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## UNIT 4 RESEARCH PROCESS II: PREPARING A RESEARCH PROPOSAL

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### 4.0 INTRODUCTION

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In the previous Unit you have learnt about the process of research. You have also learnt about formulation of a problem and hypothesis in detail. In this Unit we will learn about how to prepare a research proposal. The research proposal consists of every details of a research project. It helps a researcher in many ways. Firstly it gives the researcher a complete picture of the whole research project. Secondly a well-prepared research proposal helps to make time and budget estimate. Lastly, a research proposal enables a researcher to monitor his/her research project. Sometimes, the purpose of developing a research proposal is also to try to obtain a grant to cover the expenses of the research project.

The research proposal consists of details about various interrelated research activities, which overlap continuously rather than following a strictly prescribed sequence. At times, the first activity determines the nature of the last activity to be undertaken. If subsequent activities have not been taken into account in the early stages, serious difficulties may arise which may even prevent the completion of the study. One should remember that the various activities involved in a research project are not mutually exclusive nor they are separate or distinct. They do not necessarily follow each other in any specific order and the researcher has to be constantly anticipating at each step in the research project the requirements of the subsequent steps. However, the following order concerning various steps provides a useful procedural guideline regarding the research project:

- 1) Identification/Formulation of the Research Problem,
- 2) Review of Literature,
- 3) Identifications of Objectives of the Study,
- 4) Formulation of Hypothesis (if any),
- 5) Operationalisation of Concepts,
- 6) Preparation of Research Design,
- 7) Selection of Sample,
- 8) Selection of Method and Tools of Data Collection,
- 9) Collection of Data,
- 10) Processing and Analysis of Data,
- 11) Analysis and Interpretation of the Data,
- 12) Presentation of the Research Report,
- 13) Budget Estimate, and
- 14) Time Estimate.

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## **4.1 OBJECTIVES**

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On completion of this Unit, you would be able to :

- describe the importance of writing a research proposal;
- prepare a research proposal;
- prepare a sample design;
- prepare a plan of collection and analysis of data;
- prepare a scheme of research report; and
- prepare budget and time estimate.

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## **4.2 PREPARING RESEARCH PROPOSAL**

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### **4.2.1 Identification and Formulation of a Research Problem**

A thorough understanding of known facts and ideas in the broad area of research constitute the first and the most important step in identification and selection of a problem for your study. A thorough knowledge of the research studies conducted in the field provides you with details about the problems which have remained unresolved. A list of suggestions for further research given at the end of research reports and reviews of research would help you to get an idea about the gaps which exist in the knowledge pertaining to your field of research. Periodicals and bibliographies of research are helpful in keeping you informed about the research going on in the field in which you are interested and show competence. The various sources through which a researcher can identify a suitable and significant problem have been already discussed in Unit 3.

At the very outset of the research project the researcher has to decide the broad area that he/she would like to inquire into. In Unit 1 you have read some of the broad areas of rural development, such as: rural sociology, rural economy, rural poverty, etc. In each broad area innumerable problems exist. As a researcher first you are required to single out the broad area you wish to study. Once you decide the broad area for your research study immediately you need to evaluate the proposed area in the light of your competence, possible difficulties, in terms of availability of literature, the financial and field constraints, limitations of time etc. After evaluating the broad area you have to choose a specific subject for the study. Let us assume that you have chosen the broad area of rural economy. The broad area of rural economy consists of a number of subjects such as, source of income, patterns of expenditure and savings, occupational pattern, indebtedness etc. Within each of these broad areas of rural economy, there is a range of issues that can be studied, for example, origin of rural economy, effects and consequences of economic programmes, the impact of intervention efforts intended to ameliorate the rural economy. People associated with non-governmental organisations, who are routinely involved with many of these areas/issues, can find opportunities for research that are directly related to their professional activities. To undertake a research study, now you have to think of a specific subject, say for example, you may wish to study a subject like 'Role of Self-Help Groups in Rural Economy'.

#### **4.2.2 Review of Literature**

The beginning of this section has suggested you to get literature relevant to the topic before you want to study it. Social research topics are usually embedded in so many different kinds of literature that the researcher must be careful in selecting the best literature to examine. While many researchers collect every material which has some linkages with the topic, you need to keep the central theme of your topic in mind to guide you through your search of the literature in the field. It is also important to examine different types of literature where relevant inferences are drawn from scientific data interpretations. It would be very useful if research findings from studies using various methods are critically examined.

