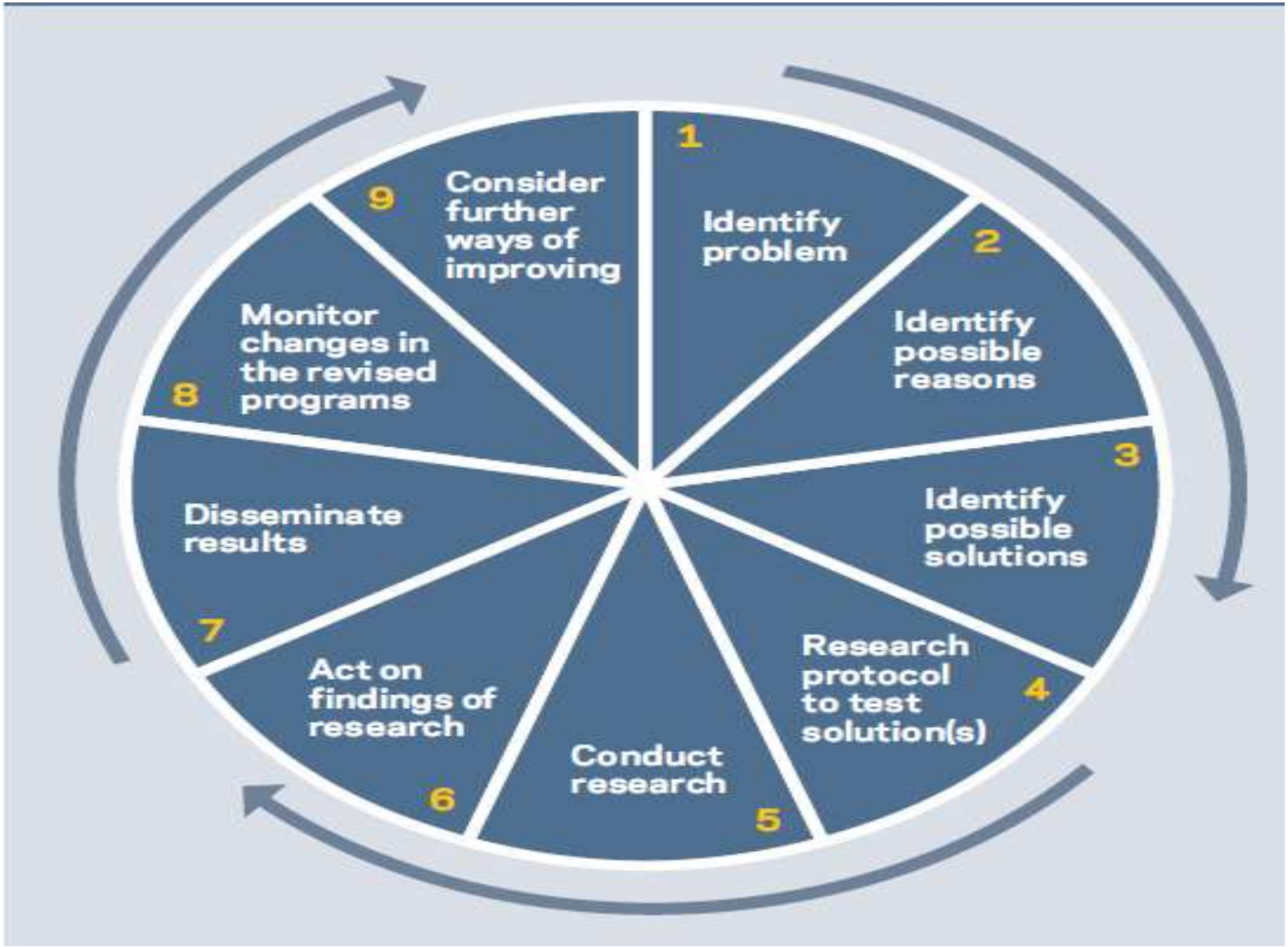
Qualitative

1. Key Informant Interview
2. In-depth Interview
3. Observation
4. Focus Group Discussion
5. Content Analysis

Quantitative Methods

1. Survey
2. Structured Interviews
3. Review of service statistics
4. Secondary analysis

OR Steps in Summary



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Thanks for listening !