UNIT 1 SURVEY RESEARCH

Structure

1.0 INTRODUCTION

One of the most important areas of research tools in the field of applied social science is the 'survey research'. It is one of the most relevant techniques basically used for collecting data and involves any measurement procedures that prominently include asking questions from respondents or the subjects selected for the research study. The term "survey" can be defined as a process which may involve an investigation/ examination or assessment in the form of a short paper-and-pencil feedback form to an intensive one-on-one in-depth interview. With the help of the questionnaire or other statistical tools, the method tries to gather data about people, their thoughts and behaviours. This unit tries to focus on the concept, various methods, the relevance and implications of the survey research method.

1.1 OBJECTIVES

After completing this unit, you will be able to:

- Define and describe the survey research method;
- List out the different methods or techniques of the survey research method;
- Elucidate the different types of survey research;
- Analyse the advantages and disadvantages of the survey research method; and
- Describe the kind of questions that should be used in survey.

1.2 CONCEPT AND MEANING OF 'SURVEY RESEARCH'

The method of survey research is a non-experimental (that is, it does not involves any observation under controlled conditions), descriptive research method which is one of the quantitative method used for studying of large sample. In a survey research, the researcher collects data with the help of standardised questionnaires or interviews which is administered on a sample of respondents from a population (population is sometimes referred to as the universe of a study which can be defined as a collection of people or object which possesses at least one common characteristic). The method of survey research is one of the techniques of applied social research which can be helpful in collection of data both through direct (such as a direct face to face interview) and indirect observation (such as opinions on library services of an institute).

1.3 STEPS INVOLVED IN CONDUCTING SURVEY RESEARCH

Any type of survey research follows the following systematic steps:

Step 1: Determination of the aims and objectives of study:

The researcher must at the outset analyse and assess the relevant areas or issues which need to be studied. Once the research area is selected by the researcher, the basic aims and objectives have to be clearly specified. These have to be focused and analysed so as to make the purpose of research relevant and understandable. The researchers have to come up with the basic aims and objectives which would be focused and analysed in their over all research.

Step 2: Define the population to be studied:

After selecting the theme of the research, the researcher also needs to define the target population which would be studied by him/her. As discussed earlier, the population or universe would be a collection of people or object that would possess at least one common characteristic, which is going to be helpful and which would also provide direction in the process of conducting the research.

Step 3: Design and construct a survey:

Once the target population is defined by the researcher, he or she needs to design a survey research. On the basis of the framed design, the research decides to conduct a survey, selects instrument for survey (for example telephonic interview) with the help of which data will be collected. After the selection of the instrument, the researcher conducts a pilot study (a small survey taken in advance of a major investigation or research). The pilot study helps the researcher to analyse the significance and relevance of the instruments selected by the researcher for the present research.

Step 3: Select a representative sample:

The process of construction of the survey instruments gives a way to the selection of the sample from the target population. The researcher selects a sample which represents nearly maximum characteristics of the whole universe/ population. If the sample selected is a good representation of the population, then the results or

the findings of the survey conducted on the sample can be easily generalised on the population as a whole.

Step 4: Administer the survey:

After the selection of the sample, the researcher conducts the survey by administering the survey instrument or tool on the selected sample. This step helps in the collection of the required data or information from the sample.

Step 5: Analyse and interpret the findings of the survey:

Once the data has been collected, the researcher analyses the data with the help of required statistical tools and then interprets the findings on the basis of the information revealed. This step involves several processes such as coding the data and then processing it.

Step 6: Prepare the report of the survey:

On the basis of the analysis and interpretation of the results, the researcher prepares a report of the over all research conducted. The report contains all the details of aims, objectives, data analysis, interpretation and discussion of the results. In this step, the researcher tries to evaluate how the findings meet the proposed aims and objectives of the research.

Step 7: Communicate the findings of the survey:

Last but not the least, the most important step of conducting the survey research is to disseminate the survey findings. The researcher needs to communicate the findings to the target population and it is equally important record for the future research to be done on a similar field. The impacts of the survey results are also assessed on them, on the basis of which the researcher may also recommend certain policies on decision making.

Self Assessment Questions

Fill in the blanks

1) In a survey research, the researcher collects data with help of .....
2) On the basis of the analysis and interpretation of the results, the researcher prepares ..... of the over all research conducted
3) The population or universe can be defined as .....
4) Pilot study can be defined as .....
5) Discuss the steps involved in survey research

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1.4 METHODS/INSTRUMENTS USED IN COLLECTING DATA THROUGH SURVEY RESEARCH

It has been argued that surveys should be designed in such a way that helps in making accurate decisions. Predominantly there are three major ways which can be used as an instrument in collecting data with the help of survey research. They are being explained below:

1) **Sampling:** As discussed earlier, a sample is a representation of the population or universe selected for the study. The technique of sampling can in itself act as an instrument in collecting data in survey research. For example if the researcher wants to study the level of job satisfaction amongst the employees of an organisation, then the researcher can select and study the attitude of at least ten persons of each department of the organisation. In order to avoid any bias, the sampling can be done with the help of randomisation (a method of sampling which provides an equal chance for each subject to be involved in the study, which can be done with the help of lottery or fish bowl technique) or stratification (a method of sampling which categorizes the population in to various categories and subcategories and then conducting the research).

2) **Questionnaire:** Questionnaires are basically a kind of paper pencil and multiple choice test in which the individual needs to select the most suitable alternative. The researcher may collect data with the help of a questionnaire from a large number of samples at a single time. Questionnaires can be administered to the sample in three ways: (i) Mail survey (ii) Group administered questionnaire and (iii) household drop off survey.These are being discussed in detail below:

   i) *Mail survey***:** The researcher may forward a soft copy of the questionnaire to a large number of respondents through mail and can get the data collected from them at a single time. It is one of the relatively inexpensive, less time consuming and convenient method of getting responses. Yet, the questions which require on the spot response or detailed answer is difficult to be achieved through mail survey.

   ii) *Group administered questionnaire***:** It is one of the traditional methods of administering questionnaire. The researcher calls for a large number of respondents to be present at a stipulated time period as a group. Under such group settings, the respondents are asked to respond to a structured sequence of questions written in paper or questionnaire. The greatest advantage of this method is that the respondents can clarify their doubt regarding any questioned that has been asked by the researcher instantly.

   iii) *Household drop-off survey:* In this method, the researcher goes door to door to the respondents and personally hands over as well as collects the questionnaire from them. It is a kind of pick and drop facility which is provided by the researcher so that the researcher can answer the questions according to their convenience.

3) **Interview:** Interview is a kind of face to face interaction which helps in providing more honest answers and responses from the sample, as the

interviewer (the one who is interviewing i.e., the researcher) works directly with the respondent or the interviewee (the one who is being interviewed). Unlike questionnaires, the interviewer has an opportunity to ask follow-up questions. They are the best suitable methods for those questions which require opinions or impressions from the respondents. Interviews can be of different types as given below:

i) *Structured interview*: Structured interviews are those interviews in which the questions that are to be asked from the respondents are prepared and preplanned in advance by the researcher. The researcher imposes those prepared questions on the respondents serially and notes down the answers given by them.

ii) *Unstructured interview*: Interviews are said to be unstructured when the researcher conducts an interaction with the respondent in an informal atmosphere. Nothing is preplanned in advance. The response of the sample gives a clue to the researcher to ask the next question.

iii) *Telephonic interview*: In order to save time and money, the researcher may call the subjects or sample through telephone and ask them questions to collect data. This method helps in saving time and energy but the sample gets limited to only that part of the population who have the facility of telephones at their residences or offices.

1.5 TYPES OF SURVEY RESEARCH

Based on the selection of an instrument or method of data collection, the researcher can use qualitative (e.g. ask open-ended questions) or quantitative (e.g. use forced-choice questions) measures. Basically there are two major types of survey: cross-sectional surveys and longitudinal surveys, though there exist some other types of surveys also. These are explained below:

Cross sectional survey

Cross sectional surveys are used by the researcher when he or she wants to collect data from varied or different types of groups (that may be in terms of age, sex, group, nation, tribes and so on) at a single time. An example of such a survey can be a study on the effect of socialisation of children of different age groups of a particular country. This type of survey is less time consuming and economical as well.

