



**UNIVERSITY OF NAIROBI**

**COLLEGE OF AGRICULTURE AND VETERINARY SCIENCES**

DEPARTMENT OF AGRICULTURAL ECONOMICS

**PROGRAMME EVALUATION IN EXTENSION EDUCATION AND RURAL  
SOCIOLOGY**

FRED I. MUGIVANE

*In collaboration with:*

*CENTRE FOR OPEN AND DISTANCE LEARNING*

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SOCIOLOGY, 2014**

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# **PROGRAMME EVALUATION IN EXTENSION & EDUCATION & RURAL SOCIOLOGY**

## **INTRODUCTION**

The course: Programme Evaluation in Education and Extension presents several different views and definitions that demonstrate a fairly broad range of potential opinion. The interpretations of several conceptualizations of programme evaluation guides learners on how to conduct evaluations of development programmes. The module assists learners do evaluation of needs and goals, design and implement activities.

In the module Evaluation is defined as a systematic investigation of various aspects of professional development and training programs to assess their merit or worth. It is therefore imperative that evaluation serve the information needs of actual and potential stakeholders in the evaluation object/programme. The module discusses programme evaluation from the function perspective of focusing the evaluation, designing the evaluation, collecting information, analyzing information, reporting information from and about the evaluation, managing the evaluation and evaluating the evaluation.

In order to undertake these functions, it is recommended that programme evaluation be conducted by individuals possessing competencies in research methodology and data analysis techniques, understanding of the social context and the unique substance of the programme evaluation object, the ability to maintain correct human relations and develop rapport with individuals and groups involved in the evaluation; and a conceptual framework to integrate all the above mentioned capabilities. In this regard the module assists learners to understand and take programme evaluation by being exposed to how to: identify who to evaluate, select methods, analyze and interpret reports, strategies of data collection and the kinds variables to look for evaluation, identifying types of designs and research, and techniques of constructing questionnaires conducting interviews to get data for programme evaluation. The module has nine (9) lessons to be covered in a semester.

## **COURSE OUTLINE**

### **1.0 Definition, conceptualization and Perspectives of Programme Evaluation**

- 1.1 Definition of programme evaluation
- 1.2 Focusing the evaluation
- 1.3 Purpose of Evaluation Formative & Summative
- 1.4 Who will be evaluated and who will do evaluation and who will do evaluation.

### **2.0 Collecting information**

- 2.1 Procedures and Techniques to collect information
- 2.2 How to select and what instrument to use
- 2.3 Analyzing and interpreting information
- 2.4 Qualitative and quantitative variables in data collection
- 2.5 Reporting and evaluation plan

### **3.0 Surveys in Programme Evaluation**

- 3.1 Purpose
- 3.2 Strategies of Survey
- 3.3 Classification of survey
- 3.4 Survey for specific data

### **4.0 Quantitative Tools for Evaluation**

- 4.1 Types and classification of Research
- 4.2 Purpose and methods of research
- 4.3 Classification of research for programme evaluation
- 4.4 Variables and their applications in programme evaluation
- 4.5 Measurement variables and scales (interval/ratio, ordinal, nominal)
- 4.6 Quantitative approaches to programme evaluation

### **5.0 Forms of Evaluation Design**

- 5.1 Types of designs
- 5.2 Formative and summative
- 5.3 Formative design
- 5.4 Emergent design

## **6.0 Forms of analysis in Evaluation**

- 6.1 Types of research analysis
- 6.2 Correlational analysis
- 6.3 Experimental approaches and designs in programme evaluation

## **7.0 Sampling**

- 7.1 Definitions, advantages,disadvantages
- 7.2 Representativeness of sample
- 7.3 Types
- 7.4 Probability and non-probability

## **8.0 Questionnaire**

- 8.1 Classification of Questionnaires
- 8.2 Techniques of questionnaire construction

## **9.0 Interviews in evaluation**

- 9.1 Types and Techniques of interviews
- 9.2 Interviewer methods

## **LECTURE ONE**

### **DEFINITION, CONCEPTUALIZATION AND PERSPECTIVES OF EVALUATION**

#### **Lecture Outline**

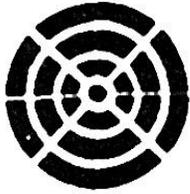
- 1.1 Introduction
- 1.2 Lecture Objectives
- 1.3 Suggestions for further reading
- 1.4 Summary
- 1.5 Activities

#### **1.1 Introduction**

Note that the concept of programme evaluation can include a wide variety of methods to evaluate many aspects of programmes in nonprofit or for-profit organizations. There are numerous books and other materials that provide in-depth analysis of evaluations, their designs, methods, combination of methods and techniques of analysis. However, personnel do not have to be experts in these topics to carry out a useful programme evaluation. The "20-80" rule applies here, that 20% of effort generates 80% of the needed results. It's better to do what might turn out to be an average effort at evaluation than to do no evaluation at all. (Besides, if you resort to bringing in an evaluation consultant, you should be a smart consumer. Far too many programme evaluations generate information that is either impractical or irrelevant -- if the information is understood at all.) This document orients personnel to the nature of programme evaluation and how it can be carried out in a realistic and practical fashion.

## **Misconceptions About Programme Evaluation**

- 1 Many people believe evaluation is a useless activity that generates lots of boring data with useless conclusions. This was a problem with evaluations in the past when programme evaluation methods were chosen largely on the basis of achieving complete scientific accuracy, reliability and validity. This approach often generated extensive data from which very carefully chosen conclusions were drawn. Generalizations and recommendations were avoided. As a result, evaluation reports tended to reiterate the obvious and left programme administrators disappointed and skeptical about the value of evaluation in general. More recently evaluation has focused on utility, relevance and practicality at least as much as scientific validity.
2. Many people believe that evaluation is about proving the success or failure of a programme. This myth assumes that success is implementing the perfect programme and never having to hear from employees, customers or clients again -- the programme will now run itself perfectly. This doesn't happen in real life. Success is remaining open to continuing feedback and adjusting the programme accordingly. Evaluation gives you this continuing feedback.
3. Many believe that evaluation is a highly unique and complex process that occurs at a certain time in a certain way, and almost always includes the use of outside experts. Many people believe they must completely understand terms such as validity and reliability. They don't have to. They do have to consider what information they need in order to make current decisions about programme issues or needs. And they have to be willing to commit to understanding what is really going on. Note that many people regularly undertake some nature of programme evaluation -- they just don't do it in a formal way so they don't get the most out of their efforts or they make conclusions that are inaccurate. Consequently, they miss precious opportunities to make more of difference for their customer and clients.



By the end of the lecture you should be able to;

1. Define programme evaluation
2. Explain the purpose of evaluation
3. Differentiate types of evaluations.
4. State who will be evaluated and does the evaluation

### **1.3 Definition of Programme Evaluation**

First, we'll consider "what is a programme?" Typically, organizations work from their mission to identify several overall goals which must be reached to accomplish their mission. In nonprofits, each of these goals often becomes a programme. Nonprofit programmes are organized methods to provide certain related services to constituents, e.g., clients, customers, patients, etc. Programmes must be evaluated to decide if the programmes are indeed useful to constituents. In a for-profit, a programme is often a one-time effort to produce a new product or line of products.

So, still, what is programme evaluation? Programme evaluation is carefully collecting information about a programme or some aspect of a programme in order to make necessary decisions about the programme. Programme evaluation can include any or a variety of evaluation, such as for needs assessments, accreditation, cost/benefit analysis, effectiveness, efficiency, formative, summative, goal-based, process, outcomes, etc. The type of evaluation you undertake to improve your programmes depends on what you want to learn about the programme.

### **1.4 Purpose of Programme Evaluation**

**Programme evaluation can:**

1. Verify or increase the impact of products or services on customers or clients – These "outcomes" evaluations are increasingly required by nonprofit funders as verification that the nonprofits are indeed helping their constituents. Too often, service providers (for-profit or nonprofit) rely on their own instincts and passions

- to conclude what their customers or clients really need and whether the products or services are providing what is needed. Over time, these organizations find themselves in a lot of guessing about what would be a good product or service, and trial and error about how new products or services could be delivered.
2. Improve delivery mechanisms to be more efficient and less costly - Over time, product or service delivery ends up to be an inefficient collection of activities that are less efficient and more costly than need be. Evaluations can identify programme strengths and weaknesses to improve the programme.
  3. Verify that you're doing what you think you're doing - Typically, plans about how to deliver services, end up changing substantially as those plans are put into place. Evaluations can verify if the programme is really running as originally planned.
  4. Facilitate management's really thinking about what their programme is all about, including its goals, how it meets its goals and how it will know if it has met its goals or not.
  5. Produce data or verify results that can be used for public relations and promoting services in the community.
  6. Produce valid comparisons between programmes to decide which should be retained, e.g., in the face of pending budget cuts.
  7. Fully examine and describe effective programmes for duplication elsewhere.

To effectively conduct programme evaluation, you should first have programmes. That is, you need a strong impression of what your customers or clients actually need. (You may have used a needs assessment to determine these needs -- itself a form of evaluation). Next, you need some effective methods to meet each of those goals. These methods are usually in the form of programmes.

It often helps to think of your programmes in terms of inputs, process, outputs and outcomes. Inputs are the various resources needed to run the programme, e.g., money, facilities, customers, clients, programme staff, etc. The process is how the programme is

carried out, e.g., customers are served, clients are counseled, children are cared for, art is created, association members are supported, etc. The outputs are the units of service, e.g., number of customers serviced, number of clients counseled, children cared for, artistic pieces produced, or members in the association. Outcomes are the impacts on the customers or on clients receiving services, e.g., increased mental health, safe and secure development, richer artistic appreciation and perspectives in life, increased effectiveness among members, etc.

Consider the following key questions when designing a programme evaluation.

1. For what purposes is the evaluation being done, i.e., what do you want to be able to decide as a result of the evaluation?
2. Who are the audiences for the information from the evaluation, e.g., customers, bankers, funders, board, management, staff, customers, clients, etc.
3. What kinds of information are needed to make the decision you need to make and/or enlighten your intended audiences, e.g., information to really understand the process of the product or programme (its inputs, activities and outputs), the customers or clients who experience the product or programme, strengths and weaknesses of the product or programme, benefits to customers or clients (outcomes), how the product or programme failed and why, etc.
4. From what sources should the information be collected, e.g., employees, customers, clients, groups of customers or clients and employees together, programme documentation, etc.
5. How can that information be collected in a reasonable way, e.g., questionnaires, interviews, examining documentation, observing customers or employees, conducting focus groups among customers or employees, etc
6. When is the information needed (so, by when must it be collected)?
7. What resources are available to collect the information?

## **1.5 Types of Programme Evaluation**

When designing your evaluation approach, it may be helpful to review the following three types of evaluations, which are rather common in organizations. Note that you should not design your evaluation approach simply by choosing which of the following three types you will use -- you should design your evaluation approach by carefully addressing the above key considerations.

