



RESEARCH METHODS

9/3/2009

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Introduction to research

Q. What is research in our opinion? (class discussion).



Introduction to research

Defining research

Research can simply be described as a systematic investigation to establish facts in a scientific manner based on clear methods and lines of inquiry.

In reality, there are various ways of knowing things. These include:

- **Empirical methods** (based on experience): These involve either *intuition* (spontaneous perception or judgment not based on reason) or *science* (obtaining knowledge by way of objective experiments or observations);
- **Non-empirical methods** (not based on experience): These involve *authority* (some respected person says it is true) or *logic* (something is true based on some reason inference, i.e. if $A=B$ and $B=C$, then it follows that $A=C$).



Introduction to research

Note:

- ***Data:*** The raw facts, figures and narrations collected through research;
- ***Information:*** The useful inferences/deductions made from data through the processings and analyzing data.



Introduction to research

Q. What do we suppose the role of research is in development work? (class discussion)



Introduction to research

Development work is about finding solutions to real life problems faced by people and improving livelihoods. This can be achieved by improving incomes, providing food security, enabling access to public services or resources, providing security to persons and property, ensuring rule of law and good governance.



Introduction to research

The role of research in development can be seen from different points of view:

- **Research informs policy-making:**

This point of view holds that research is used to inform policy through defining problems and designing solutions (Laws et al, 2003).

However, it should be recognised that change does not happen on the strength of research only but as a result of concerted efforts to influence policy by various stakeholders;

- **Research involves ordinary people:**

This point of view holds that research should empower ordinary people to understand their situation and to take action to bring about change.

Research gives voice to the experience and knowledge of the voiceless (ibid). This point of view informs most participatory approaches to research.



Introduction to research

research is useful in:

- Identifying policy failures;
- Understand problems;
- Placing us in a good position to advocate change;
- Setting the agenda about a problem;
- Monitoring and evaluation.



Introduction to research

We also noted some limitations of research including:

- **Methodological weaknesses:** certain research designs have biases and ethical problems;
- **Cost implications:** Research can be very expensive;
- **Capacity problems:** Organisations may lack the expertise to conduct research;
- **The problem of attribution:** It may be difficult to link particular outcomes with a given policy;
- **Policies may have unintended outcomes:** Research may not show unintended consequences.



Approaches to research

Quantitative approaches

- These involve use of specific variables, hypotheses and questions to establish facts, show causes and effects. Quantitative methods mostly employ closed-ended questions and other numeric inquiries;
- They may involve experiments, surveys and observations;
- They yield mainly numeric data (numbers);
- Employ statistical procedures to gain meaning from the data.



Approaches to research

Qualitative approaches

- These involve use of individual experiences, opinions and/or participation to develop a theory or pattern (Creswell, 2003);
- They may involve case studies, observation and surveys;
- They yield narrative/open-ended data;
- Qualitative methods bring personal values into the study and consider the context of the participants who may be important stakeholders in the research;
- They are in many cases geared towards creating an agenda for change.



Approaches to research

The ultimate choice of approach is influenced by several factors:

- **The nature of the problem:** If the problem is about identifying a cause of a particular outcome, ascertaining the relationship between two or more known factors or the utility of an intervention, a quantitative approach is usually best. If the problem is about a human phenomenon that is little understood (e.g. why people live the way they do or engage in a particular practice) then a qualitative approach may be best;
- **The researcher's training and experience:** People trained and experienced in one approach or the other are likely to favour what they are good at;
- **Audience of the research findings:** Researchers will engage in a particular approach also because of the audience they report the findings to.



Approaches to research

Often, in real research, a mixture of these approaches is used to yield both qualitative and quantitative data and information. This may be useful where the researcher wants to generalize findings for the entire population (hence the use of a quantitative approach) and also gain a deeper understanding of the underlying factors related to the issue (hence the need for a qualitative approach).



Approaches to research

Group exercise: Advantages and disadvantages of qualitative and quantitative approaches

Numbers do not tell the whole story but the story from qualitative research may not show us the whole picture either. Discuss the advantages and disadvantages of quantitative and qualitative approaches to research.

(Reporting: Put the advantages and disadvantages on charts and display in class).