Longitudinal survey

This type of research is used only when the subject wants to study the same sample for a longer period of time. Such longitudinal studies may be used to study behavioural changes, attitude changes, religious effects or any event or practice that may have a long time effect on the selected sample or population. There are three main types of longitudinal studies which help the researcher to analyse the long term effects on the selected sample. These three include (i) Trend studies (ii) Cohort studies and (iii) Panel studies. These are explained in the following paragraphs.

i) *Trend studies*

When the researcher needs to analyse a trend of a phenomenon in a population, they conduct trend studies. The sample of the selected population might not be the same (as over a period of time they might have shifted or not available for various reasons) but they belong to the same population. This selected population is sampled and examined regularly. Since it is a type of longitudinal research, it may not be started as well as ended by just one researcher or research project. An example of trend studies may be a yearly survey of number of graduates actively using books and journals from the library of a university.

ii) *Cohort studies*

The focus of this type of longitudinal study is also on a particular population which is sampled and studied more than once within a time gap. The example of this study can be an investigation of the number of graduates of the year 2009 who have been actively using the library and four years later, the researcher may examine the same issue on another sample of the 2009 graduates and investigate whether after the time gap has there been any difference in the attitudes towards the importance of the library within the members of the same class. Wherein, in the trend study, the research scholar would study such an attitude within the graduates of different batches of the same university.

iii) *Panel studies*

The researcher in a panel study uses the same sample of people every time and that sample is called as a 'panel'. Such a study is used in order to investigate the changes in attitudes, behaviour or practices of the same panel within a period of time. They are more specific and focused as the researcher studies a particular change in the attitude, behaviour, belief or practice of the same group. For example, a researcher may study the library usage trends amongst the graduate students and ask them questions related to their frequency of library usage habits. Thereafter, the researcher may ask the same group or panel, similar questions and also the reasons behind the changes in their habits, if it has occurred. The study is difficult enough as it faces a greater trend of attrition rates (difficulty in availability of the same people).

Self Assessment Questions

State whether the following are true or false

1) The panel study is used in order to investigate the changes in attitudes, behaviour or practices of the same sample within a period of time. ( )
2) There are different types of longitudinal studies. ( )
3) Interviews are said to be unstructured when the researcher asks preplanned questions ( )
4) A sample can never be a representation of the population. ( )

1.6 CONSTRUCTING A SURVEY RESEARCH

In the process of conducting a survey research, the researcher needs to design a framework of the instruments and processes of data collection, on the basis of

which the overall research would be done. The researcher needs to decide the content, format and wordings that would be included in the survey instruments. No doubt the researcher selects any one of the kinds of instruments (that is questionnaire/ interview), he or she needs to frame questions. The questions should be so worded that there is clarity in what is being asked and should have the capability of eliciting response.

The survey instruments are the back bone of research and that is why the statements or the questions of the researcher should be short and specific as well. Once the framework of the process of research is decided, then the researcher constructs the survey instrument by framing questions. While writing the questions for the survey, the researcher needs to take care of a few basic aspects, given below:

- Deciding the content, scope and objectives of the question.
- Selecting the most convenient format of response (for example- Likert type five point scale/ multiple choice questions and so on).
- Deciding on how to frame the questions that would elicit the required response.
- Formatting the series of questions to bring out the best response and favorable conditions for the survey.
- The researcher needs to be very sensitive while preparing the questions and take full care of the moral values and ethics of the respondents to get the best results.

1.7 TYPES OF QUESTIONS IN A SURVEY RESEARCH

As discussed earlier, the researcher needs to be very careful while preparing or constructing the questions of a survey research. Selection of the type of questions is a very crucial aspect, as the whole research would depend upon such questions. Broadly survey questions can be divided as structured and unstructured questions. Each one of them is explained below:

1.7.1 Structured Questions

Structured questions are those questions, the format of which is preplanned and predefined in advance. Some of the types of structured questions include (i) Dichotomous Questions. (ii) Level of measurement based questions (iii) Filter or Contingency Questions

i) *Dichotomous questions*

A question is said to be dichotomous if it has only two possible responses (for example – yes or no/ true or false and so on). The lay out of these questions appear in the following ways in the questionnaire:

Does the library of your university has an electronic data base system?

————Yes

————No

OR

Please mention your gender:

Male ☐ Female ☐

ii) *Level of measurement based questions*

Not to be mentioned that three basic levels of measurement are: nominal (based on names, classification of persons, objects and groups), ordinal (based on ranks and preferences) and interval (based on ratings) measurements. For example, a nominal question may have numbers before each response, which may only represent the serial order, like –

Please state the category to which you belong:

General- ————-

OBC- ————————

SC/ST- ————————

The numbers here just denote the serial order and have nothing to do with the preference or ranks.

A question based on the ordinal level of measurement will be based on the preference or choice of the respondent. For example, the respondent may be asked to give a ranking for the business tycoons in an order of most trendy or fashionable to least trendy, where the respondent may be asked to give a rank of 1 to the most trendy tycoon and 4 to the least trendy tycoon:

———————— Subroto Roy

———————— Mukesh Ambani

———————— Bill Gates

———————— Vijay Mallya

The respondent may rank the tycoons on the basis of their own likings and preferences.

The question based on interval scale may be based on rating the choices, out of which the most commonly used scale is Likert response scale (which has a rating of 1 to5, or 1to7, or, 1 to 9). For example:

The university has a well equipped and fully furnished library:

1	2	3	4	5
Strongly agree	Agree	Can not say	Disagree	Strongly disagree

iii) *Filter or Contingency Questions*

When a question is framed in such a way that it is followed by succeeding questions, which are sub parts of the main question, such types of question design is known as filter or contingency questions.

For example, if a researcher wants to ask whether the respondent has ever attended the library of the university and if the researcher also wants to know how many times the respondent has attended the library, then the format of the question will be as follows:

Have you ever regularly attended the library of your university?

Yes ☐

No ☐

If yes, then how many times?

Once in a month ☐

Twice in a month ☐

Every week of the month ☐

Each and every day in a month ☐

The researcher may use multiple filter questions in order to get the subsequent responses. But he or she should take full care that in order to maintain the interest of the respondent, they should not exceed more than two to three levels for any question.

1.7.2 Unstructured Questions

Unstructured questions are usually used in interview, where either the researcher does not prepare a list of questions and the series of questions might depend upon the response of the subjects or they ask questions in an informal atmosphere. In order to get adequate and required information, the researcher should take full care and should give a silent probe, verbally encourage, ask for clarification and have full empathy with the respondent.

Self Assessment Questions

Choose the correct alternative

1) A question is said to be dichotomous one if,
   a) it has more than two responses
   b) it has two responses
   c) It has a single response
   d) none of the above
2) In the process of conducting a survey research, the researcher needs to design
   a) framework of the instruments and processes of data collection
   b) the framework of the administrative requirements
   c) the framework of the personality requirements
   d) none of the above
3) A question based on the ordinal level of measurement will be based on
   a) the preference or choice of the respondent
   b) the ratings of the respondent
   c) the classification of the respondent
   d) none of the above

1.8 PRECAUTIONS WHILE DESIGNING INSTRUMENTS

While preparing the questionnaire or the survey instrument, the researcher should take full care of the following aspects:

1) The items or the questions of the instruments should be clear , specific, relevant and short.

2) The respondents of the research should also be capable enough to answer the questions

3) The researcher should have full empathy with the respondents and should avoid those questions which might have a negative impact on the respondent.

4) The researcher should also avoid any kind of bias either towards the questions or towards the respondents of the questions.

1.9 ADVANTAGES AND DISADVANTAGES OF SURVEY RESEARCH

Survey research has the following advantages:

- It is convenient, less time taking and economical for the researcher.
- The survey can be conducted for a longer period of time, which gives a chance of knowing about the latest changes or advancements that might have taken place in the agenda under study
- The researcher gets a full chance to well organise and present the reasons of the study to get full and honest answers from the respondents.
- Yet, the method of survey research lacks the following aspects.

Disadvantages

- Maintaining the privacy of responses of each respondent under a group interview is questionable and that may also restrict full and honest answers from them.
- High attrition rate of the respondents might hinder the longitudinal based studies.

1.10 DIFFICULTIES AND ISSUES OF SURVEY RESEARCH

If the researcher plans to go for a survey research, there are certain issues which he or she might have to understand and take full care. They are:

1) **Issues on selecting the type of survey**

One of the most critical decisions for a researcher is to select the kind of survey that might be most appropriate or suitable for his or her study. The researcher should be aware of the kind of population that would be suitable for the study. Again, they should also be comfortable with the language of the selected population. The researcher should also analyse the geographic restrictions and try to find out which method can be most feasible for a dispersed population.

2) **Issues on survey instruments**

While constructing the survey, the researcher should have full knowledge of the suitability of the questions that would be asked to the respondents. The type of questions, clarity and specificity of the questions as well as the length of the questions are some of the controversial issues within a survey research.

3) **Bias Issues**

The researcher's bias and prejudices might have a significant influence on the findings of the survey research, so they should be fully aware of the repercussions of their bias. Their behaviour should be socially desired ones, he or she should not loose track and also should avoid false reports. In such cases, issues of bias is really difficult but essential agenda in a survey research.

4) **Administrative Issues**

The cost, mode of survey, feasibility of the area selected, required time period are also important aspects which needs to be preplanned even before the advancement of the research.

Self Assessment Questions

Fill in the blanks

1) The researchers' biasness and prejudices might have a significant influence on the ..... of the survey research.
2) High attrition rate of the respondents might ..... the longitudinal based studies.
3) The researcher should have full empathy with the .....
4) The basic administrative issues are .....