### **Goals-Based Evaluation**

Often programmes are established to meet one or more specific goals. These goals are often described in the original programme plans.

Goal-based evaluations are evaluating the extent to which programmes are meeting predetermined goals or objectives. Questions to ask yourself when designing an evaluation to see if you reached your goals, are:

1. How were the programme goals (and objectives, is applicable) established?  
Was the process effective?
2. What is the status of the programme's progress toward achieving the goals?
3. Will the goals be achieved according to the timelines specified in the programme implementation or operations plan? If not, then why?
4. Do personnel have adequate resources (money, equipment, facilities, training, etc.) to achieve the goals?
5. How should priorities be changed to put more focus on achieving the goals? (Depending on the context, this question might be viewed as a programme management decision, more than an evaluation question.)
6. How should timelines be changed (- know why efforts are behind schedule before timelines are changed)?
7. How should goals be changed (- know why efforts are not achieving the goals before changing the goals)? Should any goals be added or removed? Why?
8. How should goals be established in the future?

## **Process-Based Evaluations**

Process-based evaluations are geared to fully understanding how a programme works -- how does it produce that results that it does. These evaluations are useful if programmes are long-standing and have changed over the years, employees or customers report a large number of complaints about the programme, there appear to be large inefficiencies in delivering programme services and they are also useful for accurately portraying to outside parties how a programme truly operates (e.g., for replication elsewhere).

There are numerous questions that might be addressed in a process evaluation. These questions can be selected by carefully considering what is important to know about the programme. Examples of questions to ask yourself when designing an evaluation to understand and/or closely examine the processes in your programmes, are:

1. On what basis do employees and/or the customers decide that products or services are needed?
2. What is required of employees in order to deliver the product or services?
3. How are employees trained about how to deliver the product or services?
4. How do customers or clients come into the programme?
5. What is required of customers or client?
6. How do employees select which products or services will be provided to the customer or client?
7. What is the general process that customers or clients go through with the product or programme?
8. What do customers or clients consider to be strengths of the programme?
9. What do staff consider to be strengths of the product or programme?
10. What typical complaints are heard from employees and/or customers?
11. What do employees and/or customers recommend to improve the product or programme?
12. On what basis do employees and/or the customer decide that the product or services are no longer needed?

## **Outcomes-Based Evaluation**

Programme evaluation with an outcomes focus is increasingly important for nonprofits and asked for by funders. An outcomes-based evaluation facilitates your asking if your organization is really doing the right programme activities to bring about the outcomes you believe (or better yet, you've verified) to be needed by your clients (rather than just engaging in busy activities which seem reasonable to do at the time). Outcomes are benefits to clients from participation in the programme. Outcomes are usually in terms of enhanced learning (knowledge, perceptions/attitudes or skills) or conditions, e.g., increased literacy, self-reliance, etc. Outcomes are often confused with programme outputs or units of services, e.g., the number of clients who went through a programme.

To accomplish an outcomes-based evaluation, you should first pilot, or test, this evaluation approach on one or two programmes at most (before doing all programmes).

### **1.6 Identifying who and what to Evaluate**

1. Identify the major outcomes that you want to examine or verify for the programme under evaluation. You might reflect on your mission (the overall purpose of your organization) and ask yourself what impacts you will have on your clients as you work towards your mission. For example, if your overall mission is to provide shelter and resources to abused women, then ask yourself what benefits this will have on those women if you effectively provide them shelter and other services or resources.
2. Choose the outcomes that you want to examine, prioritize the outcomes and, if your time and resources are limited, pick the top two to four most important outcomes to examine for now.
3. For each outcome, specify what observable measures, or indicators, will suggest that you're achieving that key outcome with your clients. This is often the most important and enlightening step in outcomes-based evaluation. However, it is often the most challenging and even confusing step, too, because you're suddenly going from a rather intangible concept, e.g., increased self-reliance, to specific

- activities, e.g., supporting clients to get themselves to and from work, staying off drugs and alcohol, etc. It helps to have a "devil's advocate" during this phase of identifying indicators, i.e., someone who can question why you can assume that an outcome was reached because certain associated indicators were present.
4. Specify a "target" goal of clients, i.e., what number or percent of clients you commit to achieving specific outcomes with, e.g., "increased self-reliance (an outcome) for 70% of adult, women living in the inner city of Nairobi as evidenced by the following measures (indicators) ..."
  5. Identify what information is needed to show these indicators, e.g., you'll need to know how many clients in the target group went through the programme, how many of them reliably undertook their own transportation to work and stayed off drugs, etc. If your programme is new, you may need to evaluate the process in the programme to verify that the programme is indeed carried out according to your original plans.
  6. Decide how can that information be efficiently and realistically gathered (see *Selecting Which Methods to Use*). Consider programme documentation, observation of programme personnel and clients in the programme, questionnaires and interviews about clients perceived benefits from the programme, case studies of programme failures and successes, etc. You may not need all of the above. (see *Overview of Methods to Collect Information*).
  7. Analyze and report the findings (see *Analyzing and Interpreting Information*).



### **1.7 Summary**

The lecture gives an overview of programme evaluation.. The concepts, programme and evaluation are defined . Various perspectives of programme evaluation are given focusing on purposes and how to design programme evaluation. Different types of programme evaluation namely goal-based evaluation, process-based evaluation and outcome-based evaluation are discussed. The lesson ends by emphasizing key elements and areas of identification and who should be evaluated.

**1,8 Activities**

Lectures, written exercises, students' presentations class discussions



**1,8 Further Reading**

Glass, G.V. 1969. The Growth of Evaluation Methodology. Research Paper no. 27.

Boulder, CO: Laboratory of Education Research, University of Colorado.

## LECTURE TWO

### COLLECTING INFORMATION

#### Lecture Outline

2.1 Introduction

2.2 Objectives

#### 2.3 Selecting Methods

#### 2.4 Analyzing and Interpreting Information

#### 2.5 Quantitative and Qualitative Information, Interpreting and Reporting

#### 2.6 Contents of an Evaluation Plan

2.7 Summary.

2.8 Activities

2.9 Suggestions for further reading

#### 2.1 Introduction

The lecture exposes students to techniques of collecting information, then instruments and methods of inquiry in evaluation independent and dependent variables are explained

The following table provides an overview of the major methods used for collecting data during evaluations.

Method	Overall Purpose	Advantages	Challenges
Questionnaires, surveys, checklists	when need to quickly and/or easily get lots of information from people in a non threatening way	-can complete anonymously -inexpensive to administer -easy to compare and analyze -administer to many people -can get lots of data -many sample questionnaires already exist	-might not get careful feedback -wording can bias client's responses -are impersonal -in surveys, may need sampling expert -doesn't get full story
Interviews	when want to fully understand someone's impressions or experiences, or learn	-get full range and depth of information -develops relationship with client	-can take much time -can be hard to analyze and compare -can be costly

	more about their answers to questionnaires	-can be flexible with client	-interviewer can bias client's responses
Documentation review	when want impression of how program operates without interrupting the program; is from review of applications, finances, memos, minutes, etc	-get comprehensive and historical information -doesn't interrupt program or client's routine in program -information already exists -few biases about information	-often takes much time -info may be incomplete -need to be quite clear about what looking for -not flexible means to get data; data restricted to what already exists
Observation	to gather accurate information about how a program actually operates, particularly about processes	-view operations of a program as they are actually occurring -can adapt to events as they occur	-can be difficult to interpret seen behaviors -can be complex to categorize observations -can influence behaviors of program participants -can be expensive
focus group	Explore a topic in depth through group discussion, e.g., about reactions to an experience or suggestion, understanding common complaints, etc.; useful in evaluation and marketing	-quickly and reliably get common impressions -can be efficient way to get much range and depth of information in short time -can convey key information about programs	-can be hard to analyze responses -need good facilitator for safety and closure -difficult to schedule 6-8 people together
case studies	to fully understand or depict client's experiences in a program, and conduct comprehensive examination through cross comparison of cases	-fully depicts client's experience in program input, process and results -powerful means to portray program to outsiders	-usually quite time consuming to collect, organize and describe -represents dept of information, rather than breadth



## 2.2 Objectives

By the end of this lecture you should be able to;

- 2.1 State methods to collect information
- 2.2 Analyze and interpret various forms of information
- 2.3 Analyze basic qualitative, quantitative information, interpret and report.
- 2.4 Describe the contents of an evaluation plan

## 2.3 Selecting Methods

The overall goal in selecting evaluation method(s) is to get the most useful information to key decision makers in the most cost-effective and realistic way. Consider the following questions:

1. What information is needed to make current decisions about a product or programme?
2. Of this information, how much can be collected and analyzed in a low-cost and practical manner, e.g., using questionnaires, surveys and checklists?
3. How accurate will the information be (reference the above table for disadvantages of methods)?
4. Will the methods get all of the needed information?
5. What additional methods should and could be used if additional information is needed?
6. Will the information appear as credible to decision makers, e.g., to funders or top management?
7. Will the nature of the audience conform to the methods, e.g., will they fill out questionnaires carefully, engage in interviews or focus groups, let you examine their documentations, etc.?
8. Who can administer the methods now or is training required?
9. How can the information be analyzed?

Note that, ideally, the evaluator uses a combination of methods, for example, a questionnaire to quickly collect a great deal of information from a lot of people, and then interviews to get more in-depth information from certain respondents to the questionnaires. Perhaps case studies could then be used for more in-depth analysis of unique and notable cases, e.g., those who benefited or not from the programme, those who quit the programme, etc.

### **Levels of Evaluation:**

There are four levels of evaluation information that can be gathered from clients, including getting their:

1. reactions and feelings (feelings are often poor indicators that your service made lasting impact)
2. learning (enhanced attitudes, perceptions or knowledge)
3. changes in skills (applied the learning to enhance behaviors)
4. effectiveness (improved performance because of enhanced behaviors)

Usually, the farther your evaluation information gets down the list, the more useful is your evaluation. Unfortunately, it is quite difficult to reliably get information about effectiveness. Still, information about learning and skills is quite useful.

## **2.4 Analyzing and Interpreting Information**

Analyzing quantitative and qualitative data is often the topic of advanced research and evaluation

methods. There are certain basics which can help to make sense of reams of data.

When analyzing data (whether from questionnaires, interviews, focus groups, or whatever), always start from review of your evaluation goals, i.e., the reason you undertook the evaluation in the first place. This will help you organize your data and focus your analysis. For example, if you wanted to improve your programme by identifying its strengths and weaknesses, you can organize data into programme

strengths, weaknesses and suggestions to improve the programme. If you wanted to fully understand how your programme works, you could organize data in the chronological order in which clients go through your programme. If you are conducting an outcomes-based evaluation, you can categorize data according to the indicators for each outcome.