While presenting review of research literature, a researcher should touch upon the introduction justifying the research, methodological details and findings and their implications. But most researchers present only findings. Very few researchers look into findings as well as research methodology in their reviews. From the perspectives of findings, major objectives of a review are to: (a) find gaps in research, (b) identify the areas of overlap, and (c) identify contradictions.

For preparing a research proposal, you should refer to the gaps in research, the areas of overlap, contradictions and significant findings you have noted through review of literature. This will help you to raise questions or which will guide you to decide the subsequent steps of the research process such as identification of objectives, formulation of hypothesis (if any), determination of research design and sample for your study. You must be able to draw out findings from the studies and summarize them in such a way that someone unfamiliar with study can easily grasp their meaning and importance. To help you to do this, you should look at the background literature review sections which generally come at the beginning of published research articles. Most of these reviews are very condensed; they extract a few salient points from numerous studies, summarizing them in a way that is relevant to the study in question.

### Check Your Progress 1

Discuss the importance of review of literature in a research project.

**Note :** a) Space is given below for your answer.

b) Compare your answer with the one given at the end of this Unit.

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### 4.2.3 Identification of Objectives of the Study

Once the problem, the theoretical background, and the concepts have been explained, it is time to address the aim and objectives of the study. At this stage you are required to present the aim and the objectives of the study in brief to justify your study in terms of both its rationale and the implications that it might raise.

It is important to examine whether the researcher has raised very clearly the questions to which he/she is looking for a solution. These questions should be explicit – the researcher should categorically put down the questions on paper. This set of questions can be converted into objectives. Objectives are the foundations of a research project. Eventually the objectives guide the entire process of research. The major attributes of well-written objectives are:

#### Clarity of expression and direction

The objectives must have been stated clearly enough to indicate what the researcher is trying to investigate. It is equally important to avoid overlaps in stating objectives.

#### Measurability

The objectives must be stated in a manner that they are measurable; in case of qualitative research it should be possible to at least codify the data and information so that assessment can be made whether the objectives have been achieved or not.

#### Comprehensiveness

The objectives provide the guiding framework for a research project. Hence, the statement of objectives should be comprehensive enough to cover each and every aspect of the research study. Stating differently, nothing should be outside the purview of the stated objectives.

#### Judiciousness

Another important attribute is the judiciousness in and justifiability of choosing and stating objectives. For example, many young scholars, in their postgraduate dissertations and doctoral theses mention “recommending future research” as one

of the objectives. In all fairness, this is not feasible. Similarly, in a short time-bound project, a research objective that actually calls for sustained and long-term study becomes less feasible.

Here it is important to note that rationale for doing the project will be accomplished only if the study is done well. Preparing a proposal of your study will show that you have devised a plan to study your problem that seems feasible, you reinforce the sense that the aims and objectives of the study will be achieved. The value of the study lies not only in what it alone will produce, but also in how it may add to or challenge other research in the area.

#### **4.2.4 Formulation of Hypothesis**

A common strategy in scientific study is to move from a general theory to a specific researchable problem. A part of this exercise is to develop hypotheses, which are testable statements of presumed relationships between two or more concepts. In other words, hypothesis is tentative assumption made in order to draw out and test its logical or empirical consequences. Hypothesis states what we expect to find rather than what has already been determined to exist. After extensive survey of literature and statement of objectives, researcher should state in clear terms the hypothesis.

It may be noted here that we do not need to propose hypothesis in the case of exploratory or formulative researches.

#### **4.2.5 Operationalization of Concepts**

Once you are settled with the hypotheses for your study, you need to operationalise the concepts so that you can develop your measuring instruments such as your questionnaire.

In a study, a set of concepts is used to explain the phenomenon. These concepts need clarifications with reference to the particular topic. Through the clarifications and discussion of the concepts a research model is developed at this stage. Precision in conceptualisation is critical in the social sciences, and it is not easy to achieve. Concepts like 'exploitation', 'discrimination', and 'oppression' may all seem to be familiar terms. However, the precise meanings you attach to these concepts must be defined and clarified, and then an appropriate way to measure concepts must be found or devised.