Identifying and defining the problem

Identifying a problem for research will usually depend upon what area of work the organization deals with, perceptions of a problem, a real need for information and the viability of the project (financially, legally, etc). Research will be useful:

- When there is a lack of information about an issue;
- When a community or group feel that their opinions have not been heard;
- When policy-makers are considering a policy and the likely impact is not known clearly;
- When there is need to monitor a process.



Identifying and defining the problem

Once you have an idea about a problem or issue you wish to research on, it is useful to proceed in the following:

- **Make a draft title of the study:** This is an important guide that will often remind you of the original idea and the thinking that informed the choice of the issue. It is also a roadmap into the future of the project;
- **Make a rough sketch of the problem/issue:** This will help you know how much you already know about it and what you do not know yet. For example, you can outline what you think the cause of the problem are, the obvious effects, the people or population affected by it, who your likely subjects of study could be, etc. Also, ask yourself what the knowledge gaps are (what is it I should know that I seem not to know?).



Framing statements of purpose and research questions/hypotheses

A statement of purpose conveys the intent of the study (what you want to study and what you hope to accomplish). The statement of purpose narrows down the large research problem to an objective of the study. E.g. in a qualitative study of the effects of HIV/Aids deaths on the wellbeing of children in Tanzania, the statement of purpose may be phrased like this:

The purpose of this study will be to understand the effect of HIV/Aids deaths on the livelihoods of orphaned children in Tanga region of Tanzania.



Framing statements of purpose and research questions/hypotheses

Note that the statement of purpose is more specific than the general idea in the research. It has narrowed down children to orphaned children; wellbeing to livelihoods (financial, social, physical, educational and health issues); and geographical scope to Tanga region.

If the study is quantitative, the statement of purpose will usually state the independent and dependent variables (and the relationship being studied where necessary).



Framing statements of purpose and research questions/hypotheses

Once the statement of purpose is clear, it should be broken down into specific questions that can be tested. This will focus the research to key aspects that go towards meeting the objective of the study. Keep the questions to a minimum without compromising the scope of the research.

In the above example, some of the research questions will be:

- Does HIV/Aids have any effect on orphaned children?
- What is the nature of the impact on the livelihood assets (financial, social, human, physical) of such orphaned children?
- How do these effects vary according to economic, cultural and political settings?



Framing statements of purpose and research questions/hypotheses

Group exercise:

Identify a realistic problem and do the following:

- ***State why you would wish to conduct research on the problem (justify the research e.g. on humanitarian grounds, need for information by organization, part of organizations work, viability, etc);***
- ***Make a draft title of the study;***
- ***Make a rough sketch of the problem/issue e.g. your current thinking about causes, obvious effects, the people or population affected by it, who your likely subjects of study could be, knowledge gaps;***
- ***Frame a statements of purpose for a proposed study;***
- ***Design some possible research questions or hypotheses.***



Review of existing information

Before designing the research, it is important to know what is already known about the subject you intent to study. You should always resist the temptation to Imagine that you are the only one who has considered the topic.

Literature review is intended to help the researcher to:

- Gain the information that already exists avoid duplication;
- To get an idea of the areas that need further research and design the research to achieve this;
- To establish a benchmark for comparing the results of the study.



Research Designs

The kind of study a researcher conducts depends on the issue at hand, the resources available and other factors. However, there are many designs that can be used. For instance, one of the most important problems that faces researchers is to determine whether a policy has led to a particular outcome (or problem). This is important both in defining a problem and evaluating the impact of policies.



Research Designs

A research design is the framework for carrying out the actual collection of data and the subsequent analysis. It is at this stage that we determine which specific approaches and methods will be used the research after the initial stages of defining a problem, making a statement of purpose and coming up with possible research questions or hypotheses. The design chosen should be one that can help you answer the research questions or resolve the hypotheses.



Research Designs

Some quantitative research designs that can be used to do this are:

(a) Experimental approaches:

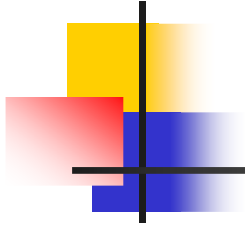
These test whether a policy has led to a change in outcomes it was designed to achieve over and above that which would have occurred in its absence. This is done by providing potentially unbiased estimates of the policy's impact. E.g. has a policy designed to reduce unemployment led to a fall in the number of unemployed or is some other factor responsible?