## **2.5 Quantitative and Qualitative Information, Interpreting and Reporting**

**Analysis of "quantitative" information** (for information other than commentary, e.g., ratings, rankings, yes's, no's, etc.):

1. Make copies of your data and store the master copy away. Use the copy for making edits, cutting and pasting, etc.
2. Tabulate the information, i.e., add up the number of ratings, rankings, yes's, no's for each question.
3. For ratings and rankings, consider computing a mean, or average, for each question. For example, "For question #1, the average ranking was 2.4". This is more meaningful than indicating, e.g., how many respondents ranked 1, 2, or 3.
4. Consider conveying the range of answers, e.g., 20 people ranked "1", 30 ranked "2", and 20 people ranked "3".

**Analysis of "qualitative" information** (respondents' verbal answers in interviews, focus groups, or written commentary on questionnaires):

1. Read through all the data.
2. Organize comments into similar categories, e.g., concerns, suggestions, strengths, weaknesses, similar experiences, programme inputs, recommendations, outputs, outcome indicators, etc.
3. Label the categories or themes, e.g., concerns, suggestions, etc.
4. Attempt to identify patterns, or associations and causal relationships in the themes, e.g., all people who attended programmes in the evening had similar concerns, most people came from the same geographic area, most people were in

- the same salary range, what processes or events respondents experience during the programme, etc.
5. Keep all commentary for several years after completion in case needed for future reference.

### **Interpreting Information:**

1. Attempt to put the information in perspective, e.g., compare results to what you expected, promised results; management or programme staff; any common standards for your services; original programme goals (especially if you're conducting a programme evaluation); indications of accomplishing outcomes (especially Basic Guide to Programme description of the programme's experiences, strengths, weaknesses, etc. (especially if you're conducting a process evaluation)).
2. Consider recommendations to help programme staff improve the programme, conclusions about programme operations or meeting goals, etc.
3. Record conclusions and recommendations in a report document, and associate interpretations to justify your conclusions or recommendations.

### **Reporting Evaluation Results**

1. The level and scope of content depends on to whom the report is intended, e.g., to bankers, funders, employees, customers, clients, the public, etc.
2. Be sure employees have a chance to carefully review and discuss the report. Translate recommendations to action plans, including who is going to do what about the programme and by when.
3. Bankers or funders will likely require a report that includes an executive summary (this is a summary of conclusions and recommendations, not a listing of what sections of information are in the report -- that's a table of contents); description of the organization and the programme under evaluation; explanation of the evaluation goals, methods, and analysis procedures; listing of conclusions and recommendations; and any relevant attachments, e.g., inclusion of evaluation

questionnaires, interview guides, etc. The banker or funder may want the report to be delivered as a presentation, accompanied by an overview of the report. Or, the banker or funder may want to review the report alone.

4. Be sure to record the evaluation plans and activities in an evaluation plan which can be referenced when a similar programme evaluation is needed in the future.

### **Who Should Carry Out the Evaluation?**

Ideally, management decides what the evaluation goals should be. Then an evaluation expert helps the organization to determine what the evaluation methods should be, and how the resulting data will be analyzed and reported back to the organization. Most organizations do not have the resources to carry out the ideal evaluation.

Still, they can do the 20% of effort needed to generate 80% of what they need to know to make a decision about a programme. If they can afford any outside help at all, it should be for identifying the appropriate evaluation methods and how the data can be collected. The organization might find a less expensive resource to apply the methods, e.g., conduct interviews, send out and analyze results of questionnaires, etc.

If no outside help can be obtained, the organization can still learn a great deal by applying the methods and analyzing results themselves. However, there is a strong chance that data about the strengths and weaknesses of a programme will not be interpreted fairly if the data are analyzed by the people responsible for ensuring the programme is a good one. Programme managers will be "policing" themselves. This caution is not to fault programme managers, but to recognize the strong biases inherent in trying to objectively look at and publicly (at least within the organization) report about their programmes. Therefore, if at all possible, have someone other than the programme managers look at and determine evaluation results.

## **2.6 Contents of an Evaluation Plan**

Develop an evaluation plan to ensure your programme evaluations are carried out efficiently in the future. Note that bankers or funders may want or benefit from a copy of this plan.

Ensure your evaluation plan is documented so you can regularly and efficiently carry out your evaluation activities. Record enough information in the plan so that someone outside of the organization can understand what you're evaluating and how. Consider the following format for your report:

1. Title Page (name of the organization that is being, or has a product/service/programme that is being, evaluated; date)
2. Table of Contents
3. Executive Summary (one-page, concise overview of findings and recommendations)
4. Purpose of the Report (what type of evaluation(s) was conducted, what decisions are being aided by the findings of the evaluation, who is making the decision, etc.)
5. Background About Organization and Product/Service/Programme that is being evaluated
  - a) Organization Description/History
  - b) Product/Service/Programme Description (that is being evaluated)
    - i) Problem Statement (in the case of nonprofits, description of the community need that is being met by the product/service/programme)
    - ii) Overall Goal(s) of Product/Service/Programme
    - iii) Outcomes (or client/customer impacts) and Performance Measures (that can be measured as indicators toward the outcomes)
    - iv) Activities/Technologies of the Product/Service/Programme (general description of how the product/service/programme is developed and delivered)

- v) Staffing (description of the number of personnel and roles in the organization that are relevant to developing and delivering the product/service/programme)
- 6) Overall Evaluation Goals (eg, what questions are being answered by the evaluation)
- 7) Methodology
  - a) Types of data/information that were collected
  - b) How data/information were collected (what instruments were used, etc.)
  - c) How data/information were analyzed
  - d) Limitations of the evaluation (eg, cautions about findings/conclusions and how to use the findings/conclusions, etc.)
- 8) Interpretations and Conclusions (from analysis of the data/information)
- 9) Recommendations (regarding the decisions that must be made about the product/service/programme)

Appendices: content of the appendices depends on the goals of the evaluation report, eg.:

- a) Instruments used to collect data/information
- b) Data, eg, in tabular format, etc.
- c) Testimonials, comments made by users of the product/service/programme
- d) Case studies of users of the product/service/programme
- e) Any related literature



## **2.7. Summary**

lecture has exposed the learners to various procedures and techniques of data collection. Methods of selecting information and goals of selecting techniques have been discussed. The learner has been made to understand that understanding qualitative and quantitative information and the skills of analyzing, interpreting and reporting are key in programme evaluation. The learners have also been made to be aware of the importance of developing contents of an evaluation plan for efficient carrying out of programme evaluation.

## **2.8 Activity**

Lectures, written exercises, student presentation, class discussions.

## **2.9 Suggestions for further reading**

Anderson, S.B. & Ball, S. 1978: *The Professor and Practice of Program Evaluation*. San Francisco: Jossey-Bass

Yavorsky, Diane K: 1978. *Discrepancy Evaluation Research Center*, University of Virginia.

## **LECTURE 3.0 Survey in Programme Evaluatuion**

3.1 Introduction

3.2 Lecture Objectives

By the end of the lecture you should be able to;

3.3 Describe the various classifications of survey

3.4 Identify and distinguish strategies, historical data collection and ethnographic

surveys

3.5 Summary

3.6 Activity

3.7 Suggestions for further reading.

### **3.1 Introduction**

- Survey does not emphasize diverse aspects of a single case as is “case studies”.
- Survey emphasizes number of answers to same question by different people
- Emphasis in survey shifts from answers to all questions given by an individual (case study) to
- Answers to one question given by all respondents (survey).
- Criteria for quality of a survey
  - (i) How many questionnaires have been filled out
  - (ii) How large and representative the sample is

#### **Purpose of Surveys**

Survey study gathers data at a particular point in time with the intention of:

- Describing nature of existing conditions
- Identify standards against which existing conditions can be compared
- Determining the relationship that exists between specific events.

#### **Examples:**

School surveys may explore and evaluate,

- Conditions, maintenance of school buildings
- Administrative procedures
- Management styles
- Financial expenditure patterns
- Quality of teaching staff
- Students performance etc.
- Educational needs
- Internal evaluation and improvement

### 3.3 Classification of Surveys

#### Two Criteria:

(1) Group Measured

- Sample or whole population
- Population survey – census
- A sample survey – selection of a subset of the population (sample) to be measured
- Sample selected randomly
- Sample used to generalize from the sample observations to population from which sample was drawn/selected.
- 

(2) Method of Data Collection (for Surveys)

(a) Written questionnaire

(b) Personal interview

(c) Controlled observation (e.g. data from school records using achievement tests, attitudes inventories as measuring instruments) etc.

Population	Questionnaire	Interview	Observation
	1. Population using question	2. Population using interview	3. Population using observation
Sample	4. Sample using Questionnaire	5. Sample using interview	6. Sample using observation

## **Historical Data Collection**

Is the systematic search for facts relating to questions about the past, and the interaction of these facts to explain the present.

Sources of Data for Historical Evaluation

Mainly recorded documents/or historical summaries

- Documents: written/printed material
- Handwritten or printed e.g. letters
- Private/personal documents e.g. diaries
- Published or unpublished e.g. journals
- Public documents e.g. institutional files
- Quantitative records: Statistical e.g. census records, registers, attendance Records
- Relics: Physical/Visual properties of object's past. E.g. school building, architectural plans
- Oral records: The spoken word e.g. tales, sagas, dance, music

### **3.4 Strategies of Data collection**

- Structured and semi-structured interviews
- Self-completion or postal questionnaires
- Standardized tests of attainment or performance
- Attitude tests and/or scales

## **Quantitative Techniques of Data Collection**

- Questionnaires and interviews are most common instruments
- Examination of existing records technique (students' files, report forms, exam records, CBS)

## **Ethnographic Data collection**

Relies on observations in which the researcher is a participant in the situation – participating. Observation – descriptive in words, pictures not numbers.

### **3.5 Summary**

The Lecture highlights the differences between the various forms of survey as used in programme evaluation depending on purpose of survey. The purposes and strategies of survey are categorized. Group measured and method of data collection are discussed. Other methods such as historical method of data collection and ethnographic methods have been explained.

### **3.6 Activities**

Group discussion and exercises in survey

## **Ethnographic Data collection**

Relies on observations in which the researcher is a participant in the situation – participating. Observation – descriptive in words, pictures not numbers.

### **Suggestions for further reading**

Campbell, D.T., & Stanley, J.C. 1966. Experimental and Quasi-Experimental Designs for Research. Chicago: Rand McNally 1979.

Alkin, M.C., Daillak, R. & White, P. Using Evaluations: Does Evaluation Make a Difference? Beverly Hills.

