

RESEARCH METHODOLOGY

3.0 INTRODUCTION

Research in mutual parlance refers to an investigation for knowledge. The universe is surrounded with various unknown facts and also the reflection of numbers of various kinds of elements, we are searching the unknown facts of the universe. Therefore, the searching process is known as 'Research'. It is the subject of developing importance in every single discipline of universe of knowledge and also shows the way for the development of knowledge regarding a specific topic which not only stimulates the ability of the learner but also enhances the knowledge of a person. The completion of research work is associated with a series of various steps. These include formulating the research problem, extensive literature survey, developing the hypotheses, research design, collection and analysis of data, hypotheses testing, interpretation and finally presentation of the results and conclusions (Kothari, 2004). The first step after the formulation of problems is to design the research. It is the complete plan of a researcher to answer the research problems. A research is an arrangement of conditions for collection and analysis of data in a systematic manner that combines reference of the research purposes with economy in procedure (Tandon, 1979). The research design is needed because "A research design is a plan of the proposed research work". Research methods are basically related with observation of reality, defining the problem and its

dimensions, a planned approach towards analysis of the research problem, interpretation of information and drawing conclusions” (Ghosh, 2010). In any discipline a definite method is to be used for the collection of data from respondents by means of survey. In the field of library and information science there are a number of options that are available for data collection viz. citation analysis, questionnaire tool, interview, telephone interview and diary methods etc. The most popular methods amongst all these methods are the questionnaires and interview methods.

In the present study of information seeking and communicating behaviour of scientists of agricultural community survey method has been adopted. In this chapter, the comprehensive aspect of methodology used is discussed or deliberated as related to the present study which comprises of location of the study, method of research, population of the study including identification of the scientists under study, data collection method, population size of the study, sources of data collection, method of data analysis etc. The brief overview of research methodology adopted for the present study includes various series of steps which are being discussed as bellow:

3.1 LOCATION OF THE STUDY

Geographically, this study is confined only to the selected ICAR Institutes and Centres of North Eastern region. Accordingly, the following institutes and centres have been taken up, for collecting the data and to study the information seeking and communicating behaviour of agricultural scientists working in ICAR Institutes and Centres of Northeast region of India.

- 1) ICAR Research Complex for NEH Region, Umiam, Meghalaya
- 2) ICAR Research Complex for NEH Region, Mizoram Centre, Kolasib, Mizoram

- 3) ICAR Research Complex for NEH Region, Nagaland Centre, Jharnapani, Nagaland
- 4) ICAR Research Complex for NEH Region, Arunachal Pradesh Centre, Basar, Arunachal Pradesh
- 5) ICAR Research Complex for NEH Region, Sikkim Centre, Tadong, Gangtok
- 6) ICAR Research Complex for NEH Region, Lembucherra, Tripura Centre, Tripura
- 7) ICAR Research Complex for NEH Region, Manipur Centre, Lamphelpat, Imphal
- 8) National Research Centre on Mithun, Medziphema, Nagaland
- 9) National Research Centre on Orchids, Pakyong, Sikkim
- 10) National Research Centre on Pig, Guwahati
- 11) National Research Centre on Yak, West Kameng, Arunachal Pradesh
- 12) ICAR, Agriculture Technology Application Research Institute, Umiam, Meghalaya

3.2 METHOD OF RESEARCH

This study was carried out on the information seeking and communicating behaviour of agricultural scientists of ICAR Institutes and centres of Northeast region of India. Keeping the above points in concern, the circumstances and objectives of the study a descriptive-analytical (survey method) method was used as the research method. A descriptive study describes and interprets what is. It is also concerned with conditions or relationships that exist, opinions that are held, processes that are going on, and effects that are evident. The major purpose of descriptive research is description of the state of affairs as it exists at present. Consequently, above method was closely related to carry out the present study,

however methods of research utilized in descriptive research is survey method. Questionnaires, interviews and observations were employed as the tools for data collection. However, indirect studies of records were adopted for collection and analysis of relevant data to supplement the data collected through questionnaires to enhance and strengthen its reliability and to gather, some additional information on seeking behaviour of agricultural scientists. This process gives every single item an equivalent probability of being selected. The two questionnaires were adopted first one is for librarians/ library in charge and second one for scientists.