In the research proposal, a clear definition of the main concept or concepts is most essential. It is also essential to discuss the process of measurement of the concepts. In the research proposal you should also touch upon the potential problems in measuring the concepts. These include two critical issues: *validity*, that is, whether the measurement of a concept in fact produces a result that truly represents what the concept is supposed to mean, and *reliability*, that is, whether the measurement would lead to same results, whenever it is repeated, that one could have some confidence in the results.

In a survey, the questionnaire is nothing but concepts in operational form. In an experiment, the operationalisation of the independent variable (concept) is the actual stimulus. In field studies, this process of operationalization occurs in a very different manner. It is often carried out after the field notes have been collected. After that the researcher may find evidence that suggests certain meanings, at which time the process of conceptualisations are carried out. To test whether you are correct, you may go back to the field to see if another instance of this operationalised concept occurs. It is always advisable to use more than one indicator for better measurement of the concept. This will strengthen your study.

### Check Your Progress 2

Define the term 'hypothesis'. Discuss the importance of hypothesis in making a research proposal.

**Note:** a) Space is given below for your answer.

b) Compare your answer with the one given at the end of this Unit.

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### 4.2.6 Research Design

After the research problem and its aims and objectives are stated and hypotheses are formulated in clear cut terms, the researcher is required to prepare a research design, i.e., he/she will have to state the conceptual framework within which research would be conducted. The preparation of such a research design facilitates researcher to complete his/her research project as proposed. In other words, the function of research design is to provide for the completion of the research project with minimum effort, time and money. But how all these can be achieved depends mainly on the research purpose. Research purpose may be grouped into four categories, viz., (i) Exploration, (ii) Description, (iii) Diagnosis, and (iv) Experimentation. A flexible research design, which provides opportunity for considering many different aspects of a problem, is considered appropriate if the purpose of the research study is that of exploration. But when the purpose happens to be an accurate description of a situation or of an association between variables, the suitable design will be one that minimizes bias and maximizes the reliability of the data collected and analysed.

There are several research designs, out of which the researcher must select one for his/her own project. The preparation of the research design (you will know about research designs in detail in Block 2), appropriate for a particular research problem, depends usually on its objectives and hypotheses, the sample, the type of data to be collected, time available for research; and the finance available for the purpose.

However, it is important that the chosen research design is competent to respond to the research objectives and questions laid down. For example, if the objective is to test the impact of a broad treatment to a group of clients, it has to follow an experimental design. Similarly, if the objective were to assess the status of certain psychosocial variables in a given sample of population, it would require survey designs. Within survey designs, if the purpose is simply to describe their status and

**Research in Rural Development** not to compare them with any standard norm or not even develop a norm, the design can be descriptive.

Hence, while preparing a research proposal it is necessary to check the choice of appropriate research design against the objectives. Another means of evaluating the applicability and appropriateness of the research design is to check it against the hypothesis. If the hypothesis to be tested, is formulated in terms of relationships, the study has to adopt a survey design, by which relationships can be tested. Compared to it, if the hypothesis is to test the performance of two different groups against a particular type of treatment, the research design has to provide for that opportunity by adopting an experimental design. Depending on the nature of the groups, the treatment, the size of the sample and also the nature of that experiment, one would adopt a pre-experimental, quasi-experimental or true experimental design.

Thus as a researcher you need to examine the appropriateness of the choice of research design vis-à-vis the research objectives. The details of the design, e.g. type of experimental design etc. too have to be evaluated. Equally important is the argument put forward by the researcher in deciding the research design.

### **Choice of Variables**

Choice of variables is an important step in a research project. There can be at least three sets of variables, namely, independent, dependent and intervening variables. There are also other ways of classifying variables like socio-economic, demographic, psychological, organisational, etc. The later classification is relevant with regard to basic content of research whereas the former is directly linked to research data.

Here, we shall concentrate on the first set. The important point in selecting the variables is the formulation of the dependent variables. This is particularly important in experimental research where the impact of other variables on the criterion variable is assessed.

In order that the research makes a meaningful contribution, it is important to choose the independent variables as meticulously as possible. The choice of independent variables depends upon more than one consideration. Of the considerations is the existing knowledge on the basis of previous research which shows that certain types of variables are indeed related to and predict the variation of the criterion variable. The second important consideration is the assumption of the researcher – that there are particular sets of variables that are likely to be related to the dependent variables.