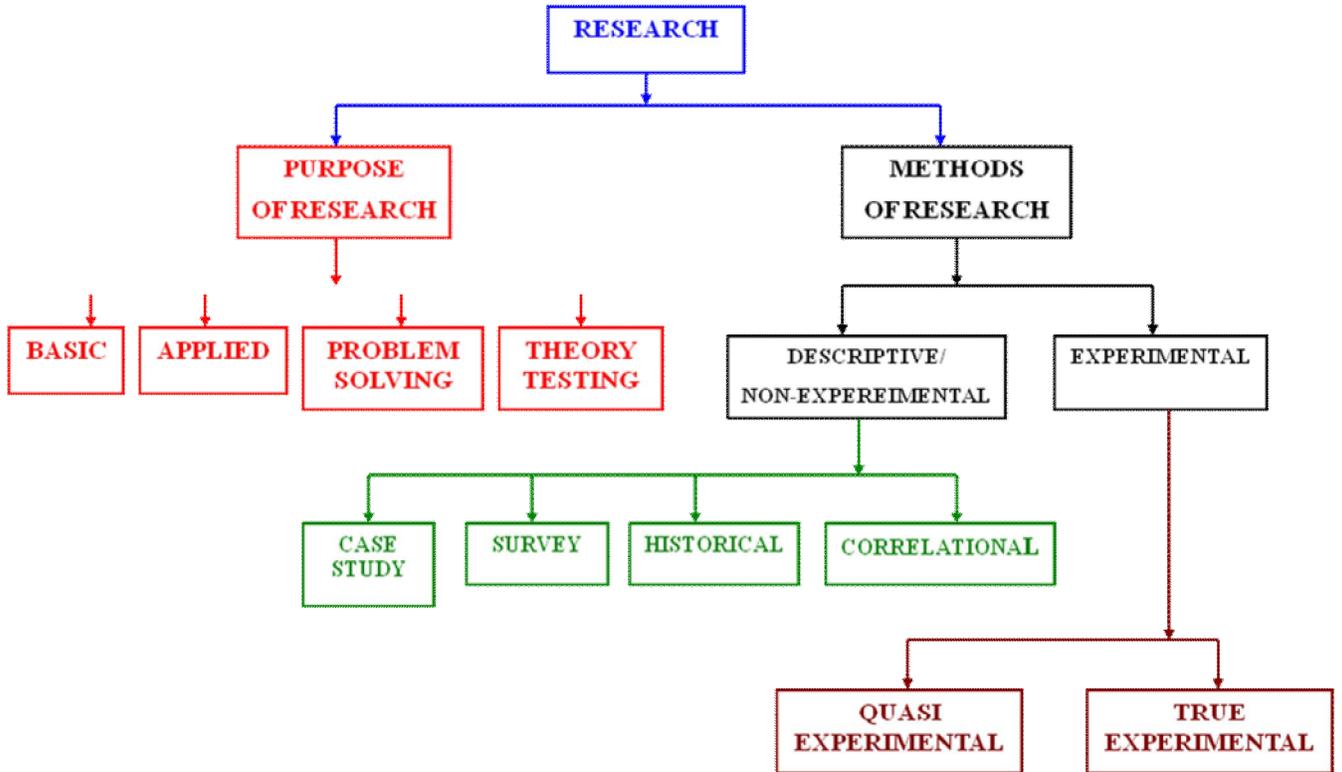
## **LECTURE 4.0 Quantitative Tools for Evaluation**

- 4.1 Introduction
- 4.2 Lecture Objectives
  - By the end of the lecture you should be able to;
- 4.3 Classification of research for programme evaluation
- 4.4 Variables applied in programme evaluation .
- 4.5 Measurement variables
- 4.6 Quantitative approaches to programme evaluation
- 4.7 Summary
- 4.8 Activities

Lectures, class discussions, exercises

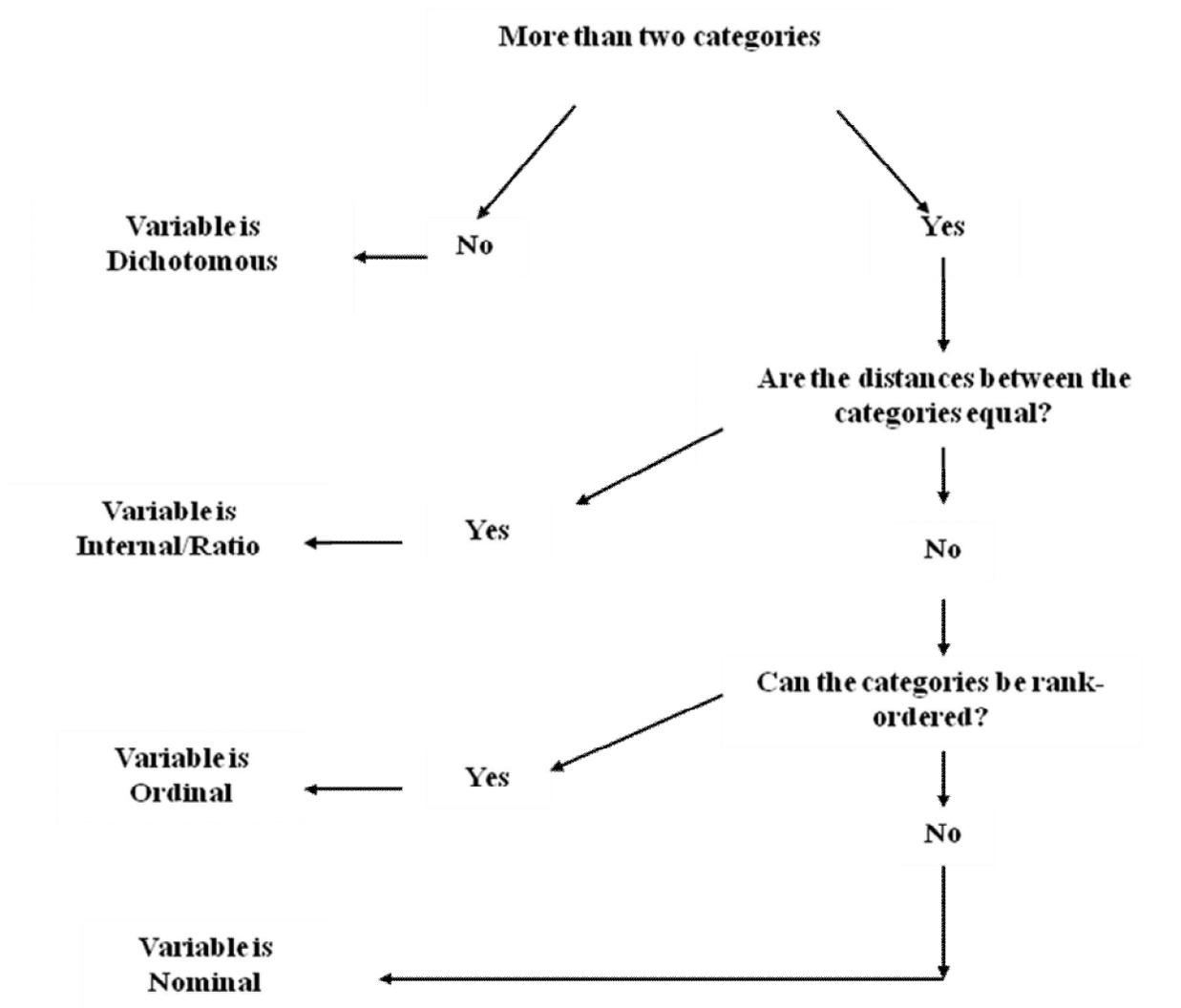
- 4.9 Suggestions for further reading

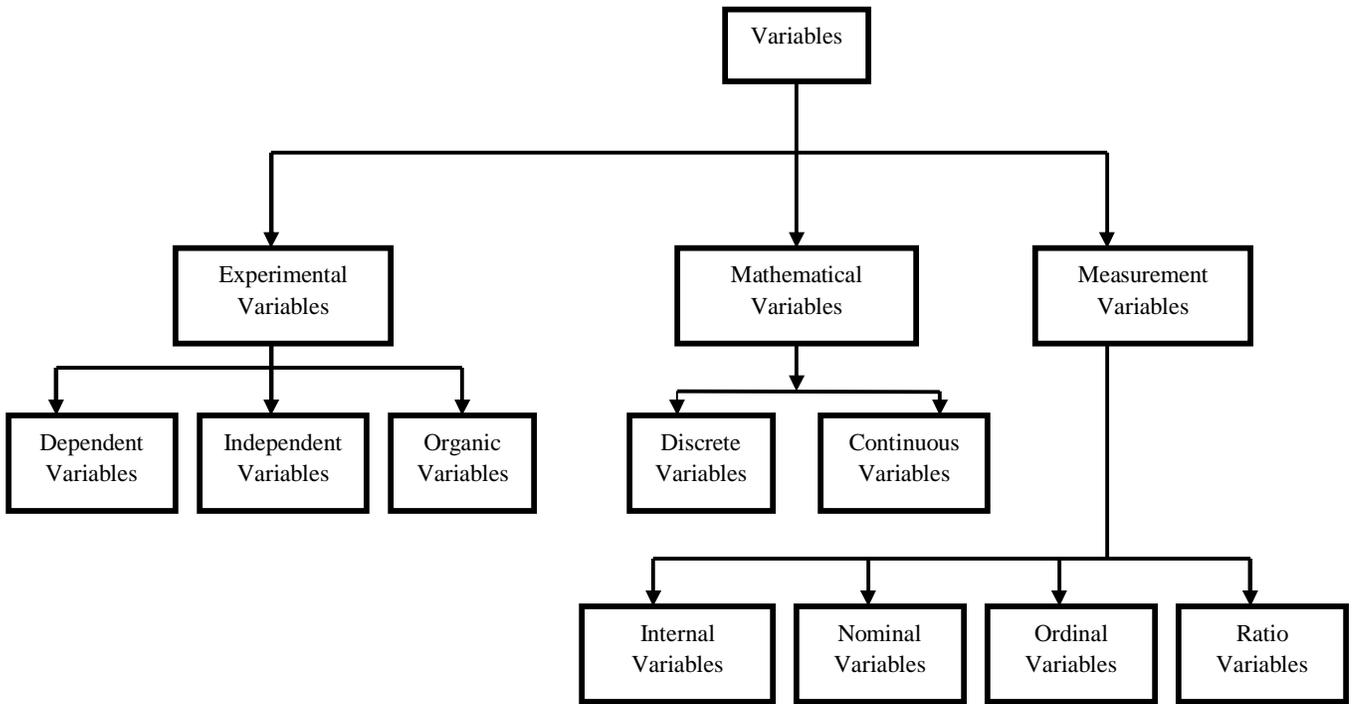
### 4.3 Classification of Research that generate data for Evaluation



## 4.4 Common Variables used in Evaluation

### Measurement Scales





## 4.5 Measurement variables and scales

The type of measurement plays a key role in determining the appropriate method of analysis when a variable is used as a dependent variable. We present a typology for four types of measurement based on three distinctions. First, let us distinguish between *quantitative* and *qualitative* measurements. The distinction between the two is that quantitative measurements closely index the substantive meanings of a variable with numerical values, whereas numerical values for qualitative measurements are substantively less meaningful, sometimes merely as classifications to denote mutually exclusive categories of characteristics (or attributes) uniquely. Qualitative variables are categorical variables.