3.3 POPULATION OF THE STUDY

The present study has attempted to understand the information seeking and communicating behaviour of the agricultural scientists working in the ICAR institutes and centres of North Eastern Region.

3.3.1 Identifying the Population

- **Librarian/Library In-charge:** All Librarians/Library In-charge of selected 6 institutes and 6 centres of ICAR in North Eastern region were chosen as the first group of population as they are considered as information providers of the study.
- **Scientists:** On the basis of the nature of work carried out by the scientists, they been recognized and categorized as scientists, senior scientists and principle scientists working in the 6 institutes and 6 centres of ICAR in North Eastern Region. They have been considered as information users as they make use of services provided by their libraries and they were chosen as the second group of population of the study. There are numbers of scientists in these centres/institutes.

3.3.2 Survey and Population Size of the Study

In the present study, as the universe or the total population is small one, the researcher tried to cover the whole population. All the target users, who are engaged in the institutes and centres as discussed above, have been included in this study. The identification of the population has been done through secondary sources like websites, review of published reports etc. As the researcher covers each and every individual member of the target users which comprise the population size of the study. So, the population size is 186. The researcher went to all centres/institutes personally and distributed the questionnaires to those respondents only whom the researcher met face to face i.e. total 179 questionnaires distributed and finally 163 questionnaires were received back. Therefore, the response rate is 91.1% i.e. N=163. **Table 3.1** below shows the clear distribution of population and responses received from the target users.

Table 3.1: Distribution of Population and Responses Received

| Sl. No. | Institutes/ Centres | Population | Responses |
|---------|---------------------|------------|-----------|
|---------|---------------------|------------|-----------|

| | | Size | Received |
|-----|--|-------------|-----------------|
| 1. | ICAR Research Complex for NEH Region, Umiam, Meghalaya | 65 | 63 |
| 2. | ICAR, Agriculture Technology Application Research Institute Zone III, Umiam, Meghalaya | 5 | 4 |
| 3. | National Research Centre on Pig, Guwahati, Assam | 14 | 13 |
| 4. | National Research Centre on Mithun, Medziphema, Nagaland | 10 | 10 |
| 5. | National Research Centre on Yak, West Kemang, Arunachal Pradesh | 14 | 13 |
| 6. | National Research Centre on Orchids, Pakyong, Sikkim Centre, Sikkim | 10 | 10 |
| 7. | ICAR Research Complex for NEH Region, Nagaland Centre, Jharnapani, Nagaland | 8 | 8 |
| 8. | ICAR Research Complex for NEH Region, Arunachal Pradesh Centre, Basar, Arunachal Pradesh | 12 | 9 |
| 9. | ICAR Research Complex for NEH Region, <i>Manipur Centre, Lamphelpat, Imphal</i> | 12 | 8 |
| 9. | ICAR Research Complex for NEH Region, <i>Manipur Centre, Lamphelpat, Imphal</i> | 12 | 8 |
| 11. | ICAR Research Complex for NEH Region, Lembucherra, Tripura Centre, Tripura | 16 | 11 |
| 12. | ICAR Research Complex for NEH Region, Mizoram Centre, Kolasib, Mizoram | 9 | 6 |

Source: Computed from the survey data

Table 3.2 below shows the Institutes and Centres wise distribution and responses received from the target users.

