CHAPTER 3

METHODOLOGY
CHAPTER 3
METHODOLOGY

As has already been stated under the section 'Organization of Thesis' appeared in first chapter - Introduction, this chapter is third in order and assumes greater significance obviously because this is the chapter which describes in detail method used and procedure followed for conducting entire research study.

Time is crucial input and if controlled efficiently provides a sense of satisfaction to the homemaker in particular in the process of successful management of home. Truly speaking concept of time management especially by using time estimation technique like PERT is new to the majority of homemakers even in urban area leave aside home maker from rural area. Present study is an attempt to introduce PERT with the selected respondents and get their views about its use and applicability. It is anticipated that if the concept of PERT technique is taken in its right perspective and possibility of its application for completion of various home activities will be a significant landmark in efficient management of home. It is claimed that applicability of PERT techniques will certainly place adequate time at the disposal of homemaker after done with home activities they are accepted to. This naturally will provide an opportunity to the homemaker for undertaking variety of activities besides leisure and rest, which otherwise she is not able to find. As has been stated earlier this study aims at accessing possibility of use and applicability of PERT technique incompletions of various home activities by the homemakers.
This chapter for the sake of convenience in its presentation has broadly been divided into following sections-

1. Locale of the study,
2. Geographical, demographic and other relevant details of the study area,
3. Sample and sampling procedure,
4. Development, pre-testing and administration of schedule,
5. Method of data collection,
6. Variables, their nature, type and measurement strategy,
7. Building of hypotheses and research design to be selected,
8. Statistical methods used for data analysis,
9. Procedure for estimation of time required for completion of various activities with the help of PERT technique and finally,
10. Meaning of the key terms used (Conceptual and operational).

Detail information about each and every section listed above has been presented below.

1. **Locale of the study:**

   Present study has been undertaken in the city of Akola place of prominence in western Vidarbha zone of Vidarbha region in Maharashtra. Reputed institutes of higher education including one of the Agricultural Universities besides recently established Universities of Medical Sciences with its headquarter the place has been well connected with different modes of transport. The place for the purpose of research has intentionally been selected for the simple reason that author has offered her services in one of the institutes of higher education on
contributory basis. She is also in Akola for quite a long time and naturally, therefore, established regional contacts. This naturally has enabled her to prepare a list of homemakers required for the purpose of selection of them and can get necessary information in the form of data.

2. Geographical, Demographical and Other Relevant Details of the Study Area:

Studies relating to diffusion and adoption have clearly brought out the establishment of relationship between situational features of the locality and adoption of innovation, be that in any field. In the present study it has been assumed that situation prevailing in the entire district as a whole in general and district headquarter in particular is likely to influence to some extent adoption of technique under study and therefore it was thought necessary to make a mention of.

Akola district has been shown prominently on the map of Maharashtra, which lies in eastern part of state. Amravati district lies to the north and east of Akola district, Washim district to the south and Buldana to the west. There are various land form in the district. A major part of purna basin is a region of plains.

The hilly region of Gavilgad, the region of hills and plateau of Ajanta and the plains of Purna river are major physical divisions. The main river of Akola district is Purna.

The climate of Akola district is generally hot and dry. The summers are severe. There are many forests in the hilly region of Gavilgad and Ajanta. Teak, Ain, Khair and Anjan are some of the trees found in this forest. Wells and rivers are the main sources of water supply.
in Akola district. The number of wells is greater. There are many tube wells in the district which are useful for water supply.

Cotton is an important Kharif crop in Akola district. All talukas in district grow jowar. Akola district is well known for production of jowar. Some of the other crops grown in Kharif season in the district are Moong, Tur, Rice, Groundnut and Udid. Wheat, Gram besides Safflower are grown in rabi season. Oranges, chills and Sugarcane are important irrigated cash crops.

Oil mills, handloom cloth, making leather articles, preparing soap, making wooden articles, toys, rope making and brick making are some of the small scale industries of the district.

As far as transport and trade is concern it may be stated that Mumbai-Kolkata national highway passes through Akola district, besides Khandwa-Purna railway line.

Akola is known for the main campus of Dr. Panjabrao Deshmukh Agricultural University.

3. Sample and Sampling Procedures: -

As stated earlier, the entire research study was based on the framework of possibility of use and applicability of PERT technique by the homemakers. Homemakers are responsible for completion of different home activities within a available time and in a manner should be completed. Considering the relation of PERT application with the homemakers, homemakers formed the sample for the study.