Within the class of *quantitative* variables, it is often useful to distinguish further between *continuous* and *discrete* variables. Continuous variables, also called interval variables, may assume any real value. Variables such as income and socioeconomic status are typically treated as continuous over their plausible range of values. Discrete variables may assume only integer values and often represent event counts. Variables such as the number of children per family, the number of delinquent acts committed by a juvenile, and the number of accidents per year at a particular intersection are examples of discrete variables. According to our earlier definition, discrete (but quantitative) variables are also categorical variables.

*Qualitative* measurements can be further distinguished between ordinal and nominal. Ordinal measurements give rise to ordered qualitative variables, or *ordinal* variables. It is quite common to use numerical values to denote the ordering information in an ordered qualitative variable. However, numerical values corresponding to categories of ordinal variables reflect only the ranking order in a particular attribute; therefore, distances between two adjacent values are not the same. Attitudes toward gun control

(strongly approve, approve, neutral, disapprove, and strongly disapprove), occupational skill level (highly skilled, medium-skilled, low-skilled, and unskilled), and the classification of levels of education as (grade school, high school, college, and graduate) are examples of ordinal variables.

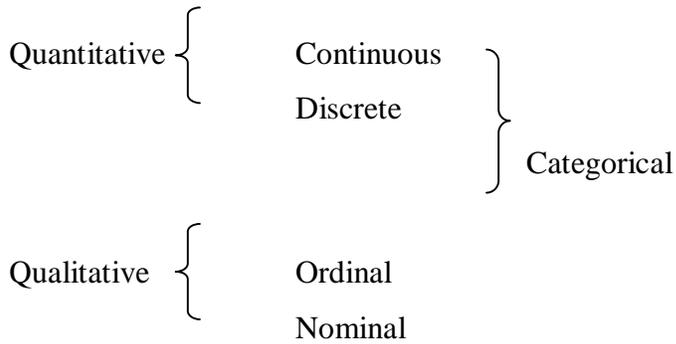
Nominal measurements yield unordered qualitative variables, often referred to as *nominal* variables. Nominal variables possess no inherent ordering, nor numerical distance, between category levels. Classifications of race and ethnicity (White, Black, Hispanic, and other), gender (male and female), and marital status (never married, married, divorced and widowed) are examples of unordered qualitative variables. It is worth noting at this point, however, that the distinction between ordinal and nominal variables is not always clear-cut. Much of the distinction depends on the research questions. The same variable may be ordinal for some researchers but nominal for others.

To further illustrate the last point, let us use occupation as an example. Distinct occupations are often measured by open-ended questions and then manually coded into a classification system with three digit numerical codes that do not represent magnitudes in substantive dimensions. Since the number of potential occupations is large (usually at least a few hundred in a coding scheme for a modern society), it is desirable, and is indeed necessary, to reduce the amount of detail in an occupational measure through data reduction. One method of data reduction is to collapse detailed occupational codes into major occupational categories and treat them either as constituting an ordinal or even a nominal measurement (Duncan 1979; Hauser 1978). Another method of data reduction is to scale occupations along the dimension of a socioeconomic index (SEI) (Duncan 1961) – thus into an interval variable. More recently, Hauser and Warren (1997) challenged Duncan’s approach and suggested instead that, to measure occupational socioeconomic status, occupations are best scaled into two separate dimensions of occupational income and occupational education. Hauser and Warren’s work illustrates the importance of considering multiple dimensions when nominal measures are scaled into interval measures.

Figure 1.1 summarizes our typology scheme for the four types of measurements variables: discrete, ordinal and nominal, all of which will be discussed in this book. This

distinction among the three types of categorical variables is useful only when the number of possible values equals or exceeds three. When the number of possible values is two, we

### Two Philosophies of Categorical Data



have a special case called a binary variable. A *binary* variable can be discrete, ordinal, or nominal, depending on the researcher's interpretation. For example, if a researcher is interested in studying compliance with the one-child policy in China, the dependent variable is whether a couple has given birth to more than one child. For simplicity, assume that in a particular sample a woman has at least one child and no more than two children. Let us code  $y$  so the  $y = 0$  if a woman has one child, and  $y = 1$  if she has two children. In this case, the dependent variable can be interpreted as discrete (number of children – 1), ordinal (one child or more than one child), or nominal (compliance versus noncompliance). Fortunately, the researcher may apply the same statistical methods for all three cases. It is the substantive understanding of the results that varies from one interpretation to another.

## 4.6 quantitative approaches to Programme Evaluation

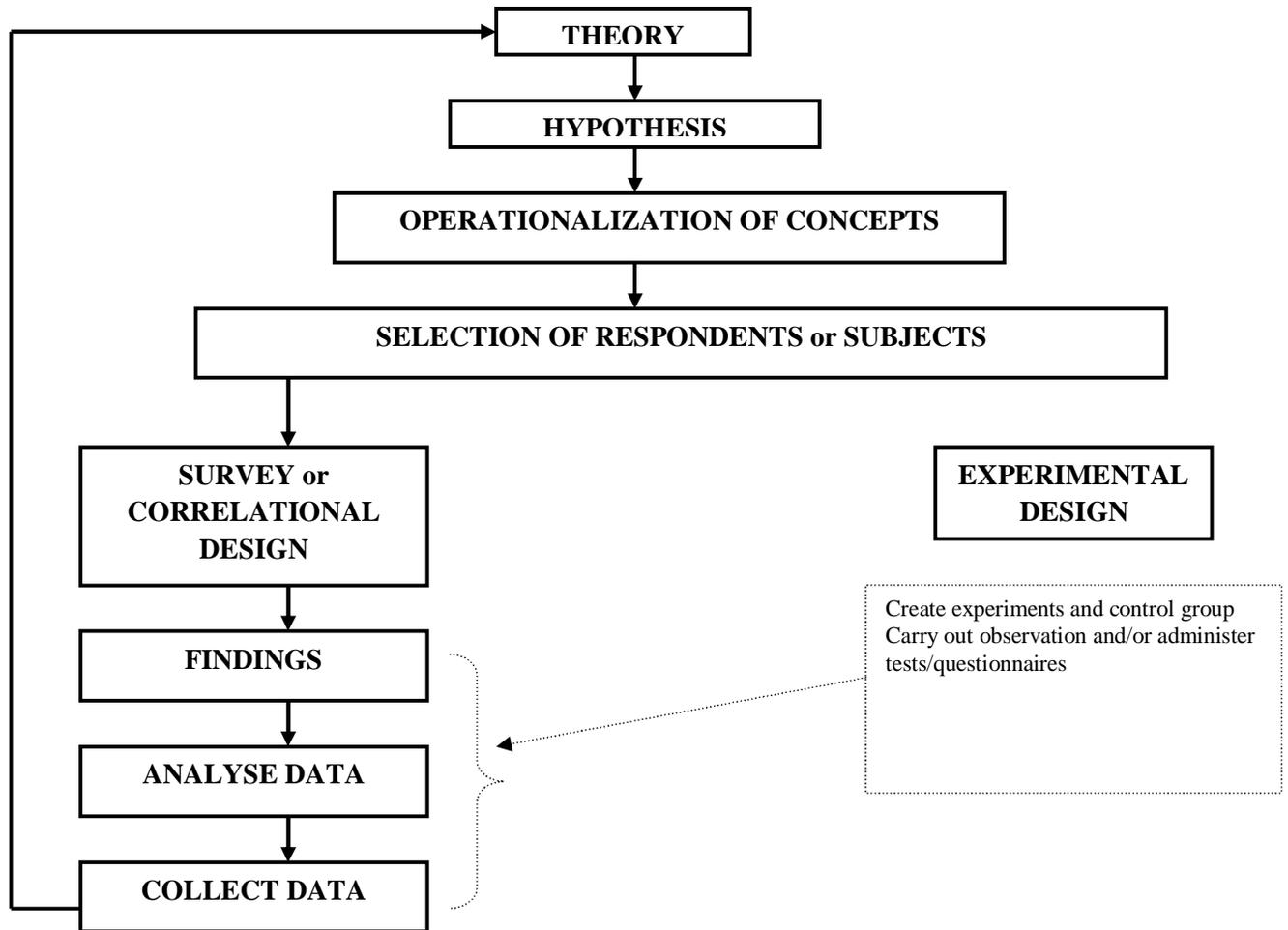
### Theory

Set of statements relating different aspects of some phenomenon. A reasoned statement or proposition explaining, predicting some phenomenon. Presents a proposition f a systematic view of a phenomenon.

### **Hypothesis**

Statement of specific expectations above the nature of things, derived from a theory.

### **Stages in Data collection analysis and theory formulation**



## Hypothesis Testing

Determining where theoretical expectations are confirmed by what goes on in the real world.

## A proposal

Provides a preview of why a study will be undertaken and how it will be conducted.

## Operationalisation

Concrete steps or operations that will be used to measure specific concepts. A process of developing operational definitions.

### **Operational Definition**

The concrete and specific definition of something in terms of the operations by which observations are to be categorized. The operational definition of “earning an A in Research Methods” is “correctly answering at least 90% of the final exam questions”.

### **Variables**

Is a concept empirical counterpart. Concepts are in domain of a theory, variables are a matter of observation and measurement. Variables require more specificity (e.g. income specified as annual family income) than concepts.

### **A paradigm**

Is a fundamental model or scheme organizes our view of something. Tells us where to look for answers.

### **Independent Variable**

Independent Variable is presumed to cause/determine a DV.

- If it is true that “religiosity is partly a function of sex-henoc “women are more religious than men –“
- Sex is the IV and religiosity is the DV in above.
- Note: Any given variable might be treated as IV in one part of an analysis and DV is another part of the analysis.
- Religiosity might become an IV in an explanation of crime.

### **Dependent Variable**

That variable assumed to depend on or be caused by another (called IV). If it is true that “income is partly a function of amount of formal education” then income is being treated as DV.

It is a wimpy variable.

### **Level of significance**

- The degree of likelihood that an observed, empirical relationship could be attributable to sampling error.
- A relationship is significant at the .05 level if the likelihood of its being only a function of sampling error is no greater than 5 out of 100.

### **Statistical Significance**

A general term reference to the unlikeliness that relationships observed in a sample could be attributed to sampling error alone.

### **Conceptual Model**

- Models form simplified familiar structure to help gain insight, understand a phenomenon one needs to explain.
- A conceptual model is away of relating factors that influence a particular outline in a more pictorial or diagrammatic way.

### **Types of models**

- Conceptual framework
- Theoretical framework

### **Conceptual Framework**

- Employs use of drawing/diagrams to explain inter relations between variables.
- Variables/other related factors put in boxes with arrows for interconnections between them.

- Prior conditions variables, intervening variables farmers encounter in reaching family goals provide a conceptual framework.

### **Theoretical Framework**

- Theoretical framework consists of a theory (theories) forming background and guide to investigation in question.
- The theories could be in conflict with each other hence study intends to resolve the conflict.
- Importance of a theoretical framework is bring order, unity and simplicity to what is being investigated.
- Helps clarity statement of problem and development as hypotheses.
  
- Theoretical framework should:
  - (i) Identify and state the theories
  - (ii) State their respective proponents
  - (iii) Identify and state basic tenets and how tenets conflict
  - (iv) Show how the theories will guide the study and the findings will resolve the conflict between the theories.
  