Research Designs

Example: Randomised controlled tests (RCT)

This is carried out by collecting baseline data to understand the situation before the policy; units from the whole population are then allocated randomly to a programme group or control group so that each has an equal chance of falling in any one of the groups; units in the programme group are subjected to the new policy whilst those in the control groups are not (continue with old policy). As long as the sample is large enough, it means that any difference in the outcomes of the programme and control group are attributable to the new policy.



- E.g. The rate of children dropping out of school in Mwanza region is higher than other regions. Research shows that the main reason is poverty and hunger. WFP decides to begin a lunch programme in the district to curb the problem of drop out. They use the randomised control test, to put participants in a programme group and in a control group. They plan to evaluate their results at the end of 2 years.



Research Designs

Q. What are some advantages and disadvantages we can note with this design?



Research Designs

Advantages of RCT:

- Results are clear and easy to explain to policy makers and other stakeholders;
- The method is simple compared to other statistical techniques;
- It is possible to see the impact of the policy and use this together with measures of the costs to carry out a cost-benefit analysis.



Research Designs

Disadvantages of RCT:

- They do not address all questions of interest in the policy process i.e. they describe outcomes but do not explain why policies do not work (also referred to as the ‘black box’ problem);
- They do not detect unintended outcomes;
- Data collection at the end of the programme can be a problem e.g. members of the programme or control group may refuse or be unable to participate and information to compare with baseline information will be missing;
- They raise ethical questions because members allocated to the control group are denied a policy intervention i.e. they are discriminated against;
- They can be costly.



Research Designs

(b) Quasi-experimental approaches:

These are experiments that have treatments, outcome measures and units just like experimental method) but do not use random allocation. They are useful where random allocation and application of a policy to one group and not another is not possible.



Research Designs

Example: Single Group Pre and Post-test Design

Baseline data is collected before the policy is implemented (pre-test) and then the policy is applied to the target group. Then data on the same factors (measures) is collected from the target group (post-test). The difference between the measures, perhaps adjusted to account for other factors, is attributed to the policy.



Research Designs

Q. What are some advantages and disadvantages we can note with this design?



Research Designs

Advantages of Single Group Pre and Post-test Design:

- Useful where randomization is not possible;
- Fairly straight forward method;
- Dose not involve denying certain members the policy intervention;

Disadvantages of Single Group Pre and Post-test Design:

- Results can be biased because of the absence of random selection i.e. the outcomes may not be entirely attributable to the policy;
- Is costly.



Research Designs

These research designs focus on using individual experiences, opinions and participation of members of a population to learn, collect data, determine the effects of a policy, perceptions of a process or a problem, opinions about issues, etc. They can come up with information that cannot be gained from other methods.



Research Designs

There are problems with most traditional methods of data collection such as questionnaire surveys. For instance, the researcher has to determine the questions well in advance yet those who design these instruments cannot know which issues are important for local people. The result is either irrelevant questions are posed or researchers tend to increase the number of questions to ensure that all relevant issues are covered leading to lengthy interviews. The researcher may also unduly influence the process and the local context and people's experiences are removed from the research.



Research Designs

For these reasons, participatory methods are geared towards involving people in the research process right from conceptualizing the issues and determining what data is eventually collected. This approach began with rapid rural appraisals. During the late 1980s, this growing experience was supplemented by drawing upon long-established traditions that had put participation, action research, and adult education at the forefront of attempts to emancipate people.



Research Designs

There are many different participatory research designs but the main principles of participation are (Pretty, 1994):

- *A defined methodology and systemic learning process:* The focus is on cumulative learning by all the participants;
- *Multiple perspectives:* A central objective is to seek diverse information about all participants rather than to generalize findings for all people (as in quantitative methods);
- *Group learning processes:* All involve the recognition that the complexity of the world will only be revealed through group inquiry and interaction;



Research Designs

- *Context specific:* The approaches are flexible enough to be adapted to suit each new set of conditions and actors;
- *Facilitating experts and stakeholders:* The methodology is concerned with the transformation of existing activities to try to bring about changes which people in the situation regard as improvements. The role of experts is to help people in their situation carry out their own study;
- *Leading to sustained action.* The learning process leads to debate about change and action to bring about change. Action is agreed upon (consensus).