1.11 LET US SUM UP

In this unit we learnt that the method of survey research holds a significant position in the area of the applied research. We also learnt the steps involved in conducting survey research. We then learnt about the types of survey research and explained each of them in detail. We learnt how to construct a survey research and what are the ways in which questions should be asked in a survey and how to avoid biases. We dealt with the many precautions while designing instruments and learnt about the advantages and disadvantages of the survey research. The methods and kinds of survey research that are most common and are frequently used by a number of research scholars were also mentioned . Yet it was pointed out that there are certain aspects which are crucial enough and the researcher should take full care. The process of constructing of the survey research is also very significant and important decision that determines the extent to which the research would be successful.

1.12 UNIT END QUESTIONS

1) Describe the different methods or techniques of the survey research method.
2) Explain the different types of conducting survey research.

3) Explain the different issues of survey research method

4) What are the different types of questions that can be designed for a survey instrument?

5) Explain the different types of interviews that can be used for conducting a survey research

1.13 SUGGESTED READINGS AND REFERENCES

Williams, D.G. and Johnson, N.A. (1996). *Essentials in Qualitative Research: A Notebook for the Field.* Hamilton, Canada: Mc Master University.

Yin, R.K. (1984). *Case Study Research: Design and Methods*. Beverly Hills, CA, USA.: Sage Publications.

References

Donovan, J.(2003). Evaluating meta-ethnography: a synthesis of qualitative research on lay experiences of diabetes and diabetes care. *Social Science and Medicine.* 56: 671-84.

Malpass, A., Shaw, A., Sharp, D., Walter, F., Feder, G., Ridd, M., and Kessler D. (2009). 'Medication career" or "Moral career"? The two sides of managing antidepressants: A meta-ethnography of patients' experience of antidepressants. *Social Science Medicine* 68(1):154-68.

MacEachen E et al. (2006). Systematic review of the qualitative literature on return to work after injury. *Scandinavian Journal of Work Environment & Health*; 32(4): 257-269.

Howard AF, Balneaves LG, Bottorff JL(2007). Ethnocultural women's experiences of breast cancer: a qualitative meta-study. *Cancer nursing* 30(4): E27-35.

Attree P. Low-income mothers, nutrition and health: a systematic review of qualitative evidence. Maternal and Child Nutrition 2005 1(4): 227-240.

Sim J & Madden S. Illness experience in fibromyalgia syndrome: A metasynthesis of qualitative studies." Social Science & Medicine 2008; 67(1): 57-67.

Yu D et al. Living with chronic heart failure: a review of qualitative Humphreys A et al. A systematic review and meta-synthesis: evaluating the effectiveness of nurse, midwife/allied health professional consultants. Journal of Clinical Nursing 2007; 16(10): 1792-1808.

Robinson L. & Spilsbury K. Systematic review of the perceptions and experiences of accessing health services by adult victims of domestic violence. Health Soc Care Community 2008; 16(1): 16-30.

Blaxter M. Criteria for evaluation of qualitative research. Medical Sociology News 1996; 22: 68-71.

Booth A. Cochrane or cock-eyed? How should we conduct systematic reviews of qualitative research? Qual EBP conference, Coventry university, may 14-16, 2001.

Burns N. Standards for Qualitative Research. Nurs Sci Q 1989; 2(44): 44-52.

Carlsen B, Glenton C, Pope C. Thou shalt versus thou shalt not: a metasynthesis of GPs' attitudes to clinical practice guidelines. Br J Gen.Pract 2007; 57:971-8.14

Cohen DJ & Crabtree BF. Evaluative criteria for qualitative research in health care; controversies and recommendations. Annals of Fam. Med 2008; 6 (4): 331- 39.

Dixon-Woods M, Booth A, Sutton AJ. Synthesizing qualitative research: a review of published reports. Qual Res 2007; 7: 375-421.

Dixon-Woods M, Shaw RL, Agarwal S, Smith JA. The problem of appraising qualitative research. QSHC 2004;13: 223-225.

Dixon-Woods M, Booth A, Sutton AJ. Synthesizing qualitative research: a review of published reports. Qualitative Research 2007; 7(3): 375-422.

Dixon-Woods M, Sutton AF, Shaw RL, Miller T, Smith J, Young B, Bonas S, Booth A, Jones DR. Appraising qualitative research for inclusion in systematic reviews: a quantitative and qualitative comparison of three methods. *Journal of Health Service Research and Policy* 2007; 12: 42-7.

Edwards A, Elwyn G, Hood K, Rollnick S. Judging the 'weight of evidence' in systematic reviews: introducing rigour into the qualitative overview stage by assessing Signal and Noise. J Eval Clin Pract. 2000 May;6(2):177-84.

Lincoln YS, Guba EG. Naturalistic Inquiry, Sage, Newbury Park, CA, 1985 .

Guba EG. & Lincoln YS. Fourth Generation evaluation. Newbury Park. CA: Sage. 1989.

Harden A. Critical Appraisal and Qualitative Research: Exploring sensitivity analysis. ESRC Research Methods Festival, St. Catherine's College Oxford, 30th June-3rd July, 2008.

Hill A & Spittlehouse C. What is critical appraisal? Evidence-Based Medicine 2003; 3 (2): 1-8.

Noyes J & Popay J. Directly observed therapy and tuberculosis: how can a systematic review of qualitative research contribute to improving services?

A qualitative meta-synthesis. Journal of Advanced Nursing 2007; 57(3), 227–243.

Morse JM, Barett M, Mayan M, Olson K, Spiers J. Verification strategies for establishing reliability and validity in qualitative research. Int J of Qual Meth 2002; 1 (2):spring. Mays N, Pope C. Qualitative research in health care Assessing quality in qualitative research. BMJ 2000;320:50-52. 15

Noyes J, Popay J, Pearson A, Hannes K, Booth A. Chapter 20: Qualitative research and Cochrane reviews. In: Higgins JPT, Green S (editors). *Cochrane Handbook for Systematic Reviews of Interventions.* Version 5.0.1 [updated September 2008]. The Cochrane Collaboration, 2008.

Oxman AD, Guyatt GH. The science of reviewing research. Annals of the New York Academy of Sciences 1993; 703: 125-133.

Popay, J.,& Williams, G. (1998). Qualitative research and evidence based healthcare. Journal of Research in Social Medicine,91(Suppl 35), 32–37.

Popay J, Rogers A, Williams G. Rationale and Standards for the Systematic Review of Qualitative Literature in Health Care. Qual Health Research 1998; 8: 341-51.

Spencer L, Ritchie J, Lewis J et al. et al. Quality in Qualitative Evaluation: a framework for assessing research evidence: a framework for assessing research evidence. Government chief social researcher's office 2003.

Websites

http://www.camden.rutgers.edu/dept-pages/sociology/early.html

http://www.stat.ncsu.edu/info/srms/srms.html http://salmon.psy.plym.ac.uk/mscprm/Forms.htm http://salmon.psy.plym.ac.uk/mscprm/Forms2.htm.

HREF="http://srcweb.berkeley.edu:4229/ http://trochim.human.cornell.edu/tutorial/mugo/tutorial.htm http://www.acs.ucalgary.ca/~newsted/tutor.htm http://trochim.human.cornell.edu/kb/survey.htm.

http://www.cc.gatech.edu/gvu/user_surveys/survey-1998-10/#methodology http://www.worldbank.org/nipr/data/envperf/" http://www.window.state.tx.us/tpr/tspr/mtplsnt/appendd.htm http://darkwing.uoregon.edu/~osrl/orsp/orsp.html

http://www.socialresearchmethods.net/kb/survaddi.php

http://www.socialresearchmethods.net/kb

http://www.transitionaljustice.org.za/index.php?option=com_content&task=view&id=2677&Itemid=49

UNIT 2 EX-POST FACTO RESEARCH

Structure

2.0 INTRODUCTION

The present unit will focus on the concept, meaning, significance and types of ex-post facto research. Research can be briefly explained as an objective based, specific and the systematic process of exploring new knowledge, skills, behaviour, attitudes and values as well as practices, or for the re-interpretation of existing knowledge, behaviour, skills, attitudes and values. Based on the research goal or problem, the selection of research method by the researcher may vary. When the researcher wants to study the cause of an event which has already occurred as an effect of the cause, then the research conducted is known as 'ex post facto' research. For example, if there has been an economical recession in a country and the researcher tries to analyse the 'cause' or reason behind such recession (which is the 'effect'). In this unit you will be learning all about the ex-post facto research, its meaning and characteristic features etc. You will also learn about the differences between ex-post factor and experimental research and how to infer causal relationships. We also will learn about the strengths and weaknesses of this type of research.

2.1 OBJECTIVES

After completing this unit, you will be able to:

- Define ex-post facto research;
- Explain the characteristics of the ex-post facto research;
- Differentiate between experimental and ex-post facto research;
- Elucidate the sequence or steps of the ex-post facto research; and
- Explain the strengths and weaknesses of the ex-post facto research.

2.2 FORMS OF RESEARCH DESIGN

On basis of the occurring events, there can be two designs or forms of research and these are Prospective research design and Retrospective research design. When the researcher tries to find out the future or potential results that is, the effect after treating the independent variable or the cause, then the researcher is actually trying to examine the prospective or the future results. For example, if the researcher wants to examine the effects of excess of smoking, then the subject may be asked to smoke under varied conditions which may result in cancer.