The third set of variables is the intervening variables. These are often ignored in research, although these actually intervene and influence the relationship between the independent and the criterion variables. On the basis of the research literature, the researcher is expected to identify such variables that are likely to influence the relationship under test.

Besides the identification and classification of the variables, it is important that variables are measurable. Further, all variables may not have standard definitions. In such a case, it is expected that the researcher shall provide operational definitions and also indications of their measurability.

Hence, an important consideration in proposing a research project is how meticulously the variables have been identified and classified under the three categories mentioned above. The second important consideration in this case is whether the researcher has provided operational definitions of at least such variables as do not have a standard meaning in the literature. The third important consideration is whether there are clear indications of the measurability of variables.

### Check Your Progress 3

Explain the purpose of a research design in research project.

**Note :** a) Space is given below for your answer.

b) Compare your answer with the one given at the end of this Unit.

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#### 4.2.7 Selection of Sample

At this stage the researcher is required to decide the sample design of his/her study i.e the way of selecting a sample. In other words, a sample design is a plan decided before any data are actually collected.

The selection of the sample for the study depends on many factors. Some of these factors, affects the selection of the sample to a great extent. We will discuss a few of them. The homogeneity or heterogeneity of the universe is one such factor which affects the sample selection procedure to a great extent. For example, if you are interested in studying medical students, which is a very homogeneous group, even a very small sample will be representative of the universe where as if you plan to study a college having arts, science and commerce faculties you may have to choose a very large sample and even then you may not have confidence to say that your sample is representative.

Other important issues with regard to selection of sample that need to be considered are: sample size, sampling technique and type of the sample. The size of the sample depends on the nature of objectives of a research project and the research design. For example, in case of rigorous experimentation, it is difficult to handle large samples. Also, it is not necessary. Similarly, for surveys and such other status studies, samples have to be large. The main consideration here is that there has to be an optimum size of sample beyond which it is waste of research resources. What is to be considered is whether the sample size is large enough for the study and the sample size has been determined scientifically.

You may be interested in generalising your findings to others beyond those studied. When probability samples are used, it is possible to determine how representative your sample is of the population who might have gotten into your study. Sampling plans may be very simple or complex. When the rules of probability are not followed



and you merely select a sample of subjects who seem to fulfill the needs of your study, you have a non-probability sample. For many studies, such a sample is sufficient; and for some, it is the best that can be achieved. Whatever the design of your sample, it needs to be explained in detail in your research proposal. It should be so precise that someone else could generate a similar sample by following your procedures. Remember that even if you select a representative sample you have to be very careful in making generalisations. (For details about the methods of sampling see Block 3, Unit 1)

#### **4.2.8 Selection of Method and Tools of Data Collection**

There are three primary methods of data collection, namely, observation, interview and questionnaire. Under these three methods there are several research instruments such as, psychological test, achievement tests, interview schedules, etc. You will learn about these methods in Units of Block 3. In these Units the methods are explained in details so that you can use them to design and carry out a study based on questionnaires or interviews, and in field studies using different types of observation techniques. It also describes different forms of what might be called data collection procedures for using secondary data.

It is important to note that the research instruments are for the measurement of variables. Every variable has certain attributes of its own, amenable to measurement by different types of scaling, namely, nominal, ordinal, ratio and interval. Similarly, these are variables which are amenable only to rigorous standardised tests, like those of intelligence, reasoning ability, etc. There are others which can be measured through inventories or questionnaires. Then there are variables which necessitate the use of interviews with probing questions to be able to go into the details of a process. The common mistake in this area is the use of incompatible instruments vis-à-vis the variables being measured; for example, researchers may use a questionnaire to measure attitude. Similarly, in the name of a questionnaire, researchers may actually frame an opinionnaire. Sometimes researchers use questionnaires for conducting interviews as if a questionnaire is no different from an interview schedule. More often than not, interviewing is called for when a lead question to 'Yes' and/or 'If no' kind of situation.

The points to be borne in mind while preparing a research proposal are the following:

- 1) Whether the researcher has chosen a tool of data collection that can actually measure the variables.
- 2) Whether the tool of data collection has been picked up from an existing stock or has been constructed by the researcher. In case of the former, whether the researcher has checked its validity, and reliability. In case the researcher has used the tool of data collection on his/her own, has care been taken to check the attributes of the tool, a dependable tool of data collection, be it a questionnaire, inventory or an interview schedule.
- 3) Whether the researcher has tested the feasibility of the use of the tool of data collection.