For the purpose of selecting sample at the outset list of homemakers residing in Akola city numbering about 6 to 7 hundred
was prepared. While preparing the list care was taken to see that homemakers as far as possible represent educated, employed and variability in their chronological age. All these homemakers were arranged according to alphabets for their surname. Then 300 homemakers were finally selected with the help of "Nth" method of randomization which is commonly known as 'Equal Interval of Randomization'.

4. Development, Pre-testing and Administration of Schedule: -

Among various steps in the research process development of schedule has assumed greater significance. At the outset points on which information suiting to the objectives formulated were listed. In view of broad prospective home management involved wide range of activities and expects. After careful consideration and in the light of importance and necessity for their incorporation issues were separated. This issue and points were then transformed into simple, understandable questions to give a shape of schedule format. While developing a schedule author was cautious in finding a place for structure and open type of questions. For the sake of convenience information on some aspects was anticipated in tabular form and, therefore, appropriate tables were placed in the schedule itself. Thus schedule was finalized.

Schedule so finalized was subjected to the exercise of pre-testing which included collection of information with the help of schedule finalized from non sample respondents. This enabled the author to get an idea from the respondents about the clarity, ambiguity, vagueness, complexity and inability to furnish the information. Author then modified the questions wherever necessary including additions and deletion of some of the questions which otherwise would have reflected
the response pattern from the sample respondents. Then in true sense schedule was ready. Data were collected from the respondents selected for the study through personal interview with the help of schedule thus finalized. It will not be out of place to make a mention of fact that for quality data author always have to rely on the availability of time placed at the disposal of homemakers from her busy schedule for management of homes.

5. **Methods of Data Collection:**

   Depending upon the type of study and nature of data to be collected researches has to go in for different methods of data collection such as personal interview, observation including participant and non-participant besides record and documents available. In the present study author certainly wanted first hand information from the homemakers and, therefore, she had to report on personal interview for data gathering. Respondents selected were, therefore, personally interviewed with the help of schedule developed, protested and finalized as and when respondents had adequate time for furnishing information required during the course of an interrogation. Method of observation both participant and non-participant was also used for getting information wherever situation prevailed favorably.

6. **Variables, their Nature, Type and Measurement Strategy:**

   Information relating to variables, their nature and type together with strategy employed for their measurement is presented in the table below.
Table: Variable and its nature and type.

<table>
<thead>
<tr>
<th>Sr. no</th>
<th>Variable and its Nature and type</th>
<th>Measurement Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Independent Variables</td>
<td>Schedule Developed</td>
</tr>
<tr>
<td>I.</td>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>II.</td>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>III.</td>
<td>Occupation / Profession</td>
<td></td>
</tr>
<tr>
<td>IV.</td>
<td>Monthly Income</td>
<td></td>
</tr>
<tr>
<td>V.</td>
<td>Type of Family</td>
<td></td>
</tr>
<tr>
<td>VI.</td>
<td>Size of Family</td>
<td></td>
</tr>
<tr>
<td>VII.</td>
<td>Social Participation</td>
<td></td>
</tr>
<tr>
<td>VIII.</td>
<td>Type of House</td>
<td></td>
</tr>
<tr>
<td>IX.</td>
<td>Availability of home equipments</td>
<td></td>
</tr>
<tr>
<td>X.</td>
<td>Availability of other facilities responsible for enhancing efficiently of homemakers</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Intervening Variables</td>
<td>Schedule Developed</td>
</tr>
<tr>
<td>I.</td>
<td>Opinion about use and applicability of PERT</td>
<td></td>
</tr>
<tr>
<td>II.</td>
<td>Knowledge about use and applicability of PERT</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Dependent Variables</td>
<td>Procedure prescribed for computation of time required for completion of home activities as per the PERT technique was used</td>
</tr>
<tr>
<td></td>
<td>Requirement of time for completion of various home activities with the help of PERT technique</td>
<td></td>
</tr>
</tbody>
</table>
Relationship between different types of variables shown in the table above has been depicted in the paradigm

Fig 1:

<table>
<thead>
<tr>
<th>Independent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Age</td>
</tr>
<tr>
<td>ii. Education</td>
</tr>
<tr>
<td>iii. Occupation/Profession</td>
</tr>
<tr>
<td>iv. Family Income</td>
</tr>
<tr>
<td>v. Type of Family</td>
</tr>
<tr>
<td>vi. Size of family</td>
</tr>
<tr>
<td>vii. Social Participation</td>
</tr>
<tr>
<td>viii. Type of House</td>
</tr>
<tr>
<td>ix. Availability of home equipments</td>
</tr>
<tr>
<td>x. Availability of other facilities responsible for enhancing efficiently of homemakers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intervening Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Opinion about use and applicability of PERT</td>
</tr>
<tr>
<td>ii. Knowledge about use and applicability of PERT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Requirement of time for completion of various home activities with the help of PERT technique.</td>
</tr>
</tbody>
</table>

7. Building of Hypotheses and Research Design Selected:

Formulation of hypotheses and selection of research is very crucial, important and necessary step in the research procedure. After careful consideration and in light of above following hypotheses were formed.

1. Respondents differ on their personal, social, economic, psychological and situational characteristics.
2. Respondents vary on their time utilization pattern.
3. Requirement of time for completion of home activities depends upon the nature of home activities.
4. Respondents are not aware of planning, control and evaluation is an important ingredients in PERT techniques.
5. Members of family of respondents do not get themselves involved in performing various home activities.
6. Use of PERT technique is not possible.
7. Respondents experience difficulties in the use and applicability of PERT techniques
8. Respondents have suggestions to offer for effective use of PERT technique for home management.
9. There exists relationship between selected characteristics of respondents and requirement of time for completion of home activities.

All these hypotheses formulated have been subjected to their testing denoting their proving or disproving.

Selection of research design is important and necessary for:

i) For drawing appropriate results and ii) data collection and their interpretation etc.

Taking into account the nature of topic at hand “Descriptive research design” was thought appropriate.

8. Statistical Method Use for Data Analysis:

Considering nature of data collected and considering the suitability of statistical method for data analysis, following statistical techniques were used.

1. Mean/Average.
2. Standard deviation.
3. Co-efficient of correlation ‘r’ test.
9. Procedure for Estimation of Time Required for Completion of Various Activities with the Help of PERT Technique:

PERT is used to plan and analyze programs that involve sequencing of large number of task, design to accomplished desire objectives. Technique of PERT is extensively used to solve not only phenomenal problems such as missile and space travel but also simpler problem costing few hundred rupees. Technique of PERT now has become a common in the task of building construction. As stated earlier present study is an attempt to explore possibility of making use of PERT techniques for completion of various home activities for the purpose of better home management.

Decision to undertake a home management project has to be necessarily followed by the committing capital and other resources otherwise necessary. The requirement is for planning and scheduling a system that will be dynamic to react instantaneously to any kind of changed conditions. In this context plan and schedule refers to a project plan and activity schedule. In this section methodology adopted for network planning for home management has been illustrated step by step.

Procedure for using PERT technique in estimating requirement of time for completion of various home activities in terms of steps followed which ultimately will enable to develop a PERT chart is described below.

1. Developing a Work Breakdown Structure:

Under this particular step considering home management as a project all the activities right from early morning to reaching bed in the
night. The first step is perhaps the most important step and, therefore, care was taken not to leave out an essential activity in the management of home affair.

2. Identification of Activities and Events:

From the list of activities prepare in detail in the first step activities and events were decided. For the purpose of present study an activity considered as discrete task using resources overtime and, event as start or completion of an activity.

3. Determination of Sequence Dependencies:

Under this step all the activities which otherwise come within the jurisdiction of home management being great in number were conveniently and broadly divided into following parts.

i. Daily activities.
ii. Weekly activities.
iii. Monthly activities.
iv. Seasonal activities.
v. Yearly activities.
vi. Activities require for home management.

which were subsequently arranged sequentially making a note of activities which have necessary preceding and succeeding sequence.

Which were subsequently arranged sequentially. Making a note of the activities which have necessary preceding and succeeding sequence. It may be stated that some of the activities such as rearing of domestic animals, care of physically and mentally distress
children etc. otherwise can be considered as home activities and at the same time very much necessary for their completion. However, need not be carried out in determined sequence and can conveniently be carried out and when homemakers finds time in her busy schedule. Naturally, therefore, they could not be classified in any one of the categories specified above on the basis of their respondents. Secondly number of respondents required to undertake such activities from amongst the respondents under study were very negligible almost none and, therefore, these activities have not been considered.