The Retrospective research design on the other hand is one in which the researcher tries to trace the history in order to find out the basic reason behind an event. Here a result has already occurred, and the researcher is trying to find out the causes behind its occurrence by going backwards in history. This kind of results obtained are said to be based on retrospective research design. For example, if the researcher wants to examine the reason behind the occurrence of cancer in a person, then they may try to trace the possible reasons that might have led to cancer. The possibilities may be excess of smoking/ heredity/ diet habits and so on.

Self Assessment Questions

State whether the following statements are True or False

1) In a prospective research design, the researcher tries to trace the history of an already occurred event ( )
2) When the researcher wants to study the cause of an event then the research conducted is known as 'ex post facto' research ( )
3) When the researcher tries to find out the future or potential results after manipulating the independent variables, then the researcher is actually trying to examine the retrospective aspects of the research. ( )

2.3 CONCEPT AND MEANING OF EX-POST FACTO RESEARCH

The ex-post facto research is a kind of research in which the researcher predicts the possible causes behind an effect that has already occurred. For example, if a child is delinquent (that is, one who indulges in criminal activities), then in order to find the basic reason behind such delinquency, the researcher would try to find out the various events that have occurred and the many possibilities that could have contributed to the concerned delinquent behaviour. The expected possibilities may be lack of discipline at school/ family history/ peer effect/ neighbourhood or socialisation.

It is an interesting point to note that, the researcher predicts a cause on the basis of a controlled effect (since no variation can be done on the effect which has already taken place on the basis of the independent variable or the cause).

Thus, an ex-post facto research can be defined as an empirically based investigation which does not involve the researchers' direct control over the

independent variables because they have already led to effects which can no more be manipulated. The conclusions regarding the relationship between the variables are inferred without intervening or varying the independent or dependent variable.

The term ex-post facto according to Landman (1988: 62) is used to refer to an experiment in which a researcher, instead of finding a treatment, examines the effect of a naturally occurring treatment after it has occurred. In other words it is a study that attempts to discover the pre-existing causal conditions between groups.

It should, however, be pointed out that the most serious danger of ex-post facto-research is the conclusion that because two factors go together, one is the cause and the other is the effect.

2.4 CHARACTERISTICS OF EX POST FACTO RESEARCH

Based on the concept of the ex-post factor research, it is also known as 'causal comparative research'. The ex-post facto research has certain characteristic which distinguishes it from other different types of researches. Some of these characteristics are presented below in the following paragraphs.

The research has a control or a comparison group

As the research is done on basis of the study of the cause which has already led to its effects, it becomes necessary for the researcher to keep a control group, which can be used for comparison with the actual experimental group later on, in order to analyse the cause of an already occurred event.

The behaviour, action, event or the treatment or the independent variable of the research cannot be manipulated or changed

As the ex-post research is a kind of study which tries to predict the causes on the basis of actions that have already occurred, the researcher cannot manipulate or change the already occurred actions or behaviour.

The research focuses on the effects

Since the researcher tries to analyse and predict the reasons behind the occurrence of an event or phenomena, their first attempt is to focus on the event or the phenomena that has already occurred. Only after having a detailed study of the phenomena or the event, the researcher tries to determine the causes behind such an event or phenomena.

The research tries to analyse the 'how' and 'what' aspect of an event

Since the researcher tries to understand the causal effects behind a phenomena, the research basically focuses on how and what reasons that has led that phenomena to occur.

Explores possible effects and causes

With the help of an ex-post facto research, the researcher tries to analyse the cause and effect phenomena of an event, action or behaviour.

2.5 DIFFERENCES BETWEEN AN EXPERIMENTAL EX-POST FACTO RESEARCH

There is no doubt that both the experimental research and the ex-post facto research try to investigate relationships between the existing variables, the conclusions of both are logically as well as empirically valid and reliable, yet there are certain basic differences between both of them. They can be pointed out as follows:

	Experimental research	**Ex-post facto research**
Control over independent Variable	In an experimental research, the researcher can directly manipulate the independent variable/s (that is, the cause) in order to examine its effect on the dependent variable (that is, the effect).	In an ex-post facto research, the researcher can not directly manipulate the independent variable/s (that is, the cause) as he or she predicts the cause on basis of the dependent variable (that is, the effect).
Principle of randomisation	The researcher can use the principle of randomisation in an experimental research on basis of which they can conclude or infer that other things remaining equal/ constant/controlled the effect is a result of manipulation of the cause.	The researcher can not use the principle of randomisation in an ex-post facto research as the researcher has no direct control over the cause and so they infer the possibilities of the causes on basis of the existing effect.
Manipulation of variables	The researcher can manipulate variables in an experimental research	The researcher can not manipulate variables in an ex-post facto research.
Interpretation	It is easier to interpret or infer relationships between the independent and dependent variables as they can manipulate the independent variable and see its effect on dependent variable	It is difficult to interpret or infer relationship between the independent and dependent variables as there can be more than one possibilities or cause for a particular effect.

Self Assessment Questions

Fill in the blanks:

1) The researcher can use the principle of randomisation in an ..... research

2) The researcher can not manipulate variables in an ..... research

3) The ex-post facto research can be defined as .....

4) The ex-post facto research is a kind of research in which the researcher predicts the possible ..... behind an ..... that has already occurred

2.6 ESSENTIALS/ REQUISITES FOR INFERRING CAUSAL RELATIONSHIPS

In order to infer or conclude the cause and effect relationships, the researcher needs to take care of the following aspects:

Associative variation

In order to infer/ predict or conclude that a particular effect 'y' is a result of a cause 'x', there should be an association between them. Therefore, the researcher can come to a conclusion only after examining that a variation in 'x' yields the effect 'y'.

Systematic order of events

The events or the process follows a consistent sequence or order. If variable 'x' causes 'y', then variable 'x' must occur before or simultaneously with 'y', and not after it.

Absence of other causes

The researcher should analyse each aspect of the causal relationship with full detail and find out the best possible cause/ reason or independent variable that has ultimately led to the effect /action or event to occur. For example, the etiology of cancer can be due to several factors. In an ex-post facto research, the researcher finds out the best possible reason that might have led to the occurrence of that disease within the person or the subject.

2.7 STEPS OF EX-POST FACTO RESEARCH

The process of ex-post facto research is systematic and follows a definite sequence. As mentioned by Isaac and Michael (1971), the following are the steps involved in the expost facto research—

Step 1. Determining the problem

In an ex-post facto research, it is necessary for the researcher to focus on the problem that he or she needs to study. They not only need to find out a problem, they also need to determine, analyse and define the problem which they will be dealing with.

Step 2. Literature Review

Before trying to predict the causal relationships, the researcher needs to study all the related or similar literature and relevant studies, which may help in further analysis, prediction and conclusion of the causal relationship between the variables under study.

Step 3. Formulation of hypothesis

The third step of the ex-post facto research is to propose the possible solutions or alternatives that might have led to the effect. They need to list out the assumptions which will be the basis of the hypothesis and procedure of the research.

Step 4. Designing the approach

Once the problem has been defined and the hypothesis has been postulated, the researcher needs to select the sample which fits the criteria of the study. They also need to select the scale or construct instrument for collecting the required information / data. Once the designing are all finalised, the researcher analyses the relationship between the variables.

Step 5. Validity of the research

The researcher needs to validate the significance of their research. They need to be cautious regarding the extent to which their findings would be valid and significant and helpful in interpreting and drawing inferences from the obtained results.

Step 6. Interpretation of the conclusion

Finally, the researcher needs to analyse, evaluate and interpret the information collected. It is on basis of this step only, the researcher selects the best possible alternative of causes which might have led the effect to occur.

Similarly, Jacobs et al. (1992: 81) also proposed that the following steps are involved in conducting an ex-post facto-research:

1st Step: The first step should be to state the problem.

2nd Step: Following this is the determination of the group to be investigated. Two groups of the population that differ with regard to the variable, should be selected in a proportional manner for the test sample.

3rd step: The next step refers to the process of collection of data. Techniques like questionnaires, interviews, literature search etc. are used to collect the relevant information.

4th Step: The last step is the interpretation of the findings and the results. Based on the conclusions the hypothesis is either accepted or rejected.

It must be remembered that eventhough the ex-post facto research is a valid method for collecting information regarding an event that had already occurred, this type of research has shortcomings, and that only partial control is possible.

2.8 STRENGTHS AND WEAKNESSES OF EX-POST FACTO RESEARCH

No research can be perfect in itself. All methods have their strengths as well as weaknesses. The same is applicable in the case of ex-post factor research too.

The *strengths* of the ex-post facto research are:

It is considered as a very relevant method in those behavioural researches where the variables can not be manipulated or altered.

The examples of such researches can include many sociological (e.g. delinquency) as well as educational variables (e.g. achievements).

It is more useful than an experimental research as it can be used in analysing a cause on basis of the effect, which is impossible in an experimental research.

It is less time consuming as well as economical.