- By identifying a research problem, you develop hypotheses as tentative answers to that problem.
  
- Such hypotheses should be developed within the framework of a suitable theory/theories.
  
- As theories are the untested answers we give to research problems or questions.
  
- Theoretical framework of a study is a supporting mechanism developed from theories.

- Theoretical framework developed from suitable theories provide tentative answers or explanations to particular research question or problem.
- Possible explanations therefore are found within the theoretical framework developed for your study and not within the theories.

#### **4.7 Summary**

The lecture has addressed the issues of research in evaluation focusing on the major variables used in programme evaluation. Experimental, mathematical and measurement variables have been discussed in detail. Definitions of dependent and independent variables are give. Research is classified according to purpose and method and basic, applied and problem solving research clearly differentiated.

#### **4.8 Activity**

Class discussions, group discussions, students' presentations.

#### **4.9 Suggestions for further reading**

Patton, M.Q. 1978: Utilization – Focused Evaluation Beverly Hills: Sage  
 Popham, W.J. Educational Evaluation 1975: Englewood Cliffs,  
 N.J.: Prentice Hall

### **LECTURE 5.0 Forms of Evaluation Design**

#### 5.1 Introduction

#### 5.2 Lecture Objectives

By the end of this lecture students will be able to:

#### 5.3 Formative versus summative evaluations

#### 5.4 Types of Designs

#### 5.5 Summary

5.6 Activity

5.7 Suggestions for further reading

## **5.1 Introduction**

Students have been exposed to various forms of evaluation design, alternative designs

and procedure for evaluation

## **5.3 Formative versus Summative Evaluation**

### **Formative Evaluation and Summative Evaluation**

Formative Evaluation takes place at the early stages, that is, the stage of formation, building up, specification on how to achieve a project goal. A project is an undertaking directed at accomplishment of one or more strategies or at least one objective from the action plan. It must contain cost and schedule estimates. A project life cycle is a series of events (actions) followed in its implementation form 1. Defining the Project, 2. Planning the Project, 3. Implementation of the Project that has monitoring and adjustments, 4. Evaluation of the Project and 5. Celebration.

Formative Evaluation therefore is used to glean information to help improve project, Curriculum, in-service structured for staff use.

Evaluation purses the extent to which Objectives are actually being realized. It is the systematic investigation of the worth and/or merit of some object and as such has steps and functions. Summative Evaluation takes place at end of a project, after the programme has been fully developed. It is therefore designed to assess the worth of an object often requires by funding agents, sponsors and administrators.

## **5.4 Types of Designs**

### **(I) Cross-sectional Studies**

Exploratory and descriptive studies are often cross-sectional. Research projects are designed to study some phenomenon by taking a cross-section of it at one time and analyzing that cross-section carefully as a single Kenya census described at a given time.

**(II) Longitudinal Studies**

**Designed** to permit observation over an extended period.

(a) Trend Studies

A longitudinal study that observes changes within some general population over time e.g. Galling Polls during course of an election campaign showing trend in relative strengths of candidates.

(b) Cohort Studies

Longitudinal studies that examine more specific self populations (cohorts) as they change over time e.g. age group of 1920 circumcision, people attending college during coalition government etc or people who got married in 1990 could be done every 10 years to study economic attitudes of Cohort born during coalition government.

(c) Panel Studies

Similar to trend and cohort studies except same set of people studied each time. E.g. same sample voters interviewed every month for their voting intention.

**5.5 Summary**

The learners have learnt that formative evaluation is used to glean information to

help improve a curriculum or inservice. Summative evaluation is designed to assess the worth of an object. There is formative design and summative

design. The learners have been exposed to most commonly used designs namely, longitudinal,

### **5.6 Activity**

Students discussions. The lecturer assists students to design evaluation,

construct a design and enables them to identify steps in doing evaluation

### **5.7 Suggestions for further reading**

Wolf, Robert L. Trial by Jury: 1995 A new evaluation method.

Ph. Delta Kappan.

## **LECTURE 6.0 Forms of Analyses in Evaluation**

6.1 Introduction

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6.2 Lecture Objectives

By the end of the lecture you should be able to;

6,3 Explain types of research analysis

6.4 Explain the use of variables in correlation analysis

6.5 Discuss the role of experimental designs in programme evaluation

6.6 Summary.

6.7 Activities

6.8 Suggestions for further reading

Wolfenberger, W. & Glenn, L. 1995 Program Analysis of Service Systems.

Vol. II:

Field Manual. Toronto. National Institute on Mental Retardation

### **6.1 Introduction**

There are many different research types which can be used in programme evaluation. There are those for which the researcher has no control over the independent variable and there are those which attempt to involve cause-effect or causal comparative approaches. In the causal-effect, measures of associations or relationship may be assessed by coefficient of correlation. There are several experimental designs used in experimental or control groups. In the experiment, the independent variable is called the experimental variable because it can be made to vary by the evaluator. In these experimental designs, randomization or random assignment of subjects to experimental group or control group is emphasized.

### **6.3 Types of Research Analyses**

(i) Ex-Post Factor Research

Researcher has no direct control of the independent variables because they are inherently not manipulable.

(ii) Cause - Effect Research

Attempt to involve cause – effect or causal comparative approach

- In ex-post factor research approaches researcher has no direct control of independent variables, thus he/she does not manipulate any variables but only determines relationship and effects between variables.
- In ex-post factor researcher tries to find out if relationship exists and also the direction – positive, negative – strength (0-1).

- The most commonly used measures of association or relationship is the “PERSONS’ s **Product Moment Correlation**: indicated by the symbol  $r$ .
- The coefficient of correlation ranges from (-1 to + 1.0).
- If the co-efficient,  $r$  will be +1.0, this is a perfectly positive correlation and ( $r - 1.0$ ) is a perfect negative correlation.
- No relationship, the co-efficient will be zero.

### **Co-efficient of correlation, R (Interpretation)**

- +1.0 = A perfect correlation, if you scored higher in BSc statistics you will most likely score higher in Msc statistics.
- -1.0 = If you scored lowest in BSc statistics you will most likely lowest in AICM statistics.
- +0.6 = A high positive correlation, if you scored above average in BSc statistics will most likely score above average in Msc statistics.
- - 0.6 = A high negative correlation
- (+0.1 to - 0.1) = very low positive or very low negative correlations – remotely related.
- 0 = There is totally no relationship between scores in BSc Statistics and AICM Statistics.

### **Cause-effect relationship**

Are the kind of research that try to investigate if an association (relationship) between two variables are strong enough so that the researcher can conclude that:

“one (the independent variable)” causes

“the other (dependent variables)”

e.g. Frequency of exposure to computer practicals in AICM (the independent variable) changes or enhances students’ performance in the subject (the dependent variable).

- If there is a positive change or a negative change, then we can call the two sets of variables cause relationships.
- Thus the manipulated independent variable (frequency of exposure to computer practicals). Is the cause of the dependent variable (the students' achievement in the subject) whose change is observed

#### **6.4 Correlation Analysis**

- Purpose is to discover relationships between variables through the use of correlational statistics.
- Purpose is to express in mathematical terms the degree of relationship between any two variables.
- Relationship is perfectly positive then the correlation co-efficient will be 1:00.
- Relationship is perfectly negative then the correlation co-efficient will be – 1:00
- 
- N relationship the correlation co-efficient will be zero.
- Correlation co-efficient is extent to which one variable is related to another e.g. how effectively students' score on one test can be used to predict their scores in another test.
- The square of a correlation co-efficient yields a statistic that is generally called EXPLAINED VARIANCE
- The square of a correlation co-efficient of 0.3 is 0.09.
- If a variable (Mathematics) correlates 0.3 with a variable B (Physics), then variable A (Mathematics) explained 9 per cent of the variance in B (Physics).
- 

#### **6.5 Experimental Approaches and Design in Programme Evaluation**

- Experiment means trying something i.e. one or more independent variables are manipulated to determine the effects.
- An independent variable that is manipulated is called an experimental variable.
- An experiment is a research situation in which at least one independent variable called the experimental variable is deliberately manipulated or varied by the researcher.
- Thus, the approach involves the manipulation of variables (possible causes) to determine the effect of the manipulation.
- The approach truly tests for cause – effect relationship.

### **Experimental Design**

- The random allocation of subjects to either an experimental group or a control group.
- The control group is a comparison group that does not receive the experimental treatment.
- Students receiving the lessons (the experimental group) and students who do not receive lessons (control group).
- For the two groups, assess performance for each group before and after the intervention.
- Experimental research may take place in lab or in field.
- Role of researcher is to test the hypothesis by carrying out the experiment.

- The variable that is controlled by the experimenter is called the Independent Variable (IV). The variable that changes because of this is called the Dependent Variable (DV).
- The above is a true-experimental design, where the experimental groups are randomly assigned.
- In quasi – experimental, the randomization is usually ignored (hence subjects are non-equivalent).
- Read on the several experimental designs:
  - Post – test only control group design
  - Pre-test, post-test control group design
  - Solomon’s four group design
  - Factorial designs
  - Repeated measures design
  - Counter balance design.
- A well designed experiment has these criteria;
  - Adequate experiment control
  - Lack of artificiality
  - Basis for comparison
  - Adequate information from the data
  - Uncontaminated data
  - No confounding of relevant variables
  - Representativeness
  - Parsimony (simpler the design the easier to implement).

## 6.6 Summary

In this lecture the students have been exposed to different types of research analyses. Ex-post facto research and cause-effect research have been explained. The meaning of coefficient of correlation, the purpose of correlation statistics and cause-effect relationships have also been discussed. Experiments play a vital role in programme evaluation. These roles are clearly seen in quasi-experiments and randomization. The role of experiments has led to experimental designs in evaluations. These designs include post-test only design, pre-test, post-test control group, Solomon's four-group design, factorial design, repeated measures design and counter-balance design.

### **6.7 Activity**

Class discussions, question and answer, practice exercises,

### **6.8 Suggestions for further reading**

Wolfenberger, W. & Glenn, L. 1995 Program Analysis of Service Systems.

A method for the Quantitative Evaluation of Human Services (3<sup>rd</sup> Ed.)

Vol. II:

Field Manual. Toronto. National Institute on Mental Retardation.

## **LECTURE7.0 Sampling**

### **Course Outline**

7.1 Introduction

7.2 Lecture Objectives

By the end of the lecture you should be able to:

7.3 Distinguish the broad classes of sampling designs-probability sampling  
from

non-probability sampling

7.4 Explain the types of probability sampling

7.5 Explain the types of non-probability sampling

7.6 Summary

7.7 Activities

7.8 Suggestion for further reading

### **7.1 Introduction**

There are two kinds of general kinds of sampling methods: random and purposive (called also the objective and subjective). Random methods are used to produce samples that are, to a given level of probable certainty, free of biasing forces. They allow use of inferential statistics to generalize findings with calculable degrees of certainty. Purposive methods are used to produce samples that will represent particular points of view. Some commonly employed sampling methods include: straight random sampling, quota sampling, stratified sampling, matrix samples, purposive key informants, expert judges, extreme groups, grapevine sampling. This lesson discusses

sampling designs appropriate in programme evaluation, types of probability sampling and non-probability sampling.