4. On the strength of information obtained from the step number third: -

PERT network was developed which exhibited the activities horizontally on paper in such way the activities showed their preceding and succeeding activities. To make this look like a formal PERT chart circles at the beginning and at the end were put. These circles indicated events representing the beginning and ending of each activities. Lines represented the activity other circles were added for showing other event not related to activities.

5. Estimation of Time Require for Completion of Each Activity in Home Management: -

Requirement of time for completion of home activities was worked out with the help of following formula.

\[ T_e = t_o + 4t_m + t_p \]
where to = optimistic time
top = most pessimistic
tm = most likely time estimation

Thus three kinds of time estimation are generally obtained they are-

1. **The Optimistic Time Estimates:—**

   It is the shortest possible time in which an activity can be completed under ideal conditions. Better than normal conditions are assumed to prevail during the execution. It is denoted by “to”.

2. **Most Likely Time Estimates:—**

   It is the most realistic time estimate which an activity consume. It assumes that things go in normal way. It is denoted by “tm”.

3. **Pessimistic Time Estimates:—**

   It is the estimate of longest time that an activity would require under the most adverse condition. It takes into account all the constraints that come in the way of performing an activity. It is denoted by “tp”.

4. **Identifying the Critical Path:—**

   Activities that had not required predecessor activity and can occur simultaneously with other task were kept on critical path.
7. Performing Network Time Calculation:

Time allotment along the critical path was added up which indicate the total time required to complete the project.

8. Presentation of Network Plan:

The heart of PERT technique lies in the construction and analysis of a flowchart of network made up of events and activities.

10. Meaning of key Terms Used (Conceptual and Operational):

In the process of writing the scientific document like thesis, the researcher is invariably confronted with the task of using different terms. To enable the reader to understand and appreciate conceptual and operational meaning of the different terms it is obligatory on the part of researches to provide meaning with conceptual and operational as well in the present study the author has made use of following key terms. Their conceptual and operational meaning has been given below.

1. PERT.
2. Optimistic.
3. Most Rational.
4. Pessimistic.
5. Planning.
6. Control.
1. PERT:-

According to Malaya (1977) PERT is an acronym for Program Evaluation and Review Technique. PERT is a management planning and controlling tool for defining and integrating what must be done to finish complex jobs in order to meet deadline. PERT measures and uses time as a common denominator for resource application and technical performance. He has further operationalised following terms-

2. Optimistic Time as the shortest possible time in which an activity can be completed under ideal conditions. Better than normal conditions are assumed to prevail during the execution. It is denoted by “to”.

3. Most Rational Time as the most realistic time estimate which an activity consume. It assumes that things go in normal way. It is denoted by “tm”.

4. Pessimistic Time as the estimate of longest time that an activity would require under the most adverse condition. It takes into account all the constraints that come in the way of performing an activity. It is denoted by “top”.

Reddy (1971) define following terms-

5. Planning:-

Conceptually in its simplest from planning involves setting up of objectives and mobilizing resources to achieve these objectives. For the purpose of present study the term planning has operationally been defined as the process of decision making about what
are the different home activities that are to be completed, why they to be done, when they to be done and how they are to be done.

6. Control: -

The term control is often defined as the art of directing and commanding the efforts of human being.

Operationally the term control meant art of getting various home activities completed in a manner otherwise they should be completed with skillful direction and command to the individual responsible for completing a particular home activity.

7. Evaluation: -

Conceptually evaluation is an analysis by which one is able to understand and appreciate relative merits or deficiencies of persons, programs, situation, method and process. It is also a method of determining how far an activity has progressed a how much further it should be carried to accomplish desired objectives.

For the purpose of present research the term evaluation has been taken to mean as the manner and the anticipating quality of the home activity under completion besides the anticipated duration/ period for the same.

8. Decision Making: -

According to Rogers and Shoemakers (1971) Conceptually decision-making is a mental process based on conscious or unconscious reasoning, more correcting as conscious process of reasoning rather then unconscious.
For the purpose of present study, however, the term decision making has been operationally defined as the process by which home maker is making a choice for selection from among the available alternatives or course of actions available.

9. Home Management:-

According to Nickell and Dorsey (1967) Home management is planning, organizing, controlling and evaluating the use of resources available to the family for the purpose of attaining family goals.