It gives a chance to the researcher to analyse on basis of his personal opinion and then come out with the best possible conclusion.

The *weaknesses* as well as the *limitations* of the ex-post facto research are:

As discussed earlier, in an ex-post facto research, the researcher can not manipulate the independent variables.

The researcher can not randomly assign the subjects to different groups.

The researcher may not be able to provide a reasonable explanation for the relationship between the independent and dependent variables under study.

2.9 CONCEPT OF POST HOC FALLACY

While predicting the causal relationships between the variables, the researcher falls prey to the bias called the post hoc fallacy. The concept of post hoc fallacy says that, it is a tendency of human to arrive at conclusions or predictions when two factors go together, one is the cause and the other is the effect. Because delinquency and parenthood go together, we may come to a conclusion that delinquency is the effect and the parenthood is the cause, whereas in reality the peer group to which the child belongs may be the actual reason.

Self Assessment Questions

Fill in the blanks

1) The process of ex-post facto research is ..... and follows a definite .....
2) Once the problem has been defined, the ..... is postulated
3) Post hoc fallacy is a type of ..... which might dominate the researchers' logical thought process

2.10 LET US SUM UP

It can therefore be concluded that the ex-post facto research holds a very good position in the field of behavioural sciences. It is the only method which is retrospective in nature, that is, with the help of this method one can trace the history in order to analyse the cause/ reason/action from an effect/behaviour/ event that has already occurred. Although it is a very significant method, yet it has certain limitations as well . The researcher can not manipulate the cause in order to see the alterations on its effect. This again marks a question on the validity of the findings of the research. Equally the researcher can not randomly assign the subjects in to groups and has no control over the variables.

Yet, it is one of the very useful methods as it has several implications in the field of applied research as well as behavioural sciences. The investigator can predict the relationship between the variables on basis of an already existing output or effect.

2.11 UNIT END QUESTIONS

1) Explain the concept and meaning of ex-post facto research.

2) Explain the characteristics of the ex-post facto research.

3) Differentiate between the concept of experimental and ex-post facto research.

4) Elaborate the sequence or steps of the ex-post facto research.

5) Explain the limitations and strengths of an ex-post facto research.

2.12 SUGGESTED READINGS AND REFERENCES

Myers, Anne, & Hansen, Christine. (2006). *Experimental Psychology.* Thomson Wadsworth: Belmont,CA.

Singh A.K. Tests, *Measurements and Research Methods in Behavioral Sciences,* reprint (2002). Bharati Bhavan publishers and distributors

Kerlinger, F.N. *Foundations of Behavoiral Research,* fourth reprint (1998). Surjeet publications.

References

Jacobs, CD; Haasbroek, JB & Theron, SW (1992) *Effektiewe Navorsing. Navorsingshandleiding vir tersi?re opleidingsinrigtings. Geesteswetenskaplike komponent.* Pretoria: Universiteit van Pretoria.

Klopper, CH (1990) Referaat gelewer tydens 'n vergadering van lede van die vereniging van SA Bourekenaars: Komitee van hoofde van bourekenaarsdepartemente by universiteite gehou op 29 September 1989. *UP-dosent,* 11(2): 43 - 72.

Landman, WA (1988) *Navorsingsmetodologiese Grondbegrippe.* Pretoria: Serva.

Boyd, H.W. Jr. and Westfall, R. (1972) *Marketing Research: Text and Cases,* Irwin, p. 80.

Dillon, W.R., Madden, T.J. and Firtle, N.H. (1994), *Marketing Research In A Research Environment,* 3rd edition, Irwin, p. 175.

Green, P.E., Tull, D.S. and Albaum, G. (1993), *Research For Marketing Decisions,* 5th edition, Prentice-Hall, pp. 105-107.

MacEachen E et al. (2006). Systematic review of the qualitative literature on return to work after injury. *Scandinavian Journal of Work Environment & Health*; 32(4): 257-269.

Howard AF, Balneaves LG, Bottorff JL(2007). Ethnocultural women's experiences of breast cancer: a qualitative meta-study. *Cancer nursing* 30(4): E27-35.

Sim J & Madden S. Illness experience in fibromyalgia syndrome: A metasynthesis of qualitative studies." Social Science & Medicine 2008; 67(1): 57-67.

Blaxter M. Criteria for evaluation of qualitative research. Medical Sociology News 1996; 22: 68-71.

Booth A. Cochrane or cock-eyed? How should we conduct systematic reviews of qualitative research? Qual EBP conference, Coventry university, may 14-16, 2001.

Cohen DJ & Crabtree BF. Evaluative criteria for qualitative research in health care; controversies and recommendations. Annals of Fam. Med 2008; 6 (4): 331- 39.

Dixon-Woods M, Booth A, Sutton AJ. Synthesizing qualitative research: a review of published reports. Qual Res 2007; 7: 375-421.

Dixon-Woods M, Shaw RL, Agarwal S, Smith JA. The problem of appraising qualitative research. QSHC 2004;13: 223-225.

Dixon-Woods M, Booth A, Sutton AJ. Synthesizing qualitative research: a review of published reports. Qualitative Research 2007; 7(3): 375-422.

Websites-

www.wildy.com

www.memsic.com

http://socrates.acadiau.ca/COURSES/PSYC/McLeod/2023Research/ex-post.htm

http://allpsych.com/researchme thods/singlesubject.html.

UNIT 3 EXPERIMENTAL RESEARCH (FIELD EXPERIMENT)

Structure

3.0 INTRODUCTION

In the previous unit you have studied about the concept, meaning, characteristics, steps, strengths and weakness of Ex-post facto research. Now we are going to read about the experimental research and field research. Research can be classified into four major categories: (i) laboratory experiments, (ii) experiment research (field experiments), (iii) field studies and (iv) survey research. In this unit you will learn about experiments, types of experimental research design etc. You will also learn about the criteria of a good experimental design.

3.1 OBJECTIVES

After reading this unit, you will be able to:

- Define experimental research and field experiments;
- Describe the strength and weaknesses of field experiments;
- Define research design and its objectives;
- Explain criteria for a good research design;
- Explain types of experimental research design and its uses; and
- Elucidate the characteristics of a good research design.

3.2 EXPERIMENTAL RESEARCH AND FIELD EXPERIMENTS

Every research requires the identification of the problem which itself is an important step in any research work. In the following section we try to provide how a research problem is identified and what is research especially experimental research etc.

3.2.1 Identifying the Research Problem

The first step in any research is to define the research problem.

This helps the investigator to focus on a more narrow research area to be able to study it appropriately. Some time it is seen that the research problem is often operationalisation and hence it is imperative to define how to measure the research problem.

The results in such cases will depend on the exact measurements that the researcher chooses and may be operationalised to test the conclusions of the research problem. After defining the research problem the investigator must formulate hypothesis. This can be positive or negative or it can be null hypothesis for the research problem.

3.2.2 Experimental Research

Experimental research is mainly used in science subjects such as physics, chemistry, medicine, biology etc. Experiment requires two variables, one independent variable and the other dependent variable. It is important that in experimental research the independent variable is manipulated and the effect of manipulation is observed on the dependent variable. All other extraneous factors are completely controlled within the laboratory. It is based on research design which uses manipulation and controlled testing to understand the causal processes. Generally, we can manipulate one or more variables to determine their effect on a dependent variable. In other words it is a systematic and scientific approach to research in which the researcher manipulates one or more variables, and controls and measures the other variables.

3.2.3 Field Experiments

Field experiments on the other hand refer to experiments conducted in real life situations. Here the control of extraneous factors is not possible as it is a natural setting and there is no way to control any factor so absolutely as one does in the laboratory experiments. Hence in field experiments we take two groups matched for a number of factors such as age, sex, education, socio-economic status etc. Both these groups are in real life setting and thus are subjected to similar extraneous variables and thus the experimenter can observe the effects of his manipulation on one group and compare with the other group which is not subjected to any intervention. Take for example that the researcher wants to study the effects of different methods of teaching (e.g. lecture vs. tutorial). The school is the natural setting from where the researcher randomly selects 100 children from a particular standard (5^{th} standard) and randomly assign them to two groups, viz., experimental (50 children) and control group (50 children). To the experimental group children the researcher uses the lecture method and to

the control group tutorial method. Then the effects of the academic performance of these children are compared before and after the introduction of the methods of teaching. If there is a difference in the academic performance of children in regard to the two methods of teaching, the experimenter can conclude that a particular method of teaching (e.g. tutorial) is more effective than the other method (lecture).