Research Designs

Group exercise: From your past experiences with participatory methods (if any) can you tell us exactly how you conducted the research? What were your experiences i.e. what did you learn? How do you think the people or community gained from the exercise?



Research Designs

Examples of participatory methods are:

Objective: To create rapport and build relations:

1. *The night halt:* Rapport between outsiders and the community is facilitated by staying in the village. It provokes change in outsiders' attitudes: they sleep and eat as villagers do; it allows for discussions when people are less busy;
2. *Work sharing:* Outsiders are taught something by the community in a reversal of roles. Professionals soon learn how much skill is required, say, to plough a furrow, transplant seedlings, get firewood, etc.



Research Designs

3. *Rapid report writing, with self-correcting notes:* It is essential to record findings together with the community. Individuals can be encouraged to keep a private diary. Findings are then presented, cross checked and feedback is received;

Objective: To ensure proper sampling:

4. *Transect walks and direct observation:* These are systematic walks with key informants through the area of interest, observing, asking about things, listening, and seeking problems and solutions. The findings can be mapped on a transect diagram.



Research Designs

5. *Wealth ranking and social maps*: Wealth ranking is used to classify households according to relative wealth or well being. The community sorts cards, each with one household name on it, into piles of wealth and poverty. Alternatively, the ranking can be done directly on a social map. The community indicates on diagrams of houses individual assets such as land ownership, animals, and tools owned by each household. Wealth rankings are useful for discussions on livelihoods and vulnerability; producing a baseline against which future intervention impacts can be measured; providing a sample frame to cross-check the relative wealth of informants; establishing indicators of welfare;



Research Designs

Objective: To conduct sensitive interviewing and dialogue:

6. *Semi-structured interviews (SSI)*: This is guided interviewing and listening in which only some of the questions and topics are predetermined; other questions arise during the interview. The interviews are informal and conversational, but are also carefully structured. A checklist can be used by the multidisciplinary to pose open-ended questions. Topics that arise are probed as the interview develops. SSIs are a central part of all participatory methods;
7. *Sequenced or chain interviews*: Many types of interviews may be combined in sequences and chains. These include key informant interviews of the local experts (e.g. men on ploughing, women on weeding, shopkeepers on inputs) and group interviews to discuss certain general topics;



Research Designs

Objective: To visualize and diagram:

8. *Participatory mapping or modeling*: This involves constructing, on the ground or on paper, models or maps of the community, its resources and institutions. Materials such as sticks, stones, grasses, wood, cigarette packets, tree leaves, soil, coloured chalk, pens, etc are used. Great play is made of the issue of *who holds the stick or pen*. The person who holds the stick talks about what is most important to him or her. As models or maps take shape, more people become involved and contribute or make changes. There are many types of models or maps e.g. resource maps of catchments, soil types, forests, farms, etc; institutional maps of villages, schools, churches, health facilities, etc; social maps of homes of a village; wealth rankings and household assets on social maps; health maps, where the health status of each family member is shown on each house; etc;



Research Designs

9. *Seasonal calendars and activity profiles*: Seasonal constraints and opportunities can be diagrammed month by month throughout the year. Ceremonies can be used as a cross-check so that names of months are agreed upon. People use pieces of stick, draw histograms in the dust or with chalk, or make piles of stones, seeds, or powders to represent relative quantities and patterns of rainfall, soil moisture, crops, labour, food consumption, illnesses, prices, animal fodder, pests, income, expenditure, etc;

Daily patterns of activity can be similarly illustrated for each hour of the day, amount of effort, time taken, and location of work. These can be compared for men, women, the old, the young, etc;



Research Designs

- 10. Time lines and local histories:* Historical analyses are a good way of noting trends. For instance, they can be used to note changes in technology and practices, crop histories, labour availability, forests histories, changes in education and population change; Listening to folklore and songs can be a useful way of exploring history;
- 11. Venn and network diagrams:* Venn diagrams involve the use of circles of paper or cards to represent people, groups, and institutions. These are arranged to represent real linkages and distance between individuals and institutions. Overlap indicate flows of information, and distance on the diagram represents lack of contact;