Table 3.2 Institutes and Centres wise Distribution and Responses Received

| Sl. | Name of the Institutes and | Total No. of | Total No. of | Percentage |
|------------|-----------------------------------|---------------------|---------------------|-------------------|
|------------|-----------------------------------|---------------------|---------------------|-------------------|

| No. | Centres | Questionnaire Distributed | Responses Received (Frequency) | (%) |
|-----|--|---------------------------|-----------------------------------|------|
| 1. | ICAR Research Complex for NEH Region, Umiam, Meghalaya | 65 | 63 | 96.9 |
| 2. | ICAR, Agriculture Technology Application Research Institute Zone III, Umiam, Meghalaya | 5 | 4 | 80 |
| 3. | National Research Centre on Pig, Guwahati, Assam | 14 | 13 | 92.9 |
| 4. | National Research Centre on Mithun, Medziphema, Nagaland | 10 | 10 | 100 |
| 5. | National Research Centre on Yak, West Kemang, Arunachal Pradesh | 14 | 13 | 92.9 |
| 6. | National Research Centre on Orchids, Pakyong, Sikkim Centre, Sikkim | 10 | 10 | 100 |
| 7. | ICAR Research Complex for NEH Region, Nagaland Centre, Jharnapani, Nagaland | 8 | 8 | 100 |
| 8. | ICAR Research Complex for NEH Region, Arunachal Pradesh Centre, Basar | 11 | 9 | 81.8 |
| 9. | ICAR Research Complex for NEH Region, Manipur Centre, Lamphelpat, Imphal | 10 | 8 | 80 |
| 10. | ICAR Research Complex for NEH Region, Sikkim Centre, Tadong, Gangtok | 9 | 8 | 88.9 |

Table 3.2 (Continued)

| Sl. No. | Name of the Institutes and Centres | Total No. of Questionnaire Distributed | Total No. of Responses Received (Frequency) | Percentage (%) |
|--------------|--|--|---|----------------|
| 11. | ICAR Research Complex for NEH Region, Lembucherra, Tripura Centre, Tripura | 16 | 11 | 68.8 |
| 12. | ICAR Research Complex for NEH Region, Mizoram Centre, Kolasib, Mizoram | 7 | 6 | 85.7 |
| Total | | 179 | 163 | 91.1 |

Source: Computed from the survey data

In the study, librarians/ library in charge were also included as the primary informers for this study as they can provide the basic information about their library. Moreover, they can express the requirements of the library as according to the needs of the agricultural scientists specifically. Total 12 questionnaires were distributed and received all 12 questionnaires with response rate of 100%. **Table 3.3** below shows the clear picture of category wise distribution and responses received from the respondents.

Table 3.3 Category Wise Distribution and Responses Received

| Sl. No. | Category | Questionnaire Distributed | Questionnaire Received | Percentage (%) |
|---------|------------------------------|---------------------------|------------------------|----------------|
| 1. | Librarian/ In charge Library | 12 | 12 | 100 |
| 2. | Scientists | 179 | 163 | 91.1 |

Source: Computed from the survey data

3.4 DATA COLLECTION METHOD

The method of collecting the data is very important after the problem is defined and research design has been marked out. There are various methods of research and most appropriate method in this type of study is survey method because using survey method we can evaluate the background of the users and their information seeking behaviour.

Though, as the situation warranted observations and interviews with the scientists and librarian/ library in charge have also been used as data collection method. In order to meet the specific objectives of the study, the researcher has employed questionnaires as the main tool for collection of data. Following are the tools used in collecting data in the study:

- (1) Questionnaire;
- (2) Interview and;
- (3) Observation.

3.4.1 Questionnaire

Questionnaire is the main tool used in the collection of data in survey type of research method. The researcher designed structured questionnaires including both open ended and closed ended questions and administered to librarians/ library in charge and users (scientists) of the libraries under study. In course of surveying the selected institutions and centres for collecting data a pilot study has been adopted. A pilot study was conducted prior to the actual data collection to make assured that the questions were appropriate for the purpose of the study and are easy to follow by the respondents. It was done to be aware of the difficulties that may confront the researcher when implementing the study. The study respondents consisted of 12 scientists and 2 librarians at the Institute of ICAR (Indian Council of Agricultural Research) Barapani, Meghalaya and ICAR, Agriculture Technology Application Research Institute Zone III, Umiam, Meghalaya. They were requested to seek clarification for any of the questions in the questionnaire that were unclear. The result showed that, in

general, the scientists and librarians/ library in charge encountered no difficulty in answering the questions. Therefore, the researcher finally decided to adopt the questionnaires for the present study.