There are considerable differences between the experimental research and field experiments which are given in the table below:

Table 3.1:Differences between experimental research and field experiments

Experimental research	Field experiment
1) The subjects are homogeneous.	1) The subjects may vary in a number of characteristics.
2) The experimental subjects are in controlled conditions.	2) The subjects are not in controlled but in natural settings and conditions.
3) One experimental group is taken and subjected to the manipulation of the independent variable (Intervention) and see the effects of it on the subjects of the experimental group.	3) Two groups matched for certain basic characteristics which may confound the results are taken and one is subjected to intervention while the other is not. At the end the results of two groups on a dependent variable are compared to see the effect of intervention.
4) The cause effect relationship can be clearly established as in the laboratory experiment all extraneous factors are controlled and the pure effects of intervention can be studied.	4) The cause effect relationship can be established to quite an extent but not to the same accuracy of experimental research as extraneous factors are not controlled as in the laboratory.
5) Predication based on the experiment is possible and one can even accurately predict a phenomenon given the same conditions.	5) Prediction is possible to certain extent as the real life situation may not be the same in all places where the study is conducted.
6) The experiment is always quantitative in terms of results.	6) The field experiment is both qualitative and quantitative in terms of results.
7) The experiment is replicable.	7) The field experiments are replicable but may require modifications in terms of the matching factors.

We can use the experimental research in different ways such as:

- There is time priority in a causal relationship (cause precedes effect)
- There is consistency in a causal relationship (a cause will always lead to the same effect)

- The magnitude of the correlation is great.

The word experimental research has many meanings.

This is an experiment where the researchers manipulate one variable, and control the others variables. It can have a control group for comparison purposes, but invariably as the experimental situation is highly controlled in the laboratory, one group is sufficient for the experiment. The subjects are randomly assigned to experimental conditions if there are more than two experimental conditions. The researcher must be very clear as to what variable(s) need to be tested and measured.

Field experiments are also called as quasi experiments, as the researcher actively influences something to observe the consequences.

When dealing with human subjects it is always possible and advisable to use field experiments or quasi experiments. This is so because when certain phenomenon and its changes are observed in natural settings, it provides considerable inputs, information and knowledge about the phenomenon in real life situation. If society has to progress this type of research is important.

3.3 STRENGTHS AND WEAKNESSES OF FIELD EXPERIMENTS

The advantages or the strength of field experiments are given below:

1) It is useful to behavioural and social scientists such as the social psychologists, sociologists and educationists.
2) It is an appropriate method for studying complex social influences, processes, and changes in life like setting. The dynamics and small groups have been fruitfully studied by this method.
3) It is most suited method to the testing of theory and to the solution of practical problems.
4) It is suited to testing broad hypotheses.
5. Flexibility and applicability to a wide variety of problems are also possible by this method.

Weaknesses or limitations of field experiments are as given below:

1) The chances of extraneous variables confounding the research findings are more in field experiments due to the uncontrolled extraneous variables.
2) One of the problems is the negative attitude of researcher.
3) Consent and cooperation of concerned subjects and the institutional authorities, (the institution where the research is to be conducted) is required for the field experiment.
4) This type of research faces lack of precision problem.

3.4 CONSTRUCTING THE FIELD EXPERIMENT

Before constructing an experiment research there are various aspects to consider.

1) *Planning:* A good planning always ensures that the research is carried out properly and in proper conditions with appropriate tools and measures.

2) *Sampling*: One of the best ways to ensure that the research is conducted systematically and appropriately is to have a proper selection of sample. **Sampling** is taking any portion of a population or universe as representative of that population or universe. Sample can be classified into *probability* and *non probability sample*.

   Probability samples use some form of random sampling in one or more of their stages. Non probability samples do not use random sampling; they thus lack the virtues being discussed. Still, they are often necessary and unavoidable.

   The probability sampling includes stratified, cluster, systematic and random sampling method.

   The non probability sampling includes quota, purposive and accidental sampling method.

3) *Research design*: Every research requires a blue print of the research work that will be carried out. Where the experiment will be conducted, that is the setting, who will be the subjects, that is the sample, how it will be conducted, what instruments will be used, what will be manipulated, what will be measured etc. The experimental design must also provide for the number of subjects that will be in the experiment and the number of subjects who will be considered as the control group.

4) *Tools of data collection:* What are the tools that will be used, how the results will be measured, and what statistical tools will be used etc.

5) *Procedure:* Once the subjects have been identified and setting has been decided where the experiment will be conducted, the next step is to get permission from authorities to use the setting. Having obtained the permission let us say from school authorities to conduct field experiment regarding which method of teaching leads to better academic performance, the subjects will be selected from a certain class. Let us say we choose children from class 5 all sections. Let us say there are 200 children. We need only 100 children and so from each of the 4 sections we take 25 out of 50 children randomly. From these 100 children, we again take 50 for control group and another 50 for experiment. This again we select randomly. Both the groups children are tested for academic performance and their scores are recorded. Then, to the experimental group of children we give instruction through lecture method and to the other group through tutorial method. After training for 1 month, the academic performance of both the groups are retested. Now the difference in the second testing for the two groups will indicate which method is more effective. Within the group also the pre and the post test performance could be measured and the difference noted as improvement or decrease in academic performance.

6) *Statistical analysis*: Appropriate statistics such as the t test will be used to find if the differences obtained between the two groups as well as between the pre and the post tests are statistically significant.

The above 6 steps are the ways in which the field experiment is conducted.

3.5 RESEARCH DESIGN

Research can be explained as Re + Search= again + explore, to explore the relationship between different variables. Research is a scientific methodology in a controlled setting. Observation and experiments are the basic scientific tools of research which gives the scientific status to the field of psychology. It is a systematic attempt to study.

The controlled observation means that we have to see the impact of independent variable and dependent variable under specific controlled condition and we have to manipulate the independent variable in a systematic way and record the relative changes in the dependent variable. For controlled observation it is essential for one to manipulate independent variables with certain controls and the principles of randomisation should be followed. In other words a good research design is that in which we can forecast or give a solution to the problem.

According to Kerlinger (1998), Research design is the

i) *plan,*

ii) *structure, and*

iii) *strategy* of investigation.

The research design is conceived so as to obtain answers to research questions and to control variance. The above three aspects of research design are being explained below:

i) Plan is the overall scheme or programme of the study. It can be in the form of proposal of the study.

ii) Structure of the research is more specific. It is the outline, the scheme, the paradigm of the operation of the variables.

iii) Strategy is more specific than plan. The method that we want to use to collect the data and analyse or interpret the data. The strategy also implies as to how the research objectives will be reached and how the problems encountered in the research will be tackled.

According to Myers (1980), the design is the general structure of the experiments, not its specific content.

Self Assessment Questions

State whether the statement is *True or False*.

1) The selection of a problem is the last step of research ( ).

2) After defining the research problem the hypothesis must be formulated ( )

3) Experimental research use in science subjects ( )

4) Field experiments refer in the real life situation ( )

5) Flexibility and applicability is a weakness of field experiments ( )

6) Structure is more specific than plan ( )

3.6 OBJECTIVES OF RESEARCH DESIGN

The research design has two basic objectives:

i) **To provide answers to research questions** – The investigator has the answer to research questions in the form of validity, objectivity, accuracy and economical aspects of the research concerned. The researcher is not inclined to answer the research questions in a layman's term but answer in terms of validity, objectivity, accuracy etc. For example, the factorial design is a design which deals with the interaction effect in an economical way. Different research problems require different research designs.

Research problems can be and are stated in the form of hypotheses and the research designs are carefully worked out to yield dependent and valid answers to the research questions epitomised by the hypotheses. If the hypothesis discussed is one of interaction, a factorial design is evidently more appropriate (Analysis of variance is used in factorial design). The adequate planning and executed design helps to make efficient observation and draw appropriate inferences from the result.

An adequate research design would suggest the number of observations that have to be made, and which variables are active and which are attributed etc. According to the adequate research design we can then act to manipulate the active variables and to categorize the attribute variables.

ii) **To control variance under study–** The score deviation is called variance and these variances must be controlled. The investigators follow certain principles for constructing an efficient research design.

Principle 1: *To maximise the variance of variable*

The main concern of the investigators is to maximise the variance in a systematic way. It is called the *experimental variance.*

The Variance of the dependent variable (DV) is influenced by the independent variable (IV). The main task of an experimenter is to maximise the variance.

If the independent variable does not vary substantially, there is little chance of separating its effect from the total variance of the dependent variable.

Hence it is necessary to give chance to the variance to show itself separately from the total variance. The purpose of a good research design is to maximise systematic variance.

Principle 2: T*o control extraneous variance*

The purpose of the effective research design is to control extraneous variance which may confound the results of the experiment.

There are three ways to control extraneous variables confounding the results:

i) to eliminate the variable as a variable;

ii) to control extraneous variance through randomisation,

iii) to build it right into the design as an independent variable.

Principle 3: T*o minimise error variance*

Our aim is to minimise error variance from the research study. It is unpredictable. Some time we see the impact of constant error in the study. For example, individual differences and intelligence. This type of error affects adversely the research findings.

We can minimise the error variance by two basic methods:

i) the reduction of errors of measurement through controlled conditions and

ii) an increase in the reliability of measures.

3.7 CRITERIA FOR A GOOD RESEARCH DESIGN

For research design to be considered good, we must ask the following questions?

1) Does the design give specific answer to the research question?
2) Does the design adequately test the hypothesis?
3) Does the design present the appropriate question/problem?
4) Does the design adequately control the extraneous independent variable?
5) Can we generalise the results of a study to other subjects?
6) Does the design give the internal and external validity?