Research Designs

12. *Matrix scoring and pairwise ranking*: These methods are for learning about local people's categories, criteria, choices, and priorities. For pairwise ranking, items of interest are compared pair by pair; informants are asked which of the two they prefer, and why. Matrix scoring takes criteria for the rows and items for columns, and people complete the boxes row by row. E.g. for six different trees available in the community, preference is indicated from best to worst in terms of use for fuelwood, fodder, erosion control, and fruit supply. Participants may put stones, seeds, or berries into piles for relative scoring.



Research Designs

Not all these methods are necessarily used together but the choice of method will depend on many factors such as the nature of the study, the kinds of stakeholders, community needs, time available, etc.

You will note that in all these methods and activities, the actual process entails participation, narratives and stories from different stakeholders and observations. Case studies (of individuals, groups, institutions, etc) can be used to bring out individual experiences and illustrate peculiar characteristics.



Research Designs

Group exercise: For each group, choose one of the techniques you used in the participatory method you experienced and discussed.

Demonstrate how you actually carried it out with the class as the community.



Data Collection methods

Interviews:

Interviewing involves use of some instrument (questionnaire or interview schedule) to pose questions directly to a single respondent. It could be face-to-face or over the telephone.

Interviews have certain *advantages*:

- It does not suffer from group tyranny where individual stories may be suppressed;
- With proper sampling and correct interview procedures, it can elicit very accurate information about the population;



Data Collection methods

- It is very useful where sensitive data is being collected (individuals may not be comfortable talking about certain things before others);
- It has high response rates compared to some other methods e.g. mail questionnaires;
- The close contact in face-to-face interviews can help create rapport and elicit good data.

Disadvantages:

- Interview methods, though mostly based on samples, can be very costly because they require many enumerators, moving from one place to another or telephone calls;



Data Collection methods

- It cannot get a give a impression of the community because of the absence of interaction with the group and lack of consensus;
- It is logistically difficult to manage. E.g. telephone interviews in places where few people have phones; missing respondents and locating them can be time consuming; etc.



Data Collection methods

Mail questionnaires:

Sometimes it may not be possible to conduct interviews face to-face or over the telephone. In such cases, questionnaires can be mailed to respondents and a SAE with a stamp provided. This technique presumes that the all respondents will understand questions properly and take the time to reply.

Advantages:

- It is cheaper than face-to-face and telephone interviews;
- It avoids the logistical difficulties of traveling and finding respondents;



Data Collection methods

Disadvantages:

- Usually has very low response rates compared to face-to-face and telephone interviews;
- It is slower because it entails sending questionnaires and waiting for responses;
- It is impersonal due to the lack of contact and that results in less good data and responses;
- Respondents may misunderstand the questions and there is no opportunity for probing.



Data Collection methods

Focus group discussions:

This entails identifying a group (randomly; purposively; as experts; key informants; leaders; etc) and having intensive discussions about an issue. It may be very informal with no checklist or formal with a checklist of questions.

Advantages:

- Allows researchers to gain knowledge that a group agrees on while also eliciting individual experiences;
- It cheaper than individual interviewing;
- It takes less time than individual interviewing.

Disadvantages:

- A few individuals may dominate discussions;
- Individuals may be less willing to give information about sensitive and personal matters.



Data Collection methods

Observation:

Involves passive observation of activities, individuals and phenomena and recording details of these. In many cases, observation is used together with other data collection methods although it can also be used as a stand alone technique.



Data Collection methods

(Systematic reviews: refer to previous notes under literature review).



Data Collection methods

Group exercise: What are the DOs and DONTs of interview, mail questionnaire, focus group and observation, systematic review techniques of data collection?

For your issue what data collection method would you apply to collect data?



Sampling techniques

Sometimes, it is possible to gather data from an entire population e.g. in census surveys, in some participatory methods where the entire community is involved; or where the population is small enough for all members to be involved in a study.

However, in many other cases, this is not possible e.g. where the population is too big.