### **Sampling and sample**

- Sampling is process of selecting a sub-set of cases to draw conclusions about the entire set (target population, universe, all members of real/hypothetical set of people).
- A sample is a small part of the large population, representative of the larger population.
- Any statement made about the sample should be true for the entire population.
- Data collection on a sample less time consuming and less costly.
- Sampling is only practical method of data collection
- Sampling as only practical way to collect data as one cannot collect data for all schools (children) in the country.

Two types of errors associated with sampling:

- (i) the chance and bias error
- (ii) the non-response error

### **Chance Error**

When in a sample, one element, and not the other has been included e.g. studying module 1 and module 2 students, one may end up with more module 1 than module 2.

### **Bias in Selection**

Faulty in techniques e.g. over or under representation of one strata in the sample.

### **Non-response**

When an element of the sample does not respond to a measurement instrument for whatever reason e.g. interviewee is tired or sick or language problem interviewee change of residence. Interviewee refuses to answer, collaborate

### Good Sample Entails

- Well defined population (operational)
- Adequate chosen sample call category
- How well a sample estimates population.

For an adequate sample you need have “the unit of sampling from which you base your sample”.

E.G. A secondary school could be your sampling unit

- Using the sampling unit one can easily identify the target population sub-population.

### Representativeness

- Use of probability or random sampling to select the sample.
- This method determines probability of including each element of the population
- Allows us to estimate how accurate the generalization from sample to population is likely to be.

### 7.3 Sampling Designs

- In sampling, we obtain a sample representative of target population.
- Representative meant a close approximation of certain characteristics of the target group.
- The Quality of a sample must be judged in terms of “procedures that produces it in terms of its “sampling design”.
- Sampling design refers to part of the research plan indicating how cases are to be selected for observation.
- Broad classes of sampling designs are probability and non-probability.
- Probability sampling (PS) scientifically more acceptable though not economical.

- Probability sampling characteristic made possible through random selection in that cases in population have known probability of being included in the sample.
- Non-probability sampling (N/-PS) characteristic is that chances of selecting any case are not known because cases are non-randomly selected.
- PS designs advantages over N-PS designs is (1) remove possibility of bias thus research interfering with selection of cases (2) the random selection one can apply laws of mathematical probability to estimate sample accuracy.
- With PS population to which sample is generalized is known while population is undefined in N-PS and laws of probability do not apply.

## 7.4 Types of Probability Sampling

### 1. Simple Random Sampling (SRS)

- It is a procedure in which all individuals in defined population have an equal and independent chance of being selected as a member of the sample.
  - Independent here means, the selection of one individual does not affect in any way selection of any other individual.
  - Precise SRS definition: It is a process of selection from a population that provides every sample of a given size an equal probability of being selected.
  - Purpose: In random sampling technique, random samples yield/research data that can be generalized to a larger population within statistically determined margins of error.
- Random sampling permits researcher to apply inferential statistics to the data.
  - Inferential statistics enable researcher make certain inferences about population value (e.g. mean, std. deviation, correlation coefficient), on basis of obtained sample values.
  - Random sampling simply means accidental.

- SR sampling procedure provides equal opportunity of selection for each element of the population.
- Techniques of selecting by simple random selection include:
  - Tossing a coin or dice
  - Lottery technique
  - Using random number tables

### **Tossing coin or Dice**

- Depends on size of population from which sample is drawn.
- If population is two students and need to select only one – tossing a coin is appropriate.
- Each student is given equal chance of being selected (head or tail).
- Mutual understanding on either head or tail as winning symbol should be reached.
- Method used to select the direction each team (football, volleyball) would start the kick-off.
- If population is six and only one student is required use a dice to select.
- Assign numbers between 1-6 to students (1-6).
- Tell them the expected winning number before the dice is tossed.
- An independent observer should do the tossing.

### **Lottery Technique**

- Population and sample size determined and known in advance e.g. 45 student and a sample of 30 to be drawn.
- Place a symbol like “yes” pm 30 out of 45 small pieces of paper (equal in size, colour, texture).
- Fold into equal size and shape.
- Place in a container, mix well, and allow each of 45 to pick one piece at a time.
- 30 students who pick “yeas” would be included in the study.

### **Random number table technique**

- Useful for a large population
- Tables consist of long series of three or five digit numbers randomly generated by a computer.
- See table of random number and explanation below.
- In summary SRS is a powerful technique for selecting a sample representative of a larger population.
- Simple Random Sample is not always perfect (rare).
- A selected Simple Random Sample may have had subjects who refused to cooperate, others lost through attrition leaving a sample not truly random.

## 2. **Systematic or Interval Sampling**

- Technique based on selection of elements at equal intervals, starting with a randomly selected element on population list.
- A Systematic Sampling is a procedure by which selection of first sample member determines the entire sample.
- Population members (names, IDs) are orderly e.g. names of students in class (alphabetical) in register.
- The sample size is chosen and the sampling constant “K” determined.
- Selecting 10 students from a list of 50 students, sampling constant K is

$$K = \frac{P}{S} = \frac{50}{10} = 5$$

- Every K<sup>th</sup> or 5<sup>th</sup> student is selected.
- K would have a range of (1-5) students on the list.
- Must randomly select whether to start with 1<sup>st</sup> or 2<sup>nd</sup> or 3<sup>rd</sup> or 4<sup>th</sup> or 5<sup>th</sup> student.
- If 1<sup>st</sup> is randomly selected then the sample includes (1, 6, 11, 21, 26, 31, 36, 41, 46) students.

- If starting student was number 5, then selection order would be (5, 10, 15, 20, 15, 30, 35, 40, 45, 50)
- Systematic Sampling consists of selection of every  $K^{\text{th}}$  case from complete list (population, starting with a random case from the first  $K$  cases in the list.
- Requirements: A sampling interval ( $K$ ), and a random start.
- Sampling interval is ratio of number of cases in population in the desired sample size.
- Random start refers to process of using a table of random numbers/or other device to select at random the initial case between 1 and  $K$ .

### 3. **Stratified m Sampling**

- Samples be selected in a way to ensure certain sub-groups in population are represented in the sample in proportion to their numbers in the population.
- These sub-samples are referred to as stratified samples i.e. the group of units composing a population into homogeneous groups before sampling.
- May be used in conjunction with simple random sampling, systematic cluster.
- In stratified random sampling, the population is divided into two or more mutually exclusive segments called strata.
- Simple random samples are then drawn from each stratum.
- These sub-samples are joined to form complete stratified samples.
- In stratified sampling make decision as to numbers to be selected from each stratum for the sample.
- One method of allocation of number is called equal allocation.
- In equal allocation subjects are selected in equal numbers per stratum.
- If there are four strata, one quarter of the sample would be selected from each stratum.
- Other methods of allocation is the proportional allocation.
- In this proportional allocation format each stratum contributes to the sample a number that is proportional to its size in the population.

- The allocation of strata member in sample is proportional to the number of members in the strata in the population.
- Third method of allocation is optimal allocation.
- In optimum allocation the strata contributions to the sample are proportional to the product of the strata population and variability of the dependent variables within strata.
- Both proportional optimum allocations have advantage over equal allocation and simple random sampling as they control part of the variability in the dependent variables.

#### **4. Multi-stage cluster Sampling**

- In cluster Sampling, the unit of Sampling is not individual, but rather a naturally occurring group of individuals.
- Cluster Sampling is used when it is more feasible or convenient to select groups of individuals from a defined population.
- This situation occurs when it is impossible to obtain a list of members of the accessible population.
- Multi-stage cluster Sampling is a variant of Cluster Sampling.
- In multi-stage Sampling start by sampling a population, which is more general than the final one.
- Common multi-stage Cluster Sampling done when entire population being studied involves area sampling as the first step.
- Area Sampling assumes people live somewhere.
- If areas are samples, then everyone has an opportunity to fall into the sample.
- The researcher first draws a sample of designated areas, e.g. perhaps city estate houses or rural locations.
- Each household in the sampled area is listed, and from that list is drawn the final sample.
- In Kenya we may use the provinces, more, to districts, then divisions, locations, sub-locations and to the households.

## 7.5 Types of Non-Probability Sampling

- Refers to process of case selection other than random.
- Due to non-random selection, N-PS have two basic weaknesses:
  - Investigator bias in selection of units cannot be controlled and impossible to calculate sampling error.
  - Nonetheless it would be a mistake to rule out N-PS.
  - N-PS appropriate in studying
    - Past events
    - Exploratory stages of problem
    - Population with few cases

### Summary of Non-probability

The probability of including each element of the population in a sample is unknown.

Hence an estimate of the likelihood of inclusion is not made.

While probability samples are of much higher quality non-probability samples have advantages of saving time and money and their disadvantages can be reduced by enlarging the sample/choosing homogeneous populations

### Types of Non-probability Sampling

#### 1. Judgmental or Purposive

Select units to be observed on the basis of own views (judgment) about which ones will be representative or most useful.

#### 2. Quota

Units selected on basis of pre-specified characteristics so that total sample will have same characteristics assumed to exist in population studied.

### **3 Snowball**

Selection of secondary units on basis of acquaintance with primary unit group (ask primary units for names of others to participate).

#### **Factors determining appropriate sample size**

- Heterogeneity of the population (degree of dissimilarity in particular characteristic)
- Desired precision (degree of variability or error in a sample estimate).
- Type of sampling design
- Available resources
- Number of breakdowns planned in data analysis (number of variables and variable categories)

#### **7.6 Summary**

Students have been assisted in differentiating probability sampling from non-probability sampling and have also learnt what is meant by the representativeness of a sample. Methods of obtaining a sample in both probabilities have been discussed and advantages and disadvantages of each method explained.

#### **7.7 Activities**

Exercises and class discussions, presentations and demonstrations.

#### **7.8 Suggestion for further reading**

Guba, E.G. & Lincoln, Y.S. 1981: Effective Evaluation: Improving the Usefulness of Evaluation Results Through Response and Naturalistic Approaches. San Francisco. Jossey – Bass.

## **LECTURE 8.0 Questionnaire**

8.1 Introduction

8.2 Lecture objectives

By the end of the lecture you should be able to:

8.3 Distinguish the different types of questionnaires, their merits and demerits

8.4 Construct questionnaires of various techniques

8.5 Summary

8.6 Activities

8.7 Suggestions for further studies

### **8.1 Introduction**

Types of questionnaires, their merits and demerits are discussed and the techniques of constructing questions and administering them addressed. The lesson exposes the learner to various types of questionnaires and their merits and demerits. Unstructured open-ended, structured close ended, contingency, demographic, non-threatening and threatening, attitudes types of questionnaires and examples are discussed. The learner is guided on ways to construct good questionnaires.