3.8 TYPES OF EXPERIMENTAL RESEARCH DESIGNS

The pure experimental research is not always possible in behavioural and social sciences due to the difficulty in controlling all the variables and influences from outside of and inside the individuals which is possible only within a laboratory situation. The experimental situations in which experimenter can manipulate the independent variables and has liberty to assign subjects randomly to the treatment groups and the control groups may not be that possible or accurate. Also the control of the extraneous variables is not possible and children in a classroom keep getting stimulation from various sources. Hence one has to take such designs in which to the extent possible randomisation and control of variances are possible.

To conduct the field experiments there are experimental designs available and these are being discussed below. Let us consider the different types of designs:

3.8.1 Single Case Experimental Design

The single case experiment is useful in clinical research especially in the area of behaviour modification. This design provides us the detailed information of human behaviour which is not possible in the group designs. Repeated measurements are also possible and we can note subtle changes in the subjects' behaviour.

The design however is not very suitable for generalising the findings to the larger population as it is based on a small number of subjects and who have not been randomly selected.

3.8.2 Quasi-Experimental Design

All experimental situations in which the researcher / experimenter does not have full control over the assignment of experimental units randomly to the treatment conditions or the treatment cannot be manipulated, are collectively called quasi-experimental designs.

There are the various experimental situations in which the experimenter does not have full control over the situations. The plan of such experiments constitutes the quasi- experimental design.

Though, quasi-experimental investigations have limitations, nevertheless these have advantages in certain respects. It is possible to select subjects randomly as pointed out earlier in the case of selecting students from class 5 of a school and randomly assign them to the experimental and control groups respectively. We conduct the experiment in natural and real life setting and so it has certain amount of realism and the information so gathered can also be to quite an extent generalised. It can provide answers to several kinds of problems about past situations and those situations which cannot be handled by employing pure experimental research design.

3.8.3 Experimental Design

This type of design is generally conducted in the laboratory with complete control over all variables and all subjects. In this type of research design one can assign subjects randomly to the treatment groups and one can manipulate the independent variable and study the pure effects of the manipulation on the dependent variable. Also, in such experiments, the experimenter has complete control over the scheduling of independent variables. In such experiments one can use high level advanced statistical methods got analyse the data. For example, the *F* test, Correlation and regression and multiple regression analysis, partial correlation etc. There are also three types of designs that we can use within the experimental design and these are (i) Between subjects design (ii) Within subject design and (iii) Mixed design (iv) classical pre test post test design (v) Solomon four groups design (vi) Factorial design. These are presented in detail below:

i) *Between subject design* – Each subject is observed only under one of the several treatments conditions.

ii) *Within subject deign or repeated measures design* – Each subject is observed under all the treatment conditions involved in the experiment.

iii) *Mixed design* – Some factors are involved from between subjects and some are from within subjects.

iv) *Classical pretest-post test* – The total population of participants is randomly divided into two samples; the control sample, and the experimental sample. Only the experimental sample is exposed to the manipulated variable. The researcher compares the pretest results with the post test results for both samples. Any divergence in the results between the two samples is assumed to be a result of the experiment.

v) *Solomon four group design* – The sample is randomly divided into four groups. Two of the groups are experimental samples. Two groups experience no experimental manipulation of variables. Two groups receive a pretest

and a post test. Two groups receive only a post test. This is an improvement over the classical design because it controls for the effect of the pretest.

vi) *Factorial design* – This is similar to a classical design except additional samples are used. Each group is exposed to a different experimental manipulation.

All the above designs of research can be used in experimental research work for analysing the data. On the other hand these designs are not suitable for conducting field experiments though one could use them with certain modifications.

Having presented the experimental research and field experiment, the following section presents in detail the basis issues related to research design.

Self Assessment Questions

Fill in the blanks

1) Research problem can be stated in the form of .....
2) Research is a ..... methodology in a controlled setting.
3) The main task of an experimenter is to maximise the .....
4) The ..... experiment is useful in clinical research.
5) ..... design is generally conducted in the laboratory with complete control over all variables and all subjects.

3.9 LET US SUM UP

The key points of our discussion in this unit have been as given below:

Experimental research is a systematic and scientific approach to research in which the researcher manipulates one or more variables, and controls and measures the other variables.

Research is a scientific methodology in a controlled observation and experiments are the basic tool, which gives the status of science of psychology. It is a systematic attempt to study.

The research design has two basic objectives: (i) To provide answers to research questions and (ii) To control variance under study.

Field experiment on the other hand is carried out in real life situation and deals with real life related problems and thus is important for our society.

It helps us to improve our everyday living lives and it is also able to predict the manay important social phenomena. Typically, an experiment is constructed to be able to explain some kind of causation.

It has some strength and weakness of field experiment. The three types of experimental research design are (i) single case experimental design, (ii) quasi-experimental design, (iii) experimental design.

3.10 UNIT END QUESTIONS

1) Define experimental research.
2) Differentiate between experimental research and field experiment.
3) Define research design.
4) Explain two basic objectives of research design.
5) Explain the importance of field experiment in research.
6) How can we check the criteria of a good research design?
7) What are the three types of experimental research, explain each.
8) Explain Solomon four group designs.

3.11 SUGGESTED READINGS AND REFERENCES

Broota, K.D. (1992) *Experimental Design in Behavioural Research*, Wiley Eastern Limited.

Kerlinger, F. N. (1998) *Foundation of Behavioural Research*, (4th edition) Holt, Rinehart and Windston, Inc.

Myers, A. (1980). *Experimental Psychology.*, New York: D. Van Nostrand Co.

References

Edwards A.L. (1980) Experimental Design in Psychological Research, Holt, Richart and Winston, New York

Shavelson, R.S. (3rd edition) Prentice Hall New York.

Internet source: wikipedia.org

3.12 ANSWERS TO THE SELF ASSESSMENT QUESTIONS

True or False

1) False, 2) True, 3) True, 4) True, 5) False, 6) False

Fill in the blanks

1) hypothesis, 2) scientific, 3) variance, 4) single case, 5) experimental.

UNIT 4 CASE STUDY

Structure

4.0 INTRODUCTION

Earlier you have studied about the survey research, ex-post-facto research and experimental research. Now we are going to read about the case study method in research work. In the field of social sciences case study is important tool for a good research methodology. It can be apply on the single subject, small and large group, a class within a school, a school with in a city, or event. Case study methods involve an in-depth study, longitudinal examination of a single subject or event and it may be descriptive or explanatory. A case study is not different to a survey method, but instead of collecting data about few factors from a large number of units the researcher makes a depth and intensive study of a single subject. It is limited in scope but more exhaustive and more informative as compared to survey. It can be used in a school atmosphere, for example, a teacher may use case study to identify the causes of failure in mathematics of a group of three students in class V of a village primary school who continuously failed in three unit tests. The teacher will study these cases in detail in order to arrive at the specific causes of the failure of these students and then take a decision about the remedial measures, which may be taken to overcome the problem of failures. In this unit you will be understand the nature of case study, criteria and types of case study.

4.1 OBJECTIVES

After going through this unit, you will be able to:

- Define case study;
- Explain the nature of case study;
- explain the criteria for selection of case study;
- Delineate the types of case study; and
- describe the steps involved in case study.

4.2 NATURE OF CASE STUDY

Case study provides a systematic and scientific way of perceiving or examining events, collect data, analyse information, and prepare a report. As a result the researcher may gain a sharpened understanding of why the instance happened as it did, and what might become important to look at more extensively in future research. Case studies lend themselves to both generating and testing hypotheses.

In other words, case study should be defined as a research strategy, an empirical inquiry that investigates a phenomenon within its real-life context. Case study research means single and multiple case studies, can include quantitative evidence, relies on multiple sources of evidence and benefits from the prior development of theoretical propositions. Case studies based on any evidence of quantitative and qualitative research.

Single subject-research provides the statistical framework for making inferences from quantitative case-study data. According to Lamnek (2005) "The case study is a research approach, situated between concrete data taking techniques and methodologic paradigms."

In the past years, case study method was used in the field of clinical psychology to examine the patient's previous history regarding the person's mental health status. To know about the patient's physical and mental health, and to make an accurate diagnosis, it is very important to know about the patient's past and present health related and environmental problems and issues.

Psychoanalyst Sigmund Freud used case study method to assist his subjects in solving personality problems. The detailed accounts of interviews with subjects and his interpretations of their thoughts, dreams and action provide excellent examples of case studies. Guidance counselors, social workers and other practitioners conduct case studies for diagnosing particular condition or problem and recommending remedial measures. They collect data from a particular individual and confine their interest to the individual as a unique case or collect data from a small group of individuals, which form a unit for depth study.

The case study approach is based on reality. Some of these studies have been conducted in school environment, which have mostly centered on behavioural problems of children. Observation, interviews, psychological tests and inventories have been used for collecting relevant data about the case or cases. However, subjective bias is a constant threat to objective data gathering and analysis techniques. The researcher must be thoroughly familiar with the skills which are associated with the conduct of case-studies.