3.4.1.1 Designing of Questionnaires

In the present study, the two types of questionnaires were adopted one is for librarians/ library in charge as in (**Appendix-III**) and another is for scientists as in (**Appendix-IV**) to attain the objectives of the study.

➤ The first questionnaire was developed for Librarians/library in charge which consists of eleven questions such as name of the parent organisation, name of the library, year of establishment of the library, name of the librarian/ In-charge of the library, qualification of the librarian/In-charge of the library, main funding agency of the library, staff strength of the library, details of library collection, ICT Infrastructure of the library, status of automation of the library and lastly one open ended question was designed whether they would like to add any comments on the present topic or study. Specimen of the questionnaire is given as **Appendix III**.

➤ The second questionnaire was developed for the agricultural scientists which has been designed by dividing into six sections as enumerated below:

Section A: General Information: This section comprises of 5 questions including name, address, age, sex and category.

Section B: Allied Specialization: This section consists of 3 questions which include area of specialization, number of conferences/seminars/workshops attended and to know the types of works or activities performed by the scientists.

Section C: Library Visit and Usage Pattern of Library: This section has 4 questions including library visit pattern, purpose of library visit, types of document

generally consult by the scientists and different type of information often require for research or other activities.

Section D: Information Seeking Behaviour: This section containing 8 questions includes types of information sources usually consult for getting information, how scientists updated themselves in their area of research, to know the adequacy of library resources, to know how they often obtain journal articles for their research work, their dependency on different sources for accessing information, their dependency on the different mode of collection of information and their dependency on the different types information sources for their research and other allied works.

Section E: Constraints faced by the scientists in using/searching information in libraries: This section comprised of 3 questions which includes difficulties that come across in accessing information, whether scientists have time problem in reading or looking for information in the library and what extent they have problems in getting resources from the library.

Section F: Suggestions/remedies which may help the scientists to use the library in an efficient way: This section consists of 3 questions in which two questions are open ended and one is close ended. The questions include to suggest some ways/means/techniques the scientists should follow while referring the library, do they agree that reference materials should be issued to the users? And lastly space is provided for the suggestions if any for the better and efficient use of the library. Specimen of the questionnaire is given as **Appendix IV**.

A number of probable techniques have been also followed in distributing the questionnaires and the collecting the data from the agricultural scientists. Because of the different types of circumstances, the researcher was obliged to use different types of techniques which are as follows-

- **Direct Approach/ Method** has comprehensively been used in the collection of data from various individual agricultural scientists who are engaged in different institutions, and centres, etc. of the respective states.
- **Electronic Communication** also used and as a result some of the scientists have also returned duly filled in questionnaire through e-mail delivering the same as attached file to the researcher.

3.4.2 Interview Method

For collecting more accurate data and also to understand the environment of the target users the researcher also used interview method to some extent while distributing the questionnaires. Interview gives the opportunity for the librarians/library in charge and scientists to share their experience and also to provide personal advice/comments/suggestions regarding the information seeking behaviour of agricultural scientists of ICAR institutes and centres of North Eastern Region. However, the main purpose of interview method was to supplement and to substantiate the details or the data collected through the questionnaires.

3.4.3. Observation Method

The investigator has personally visited to all the Institutes and centres selected for the study in order to observe and know their allied specialization, information needs, use pattern, gathering behaviour, adequacy of the collection of the library, various channels through which information is accessed, different types of constraints faced by them and also to get some suggestion/ comments related to the present study and also better usage of the library. Information collected through observation was utilized to supplement the data collected through questionnaires and interviews.