While preparing the research proposal you are also required to describe how you will collect primary data. In case you are planning to use secondary data you must mention which sources of available data you will actually use. You may also very briefly discuss about issues of access to the data. It is important for a researcher to see that, he/she must be able to get the data he/she proposes. If you anticipate problems in securing the proposed data, these problems should be discussed and possible alternate sources of data might be suggested. Most researchers proposes

to use one source of data yet you may propose few more sources through which you may also collect data from other sources to widen their scope.

### 4.2.9 Collection of Data

There are different methods of data collection. Each method of data collection has its special concerns which need to be considered fully before doing the study. This is why pre-testing is so valuable, because it helps you to find and address potential problems before they enter your study and cause bigger problems.

The plans for collecting data should be described carefully. In a field study, it is always more difficult to be precise, and you may need to make changes once you enter the field. Nevertheless, it is better to have a clear plan that can be changed as you move forward. For an experiment; data collection procedures can usually be described very precisely. This is also true of a survey. Surveys using mailed questionnaire tend to have multiple stages in the data collection procedure to increase the *response rate*. If you are using secondary data, you need to describe at this stage how you will collect the data.

The quality of the outcome of research also depends on the quality of data itself. In turn, the quality of data is determined by the procedure of data collection. The indication of the quality of data lies in the dependability of the information collected from the sample.

### 4.2.10 Processing of the Data

Once the data are collected, they must be processed. If the responses are in qualitative terms you have to prepare a code book where you have to give numbers for the qualitative responses. This is very much essential if you wish to process your data through computer. If they are field notes, they must be organised and categorised.

In the research proposal, a concise statement may be included to address this subject. It may describe what type of computer facilities is available, what possible sources of assistance are available, and what efforts are being made to increase accuracy in the handling of the data. There are now some technological advances in data gathering which speed the process from data gathering to data entry. An example is the SPSS (Statistical Package for Social Sciences) now becoming quite common for social research.

### 4.2.11 Analysis and Interpretation of Data

You need to plan how you will analyze the data. It is advisable to prepare a plan of analysis of data spelling out the various applications of statistical tests carefully while the study is being designed. It is better to have a planned strategy that can be adapted than to end up with piles of data for which you have no organised plan.

You are also required to explain how you are planning to compare or contrast different variables, for example, men with women, one rehabilitation program with another, length of time spent in an organisation by the attitude of employees towards the new incentive introduced recently?

In addition, you need to consider which statistical tests you plan to apply to evaluate the association/differences between the variables. For example, if you propose to measure correlation between the variables to test whether there are significant correlations between them you have to select an appropriate test of correlation that could get the result you need.

**Check Your Progress 4**

Why it is necessary to prepare a plan of analysis of data?

**Note :** a) Space is given below for your answer.

b) Compare your answer with the one given at the end of this Unit.

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**4.2.12 Presentation of the Report**

Every research is conducted by presenting its results in the form of a report. The reporting of results of a research study depends on purpose, with which it was undertaken. A study might have been conducted for various reasons, such as, a personal research may be for award of a degree, an institutional project, a project funded by an outside agency, etc.

At the end of the study, you have to present the results of the study in the form of a report. Research studies follow scientific process. As such, when it is reported it follows certain conventions and formats for maintaining parity in reporting and for easy grasps by readers.

While preparing a research report you have to follow a number of writing conventions. These conventions are commonly known as research formats. These conventions/research formats allow the researcher to present his/her findings within a framework, a framework which is both logical and sequential. By following conventions/research formats the researcher not only systematise and structure his/her research findings in terms of the research problem and its objectives but also facilitate the reading and comprehension of the report by others. In a very broad sense, the format of a research report consists of three parts: the preliminaries, the text and the reference materials. The length of any of these three parts is conditional on the extent of the study. Each of these parts may consist of several subsections. (For order of individual items within the three main sections and other details about the conventions/research formats you are advised to refer “Thesis and Assignment Writing” by Anderson, et.al.)

**4.2.13 Time Estimate**

Time estimate is another important step in preparing a research proposal. The various activities discussed above are completed in a sequence. A researcher is required to estimate time for each activity so that he/she will be able to know the total time required executing the project. Time estimate not only set the time frame for the execution of the project but it also helps the researcher to prepare budget estimate for the research project.