The Case study is also useful in psychology. It refers to the use of a descriptive research approach to obtain an in-depth analysis of a person and group. The various techniques may be applied on the subject such as personal interviews, observation, psychometric tests, and archival records. We can use the case study method in clinical psychology to describe rare events and conditions. Generally case study is a single-case design, but it can be a multiple-case design, where replication instead of sampling is the criterion for inclusion. One thing we must remember about the case study is that it must provide valid and reliable results for the development of future research.

4.3 CRITERIA FOR SELECTION OF CASE STUDY

For selection of cases for the case study, we often use information oriented sampling. Our cases are based on this only information, which is mostly based on the extreme cases or typical cases. The average case is often not the richest in information. Extreme or a typical case reveals more information because they activate more basic mechanisms and more actors in the situation studied.

In addition, from both understanding oriented and action oriented perspectives, it is often more important to clarify the deeper causes behind a given problem and its consequences, than to describe the symptoms of the problem and how frequently they occur, etc.

Random samples emphasising representativeness will seldom be able to produce this kind of insight. It is more appropriate to select a few cases for their validity, but this is not always the case. Three types of information oriented cases may be distinguished:

- Critical cases
- Extreme or deviant cases
- Paradigmatic cases

Yin (2005) suggested that researchers should decide whether to do single-case or multiple-case studies and choose to keep the case holistic or have embedded sub-cases.

4.4 TYPES OF CASE STUDY

There are four types of case studies which are (i) illustrative case studies (ii) exploratory case studies (iii) cumulative case studies and (iv) critical instance case studies.

1) **Illustrative Case Studies:** These are primarily descriptive studies. They typically utilise one or two instances of an event to show what a situation is like. Illustrative case studies serve primarily to make the unfamiliar familiar and to give readers a common language about the topic in question.

2) **Exploratory (or pilot) Case Studies:** This type of case studies performed before implementing a large scale investigation. Their basic function is to help identify questions and select types of measurement prior to the main investigation. The primary pit fall of this type of study is that initial findings may seem convincing enough to be released prematurely as conclusions.

3) **Cumulative Case Studies:** These serve to aggregate information from several sites collected at different times. The idea behind these studies is the collection of past studies will allow for greater generalisation without additional cost or time being expended on new, possibly repetitive studies.

4) **Critical Instance Case Studies:** These examine one or more sites for either the purpose of examining a situation of unique interest with little to no interest in generalisability, or to call into question or challenge a highly generalised or universal assertion. This method is useful for answering cause and effect questions.

4.5 STEPS FOR CASE STUDY

The following steps are used in the conduct of a case study:

Step 1. Determining the present status of the case or cases

The first step is to determine the present status of the case or cases through direct observation. In addition to physical examination of the case or cases, a psychological evaluation is required to determine the general ability level etc. For example, to make a case study of a 'slow learner', the first thing to do is to determine the present status of the child by making an assessment of his physique cognitive factors through direct observation and psychological test.

Step 2. Identifying the most probable antecedents of the case or cases

Determining the most probable antecedents of the case or cases is the next important steps. This information helps in formulating a workable hypothesis or a set of hypothesis. For example, in case of 'slow learner' cited in Step 1, the researcher may formulate a hypothesis that occurrence of slow learning behaviour in the child is due to unhealthy have environment, bad study habits and poor teaching in the school.

Step 3. Verification of Antecedents/Hypotheses

The case is then checked for the presence or absence of the antecedents supposed to apply to situation of under study. For example, the behaviour of slow learning of the child. This involves multi-method approach, which includes observation, past history of the case, interview etc.

Step 4. Diagnosis and Remedial Measures

After the verification of the antecedents or hypothesis (es , the next step is directed towards the diagnosis of the causes (example, causes of slow learning) and suggesting remedial measures in the light of the causes.

Step 5. Follow-up of the case or cases

The last step of the case study is the follow-up of the case (es) to study the impact of remedial measures. If impact is positive, the diagnosis is taken to be correct.

4.6 WAYS OF CASE STUDIES

There are different ways of using case studies, which are given below:

1) **Writing analysis of case study**

The most careful analysis of a case study is probably obtained when it is made in writing. Case studies can be used as term papers with other related readings and bibliographies.

2) **Panel of experts**

Although group members miss the advantages of participation, listening to a panel of experts a case may be useful especially as an introduction to the case method. A variation of this technique would be to bring in a panel of experts to analyse a case after a group had already done so.

3) **Analysis of similar case studies**

Another variation of case discussion is to collect from the group members incidents from their experience similar to the case under consideration. Generalisations drawn from the case under consideration may carry over to the experiences of other members.

4) **Cross examination**

By cross examination group members with questions prepared in advance, they will discover that it is necessary to do careful thinking and preparation before entering into case study. This technique, especially appropriate for use with cases containing a great deal of detail, gives the researcher many opportunities to ask individuals to defend their points of views in terms of the data presented.

Self Assessment Questions

A) State whether the statement *True or False*

1) Case study involves in-depth study ( )
2) Case study provides a systematic and scientific ways of perceive ( )
3) Case study can be used only in clinical psychology ( )
4) The approach of case study is based on the artificial atmosphere ( )
5) Critical case studies are useful for cause and effect questions ( )

B) Fill in the blanks

1) Case study means single and ———— case studies.
2) Case studies based on any evidence of quantitative and .....research.
3) ..... case study performed before implementing a large scale investigation.
4) ..... is the last step of case study.

4.7 MISCONCEPTION ABOUT CASE STUDY

There is little misconception about the case study for using in research work. Flyvbjerg (2006) define five misconceptions about case study research:

1) Generally, theoretical knowledge is more valuable than concrete, practical knowledge, because one cannot generalise on the basis of an individual case and, therefore, the case study cannot contribute to scientific development.
2) The case study is most useful for generating hypotheses, whereas other methods are more suitable for hypotheses testing and theory building.
3) The case study may affect the bias tendency toward verification, i.e., a tendency to confirm the researcher's preconceived notions.
4) Some time it is difficult to summarise and develop general propositions and theories on the basis of specific case studies.

4.8 LET US SUM UP

The key points of our discussion in this unit have been that case study is an important area of research which helps the researcher to study the individual and develop appropriate strategies to provide remedial instructions. In this unit attempt is made to make you aware about the systematic steps of case study on the basis of which strategic interventions can be planned for the development of a particular aspect.

Case study is also useful in psychology. It refers to the use of a descriptive research approach to obtain an in-depth analysis of a person and group. The various techniques can be applied on the subject such as personal interviews, observation, psychometric tests, and archival records.

There are four types of case study (i) illustrative case studies, (ii) exploratory case study, (iii) cumulative case study, and (iv) critical instance case studies.

There are various steps to conduct the case studies such as, *Step 1* Determining the present status of the case or cases; *Step 2* Identifying the most probable antecedents of the case or cases; *Step 3* Verification of Antecedents/Hypotheses; *Step 4* Diagnosis and Remedial Measures; and *Step 5* Follow-up of the case or cases**.**

There are the different ways to using case study such as, (1) Writing analysis of case study, (2) Panel of experts, (3) Analysis of similar case studies, (4) Cross examination.

4.9 UNIT END QUESTIONS

1) What do you mean by case study method?
2) How can we use case study method in psychology?
3) What are the criteria of case study?
4) Explain types of case study.
5) What are the important steps to conduct the case study?
6) Explain ways of using case studies.

4.10 SUGGESTED READINGS AND REFEENCES

Baver, R.C. (1955) *Cases in College Administration*: Bureau of Publications: Teacher College, Columbia University, New York.

Bell, J. (1999) *Doing Your Research Project* (3rd edition) Milton Keynes: Open University Press.

DEP-SSA, IGNOU (2008). *A Document of Action Research*, IGNOU, New Delhi.

Everett, J.B. Downing, Ms. S. Leaviet, H. (1960) *Case Studies in School Supervision,* Rincehart & Company, Inc. New York.

References

Flyvbjerg , Bent (2006). “Five Misunderstandings about Case Study Research” *Qualitative Inquiry*, vol. 12, (2) pp. 219-245.

Hamberg, M. (1957) *Case Studies in Elementary School Administration*, Bureau of Publications, Teachers College Columbia University, New York.

Hitcheock, G. and Hughes, D. (1989), *Research and the Teacher: A Qualitative “Introduction to School based Research*, MA: Allyn and Bacon.

Koul, L. (1984), *Methodology of Educational Research*, Vikas Publishing House Pvt. Ltd. (II revised edition)

Nisbet, J. and Watt, J. (1984), Case study in J.Bell, T. Brush, a Fox, J. Goodley and s. Goulding (eds.) *Conducting Small-scale Investigations in Educational Management*, London : Harperpow.

Lamnek, Siegfried (2005) *Qualitative Sozial forschung*. Lehrbuch. Auflage. Beltz Verlag. Weihnhein, Basel.

4.11 ANSWERS TO SELF ASSESSMENT QUESTIONS

A) True or False

1) True, 2) True, 3) False, 4) False, 5) True.

B) Fill in the blanks

1) multiple, 2) qualitative, 3) exploratory, 4) follow-up.