3.5 SOURCES OF DATA COLLECTION

To study the information seeking and communicating behaviour of agricultural scientists of ICAR institutes and centres, the following sources were used to collect the data:

- Library websites available from internet resources/ home page of the ICAR Institutes and Centres of North eastern region.
- Annual reports and brochures of the Institutes and Centres.
- Extensive survey of agricultural scientists and librarians working in ICAR Institutes and Centres, using the questionnaire, to understand their information seeking behaviour in their agriculture environment.

However, in order to get a complete knowledge about information needs and information seeking behaviour of users, particularly of agricultural scientists, survey of related literature has comprehensively been carried out. Some of the resources used for this purpose include:

- Library and Information Science Abstracts (LISA),
- Indian Library Science Abstracts,
- Scanning of published materials,
- Bibliographies of books, theses, dissertations and reviewed articles,
- Different type of references appended in various research papers, etc., List of Research in Progress, Websites, Directory of books, journals including both national and international, etc.

In the context of the present study, the collections of data from the scientists were performed during the period of March, 2014 to July 2015. So, the work is restricted to the period 2014-2015. On the other hand, the records and different reports of present and

previous years of various institutes and centres have been taken into account for necessary record of the study to understand many problems and matters accompanying with the study.

3.6 PROBLEMS ENCOUNTERED

In order to collect the data using survey method, one has to undergo a lot of hardships or a number of problems were experienced in the process of data collection. In the present study, the scientists and librarians/library in charge working in different centres and institutes being busy in their research as well as other academic and extension activities also showed some problems to fill up the questionnaires. Some of the most marked problems faced are as follows-

- Respondents usually did not want to reveal their usage and perceptions about the information sources and channels that they use in their day to day work.
- In general, respondents assigned lack of time in not being able to fill the questionnaire and many of them needed determined persuasion in filling and returning the questionnaire.
- Some respondents were unwilling to respond the questionnaire as they had feeling that the information they are providing may be used otherwise, and also the findings may not be available to them for scrutiny and follow-up action.
- Some respondents took too much time in filling and returning the questionnaire and some even lost the questionnaire itself.

Though, in some of the institutes and centres scientists and librarians/library in charge showed keen interest in filling up the questionnaires and also tried to know the benefit and importance of the present study. Due to repeat personal visits, response received from

scientists is appreciable. Once the questionnaires were distributed, two or three visits had been made to get back the completed questionnaires.

3.7 TECHNIQUES USED FOR DATA ANALYSIS

Analysis of data is an important aspect of any research. In the present study, for data analysis percentage technique has been adopted and same was coded, tabulated, computerized and analysed for statistical inferences and also for empirical interpretation with the help of computer using data analysis software MS Office Excel 2010.

3.8 PRESENTATION OF DATA

The researcher uses different ways of data presentation of collected and analysed data which are as follows:

3.8.1 Tabulation

To give a clear picture of the nature of the data under consideration, the analysed data have been presented in the form of tables.

3.8.2 Graphical Representation

To give a complete and perfect picture of the analysed data, besides the tables, graphical methods like bars, pie charts, line graphs, etc. have also been used.

3.9 CITATION STYLE

In the present study, the citation style followed or the reference part of the study is mainly based on APA style to all types of information resources whatever consulted and referred for various facets and sections of the study. In the completion of the present study, a bibliography was used and consulted which is one of the essential components of the research work which provides an alphabetized list of all of the sources referred or consulted in the course of the study.

3.10 CONCLUSION

In the field of Library and Information Science, the study of information seeking behaviour of users is not a new area of research. For the present study different methods and techniques have been used while collection of information from the target users. In the viewpoint of the present work, the methodology adopted was found to be more suitable and practicable which assisted the researcher to attain the objectives of the study more easily. The data were collected using questionnaire as a tool that was personally distributed to the concerned ICAR scientists. Researcher personally visited the different institutes and centres to distribute the questionnaires and observed the prevailing circumstances of the libraries and mainly the seeking behaviour of the scientists working in those respective institutes and centres. The next chapter gives a brief history of agricultural research in global and Indian scenario with special focus in the growth and development of ICAR (**Chapter 4**).