The preparation of the time estimate for a particular research project depends primarily on the size of the sample for the study and the method and tools of data collection to be used for the study, time available for research; and the finance available for the purpose.

For preparing a time estimate for your research proposal, you are advised to discuss with your research supervisor or research experts. This will help you to decide optimum time for various research activities to be undertaken in the research study. A model of time estimate is given below:

<b>S. No.</b>	<b>Research Activity</b>	<b>Time Required</b>
1	Identification of Problem	2 Weeks
2	Review of Literature	1 Month
3	Identification of Objectives	1 Week
4	Formulation of Hypothesis	2 Weeks
5	Selection of Research Design	2 Weeks
6	Selection of Sample	1 Week
7	Selection/Construction of Tools of Data Collection	1 Month
8	Pre-testing of Tools of Data Collection	2 Weeks
9	Data Collection	3 Months
10	Editing of Data	2 Weeks
11	Preparation of Code Book	1 Week
12	Preparation of Master Chart	2 Weeks
13	Processing of Data	1 Week
14	Statistical Analysis of Data	1 Week
15	Writing of Report	2 months
16	Presentation of Report (Typing, Binding etc.)	1 Month
	<b>Total</b>	<b>12 Months</b>

#### **4.2.14 Budget Estimate**

In case you are contemplating to apply for a research grant to cover the expenses of the research project, you will be required to prepare a budget estimate along with your research proposal. The preparation of the budget estimate for a particular research project depends primarily on the area of study and size of the sample for the study and the method and tools of data collection to be used for the study. Common heads/items of expenditure for a research project are shown in the following table.

S.No.	Item/Research Activities	No. of Personnel required	Duration	Cost (Rs)
1.	Research Assistant @ Rs 6000.00 per month	1	6 Months	36000.00
2.	Research Investigators @ Rs 3000.00 per month	2	3 Months	18000.00
3.	T.A./D.A for Research Assistant & Research Investigators			10000.00
4.	Typing & Binding of Report			5000.00
5.	Overhead Expenditure			5000.00
6.	Contingencies Expenses (10 % of the expenditure on items 1 to 5)			7400.00
			<b>Total</b>	<b>81400.00</b>

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### 4.3 LET US SUM UP

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The research process consists of six major stages, namely, selection and formulation of a problem formulation of hypothesis, selection of research design, data collection, data analysis and interpretation and generalisation. In each stage there are a number of research activities which can be taken up step by step. These activities are spelled out in a research proposal.

You should keep in mind that the various steps involved in a research project are not mutually exclusive, nor they are separate or distinct. They do not necessarily follow each other in any specific order and the researcher has to be constantly anticipating at each step in the research project the requirements of the subsequent steps. However, the following order concerning various steps provides a useful procedural guideline regarding the research proposal: Identification/Formulation of the Research Problem, Review of Literature, Identifications of Objectives of the Study, Formulation of Hypothesis (if any), Operationalisation of Concepts, Preparation of Research Design, Selection of Sample, Selection of Method and Tools of Data Collection, Collection of Data, Processing and Analysis of Data, Analysis and Interpretation of the Data, Presentation of the Research Report, Budget Estimate, and Time Estimate.

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### 4.4 CHECK YOUR PROGRESS: THE KEY

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- 1) Review of literature has a significant role in preparation of a research proposal. Review of literature refers to gathering the significant findings of studies already undertaken in the area of the research. It helps the researcher to raise research

questions and guide him/her to decide the subsequent steps of the research process such as identification of objectives, formulation of hypothesis (if any), determination of research design and sample for the study.

- 2) Hypothesis is a tentative assumption to be tested during the study. It is made in order to draw out answers for the research questions and test its logical or empirical consequences. As such, the manner in which research hypotheses are formulated is particularly important since they provide the focal point for research. They also effect the manner in which tests must be conducted, in the analysis of data and indirectly the quality of data which is required for the analysis.
- 3) The researcher is required to prepare a research design to state the conceptual framework within which research would be conducted. The preparation of such a research design facilitates researcher to complete his/her research project as proposed.
- 4) A plan of analysis of data is prepared to spell out the various ways of analysis of data and applications of statistical tests while the research proposal is prepared. Because it is better to have a planned strategy that can be adapted than to end up with piles of data for which you have no organized plan.

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