### **8.3 Classification of questionnaire:-**

- Unstructured Open-ended questions

Respondents given complete freedom to express their views e.g. to what extent are you satisfied .....brief/lengthy answer or essay type of questions. In some cases only a figure is needed.

**Merits:**

- Simple to construct
- Permit indepth response
- Stimula respondent to think
- Give respondent opportunity to give insight into feeling, background etc.

**Demerits:**

- Difficult to analyze diverse responses given, hence difficult to categorize quantitatively.
- Responding to questions time – consuming
- Irrelevant response/not focused.

**Structured-close – ended questions**

Questions accompanied by a list of possible alternative versions for respondents to select from. E.g. in which order did you place BSc. Degree pursued at the University?

- 4 = First Choice
- 3 = Second Choice
- 2 = Third Choice
- 1 = None

**Merits of closed - ended**

- Easier to analyze as are in usable form
- Are economical to use in terms of time and money
- Easier to administer as alternative response option are given

### **Demerits**

- More difficult to construct as categories must be well thought out
- Responses are usually limited hence compelled to answer questions.

### **Contingency Questions**

Questions usually applicable to certain groups of respondents, hence follow-up questions needed for further information.

#### **Format One:**

Question 1 Are you a regular or module II student at the UoN?

Choices 1 Regular government sponsored student

2 Self-sponsored student

Question 2 If self-sponsored student, how do you manage to finance your studies?

Choices: 1 Harambee

2 Loans

3 Family service

4 Other (specify)

#### **Format Two**

Choices could be such as:

Self-sponsored residential student (please answer question 6-7)

#### **Merits of CQ**

- Easy to analyze
- Easy to administer
- Economical in money and time

#### **Demerits of CQ**

- More difficult to construct

- Limited responses
- Do not allow follow-up for issues pursued further

### **Matrix Questions**

These questions share same set of response categories. Are common when scales (Likertscale type) are being used.

e.g. Indicate whether you agree very well, agree well, agree a little, or do not agree at all

Preparation for	Very well	Well	A little	Not at all
Management skills				
Business				
Practical skills				
Analytical skills				

### **Merits of MQ**

- Easier to complete
- Use space economically/efficiently
- Easier to analyze

### **Demerits of MQ**

- Pattern response, just making random ticks
- May be used even when inappropriate

### **Other Questions**

#### **1. Demographic Questions**

- What is your name?
- What is your sex?
  - (1) Male
  - (2) Female
- Current marital status

- (1) M
- (2) W
- (3) D
- (4) S

**2. None – Threatening behavioral questions**

- How do you plan your study?
- How do you choose your friends?

**3. Threatening behavioral questions elicits defensive reaction**

- How much alcohol do you drink in a week?
- Indicate the frequency of extra-marital sexual relationships you have had in the past year.

4. Knowledge questions found in tests in school asking how much a person knows about a particular subject to avoid threat ask. Do you happen to know.....?  
Mail surveys are not appropriate for knowledge question as one can go look up the answer.

**5. Attitude Questions**

How much do you like or dislike? Avoid: Would you vote for a female candidate from FORD party? Use bipolar question rather than Unmoral ones e.g. Are you in favour of or opposed to...?

Are you satisfied or dissatisfied with.....?

Limit Ranking questions to no more than five alternatives.

Do not use more than five points on the rating scale etc.

**8.4 Techniques of good question construction**

- Specific questions will produce specific answers.
- Overly precise questions can cause problems

- Keep the language simple
- Avoid using double negatives
- Limit each question to a single idea
- Avoid emotionally charged words
- Avoid leading questions
- Be careful of personalization
- Try to avoid subjective terms
- Keep the items as short as possible
- Ensure that all response options are included
- Avoid acronyms and abbreviations
- Check the consistency of answers
- Pilot the questionnaire
- Construct relevant questions

## **8.5 Summary**

In this lecture, students have been exposed to and discussed different types of questionnaires used to gather information and been able to learn techniques of questionnaire construction. The students have also been able to discuss the merits and demerits of the questionnaires

## **8.6 Activities**

Group discussion and questionnaire construction exercises

## **8.7 Suggestions for further reading**

Smith, Nick L. 1981. Evaluability Assessment: A Retrospective Illustration and

## **LECTURE 9.0 Interviews in evaluation**

### 9.1 Introduction

Differently forms of interviews and approaches are discussed.

### 9.2 Lecture Objectives

By the end of the lecture you should be able to;

9.3 Explain the different types of interviews.

9.4 Identify interview methods in evaluation.

### 9.5 Summary

Students have been exposed to various interviews techniques and approaches to interviews.

### 9.6 Activities

Group discussion

### 9.7 Suggestions for further readings

Yavorsky, Diane K. 1978 Discrepancy Evaluation : A Practitioner's Guide  
Evaluation Research Centre, University of Virginia.

## **9.1 Introduction**

### **Definition of Interview**

- Is an oral administration of a questionnaire or an interviewer schedule
- Interviews can be administered by face-to-face encounters, through telephone.

The lesson focuses on types of interview methods and their merits and demerits. The concept “ interviewing” is defined and techniques of interviews based on types of

interviews such as unstructured and semi-structured, mapping, modeling, seasonal calendars and timelines are discussed in detail

### **Interview Methods**

- Researcher asks subjects questions face-to-face or over telephone
- It is flexible and dependent on interviewer skills.

### Demerits

- Time consuming
- Expensive
- Needs training
- Information can be difficult to analyze

### **9.3 Types of interviews**

- The structured interview – The content and sequence of questions are determined before hand.
- The non-structured interview – The content sequence and wording is left to the interviewer.
- The non-directive interview – The interviewer allows the subject to talk freely about the topic. There are no set questions.
- The focused interview – The interviewer has prior knowledge of the topic under discussion.

When using interviewing methods consider these:-

- Use easy to understand language
- Avoid leading questions
- Remember, open – ended questions evoke rich qualitative responses
- Talk less than the interviewee
- Make sure to pilot the interview schedule
- Can be used to:
  - Develop theories
  - Define key variables
  - Generate hypotheses (educated guesses about causes of the problem)
  - Explore and understand organizational structures
  - Study new phenomena.

#### **9.4 Techniques of Interviewing based on types of interviews**

##### **Unstructured Interview**

- Widely used method of data collection
- Researcher has idea of topics to be covered.
- Minimal control over order in which topics are covered over respondent's answers
- Specific questions rarely pre-defined
- It is informal and conversational
- Aim is get respondents open-up
- Probe and stimulate informant to produce more information - key

**Strength:** Allows individual to respond to situational characteristics broadly (read more on this)

**Weaknesses:** Difficult to systematize and analyze the data as it lacks set format and each interview tends to be unique.

## **Semi- Structured Interviews**

- Based on use of an interview guide – written list of questions or topic is to be covered in interview.
- Order/wording vary respondent to respondent
- Interview guide contains main topics to be probed.

## **Semi-structured Interviews**

Interviews using interview guides

1. Depth/focused interviews are intensive in investigation
2. Case studies

Purpose is to collect comprehensive, systematic and indepth information on cases of interest.

- A case may be person, event, illness episode, a programme, an organization, a time period or a community.
- Case studies describe the unit in detail
- Useful in understanding particular people, problems, situations etc.

### **Structure or systematic interviewing techniques**

- Involves subjecting every informant in a sample to same stimuli i.e. asking exact same question.
- Survey researchers most familiar with structured questionnaire
- Data collection produces numerical, quantifiable data.

### **Group interviewing techniques**

- Allows researcher to make inferences about groups
- Unit of analysis is the group, not the individual
- If group interviews with community opinion leaders (sub-chiefs, religious leaders etc) inferences are community leaders as a group and not individuals who participated in group interviews.

### **Focus Group Discussion (FGD)**

- Is special type of group interviews in terms of size, composition procedures.
- Focus is usually of 6 to 8 individuals who do not know each other prior to group discussion but selected due to certain characteristics relevant to the topic.
- FGD differs from informal group discussions as specified, pre-determined criteria are used to recruit FG participants, topics selected before hand and pre-determined list of open – ended questions used.
- FGD used to test new ideas, programmes, improve programmes.

### **Other Group Interview Techniques**

#### **1. Mapping and modeling**

- A group asked to discuss or build maps and models of their community using local materials (stones, grass, sand etc)
- Use different interest groups e.g. women, men, young, old, poor, wealth, working together.

#### **2. Seasonal Calendars e.g.**

- Relative quantities and patterns of rainfall
- Labour activity patterns
- Farming activities
- Relative levels of income and expenditure

#### **3. Timelines**

- Group members asked to recall local events and develop a community history including approximate dates.
- Useful in facilitating discussion about changes that occurred overtime (education, crop output, environ, conditions)

### **9,5 Summary**

Students have been exposed to various interview methods and techniques of doing interviews. The approaches to interviews have been discussed in detail and the learner given exercises to reinforced the concepts in interviews..

## **9.6 Activities**

Group discussion

## **9.7 Suggestions for further readings**

Yavorsky, Diane K. 1978 Discrepancy Evaluation : A Practitioner's Guide  
Evaluation Research Centre, University of Virginia.

## **9.8 Sample Questions**

1. Distinguish formative evaluation from Summative evaluation
2. Evaluation process may involve collecting information (data) by use of survey and experiment methods analyzing the data and interpreting findings:
  - a) Data collection in surveys involve the use of some strategies. List and discuss four of these strategies
  - b) The most widely used quasi- experimental design in programme evaluation is the non-equivalent control group design. Illustrate this method.
3. Delineate and give a brief overview of experimental variables.
4. Based on your general knowledge of statistics, analysis and interpreting evaluation, how would you differentiate correlational analysis from content analysis?
5. Explain what you understand by “random allocation of subject “and “subject is non-equivalent “in an evaluation.
6. Discuss the following alternative ways to design evaluation
  - i) Fixed Design
  - ii) Emergent Design
  - iii) Quasi-Experiment Design
  - iv) Unobtrusive Inquiry

7. In developing a strategic plan for an organization, element of action plans are depicted on implementation matrix. Draw the matrix with the elements orderly arranged and explain each element.
8. a) Discuss the four types of interviews in evaluation  
b) What factors should one consider when using interview methods?
9. Content Analysis, Records Analysis and Correlational Analysis are important in analyzing and interpreting evaluation information. Discuss each of these analyses and give examples.
10. List and discuss six of the commonly used instruments in information collection.

#### BACK PAGE

The materials in this book are for use in training, teacher education,, and other professional development programs and projects in private and public agencies, schools, colleges and universities. They are designed to help individuals or groups in their own work, and they can be used to train others. The contents have also been designed for application to real-life, projects and programs in different settings. Learners will find the materials useful for improving training efforts or to better invest training resources.

The functions of training, namely, to identify goals, design training strategies, implementing training and recycling decisions are emphasized along evaluation purpose and uses. Collecting information and research techniques will assist fourth year students to carry out their research in projects, analyze, interpret data and write research reports.

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