Sampling techniques

Sampling refers to the selection of some members of the entire population who then become the respondents in data collection exercises.

Before selecting a sample, it is necessary to define the population. The entire population is referred as the sampling frame, from which the sample is then picked. E.g. If I wish to study the BA class by selecting a sample of 20 % of the class, my sampling frame (population) is the 36 students in the entire class.



Sampling techniques

There are many different techniques of sampling:

1. Haphazard sampling:

The researcher has no control over who to sample e.g. where the population is massive (anybody/whole country) and the required respondents are few; or the cost of sampling in terms of time and money cannot be justified. For instance, a radio station that wishes to interview a few people on the street on some matter. They will simply send reporters to the street and ask them, say, to speak to 20 people among them, 7 adult men, 7 adult women, 3 girls and 3 boys. That would be a haphazard sample.



Sampling techniques

Q. What are the advantages and disadvantages of haphazard sampling?

2. Simple random sampling:

Where the population is homogeneous (has same characteristics throughout with regard to the research), a simple random sample can be used. In this kind of sample, every member of the population has an equal chance of being selected. The sample can be selected by balloting, using a computer programme to randomly select the population, or using a random number table.

E.g. ballot the BA class.



Sampling techniques

Q. What are the advantages and disadvantages of simple random sampling?

3. Stratified random samples:

Where the population has identifiable subgroups that differ significantly in their responses and then it may be important to ensure each subgroup is represented in the sample. This can be achieved by selecting a stratified random sample. In our example, if we believed the women and men in the class would respond very differently in our research, we would divide the class into two groups (men and women) and ballot them separately.



Sampling techniques

Q. What are the advantages and disadvantages of stratified random sampling?

3. Purposive sampling:

This is a non-random sample of respondents with some desirable characteristic. E.g. a researcher on education quality in schools may believe that the data they seek is best obtained from head teachers of schools in urban areas and choose the sample from this group rather than all head teachers.

Q. What are the advantages and disadvantages of purposive sampling?



Sampling techniques

4. Convenience samples:

This is sometimes seen as quite similar to purposive and haphazard samples. Perhaps the only difference is that the selection is based on practical convenience. The researcher is therefore more thoughtful than in haphazard samples. For instance in a study of school children in the country, it may be convenient (for logistical, financial reasons, etc) to select the sample from schools in the researchers home city alone.

Q. What are the advantages and disadvantages of convenience samples?



Questionnaire design and interviewing techniques

Questionnaire design:

- Linkages with problem, purpose and research questions/hypotheses;
- Introduction and confidentiality;
- Nature of questions;
- Length of questionnaire;
- Other practicalities.

Interviewing techniques:

- Introduction and confidentiality;
- Posing questions;
- Probing;
- Making progress;
- Concluding the interview;
- Other practicalities.



Questionnaire design and interviewing techniques

Group exercise: In your earlier groups and Dealing with the same issues, try and design a questionnaire you could use using some of the points we have made. We will then

- *Explain our design;*
- *Role play by asking questions **the way they should be asked and the way they should not be asked.***



Ethical issues

Ethics is a controversial topic in any discipline or practice. There is always a contest between carrying on a practice that may be very useful for people and sensibilities that other feel must be respected. Ethical issues may be based on cultural, religious, political, environmental and socio-economic grounds.

When undertaking research, it is important to give some thought to these issues.



Ethical issues

Some ethical issues that arise in different forms of research are:

- ***Responsibility:*** How do we achieve achieve balance between the potential benefits of the research and the cost of the research to participants?



Ethical issues

- ***Protection from harm:*** This is especially relevant in experiments such as medical tests. Whereas the potential benefits may be great, participants may be harmed;
- ***Consent:*** Research, even where some agreement has been elicited from the respondent, may be conducted without proper consent i.e. was the respondent given full information and did s/he understand the implications?



Ethical issues

- ***Privacy and freedom from coercion:*** Respondents have these rights. Certain methods of collecting data are coercive in nature and prey on private matters;
- ***Deception and fraud:*** Research may use methods that deceive participants in order to get data. The data may also be used in a manner that was not explained and agreed to by the respondent. This can be unethical.



Ethical issues

Q. How can we deal with these ethical issues and make research more acceptable by people?