

4.1. INTRODUCTION

A system of models, procedures and techniques used to find the result of a research problem is called research methodology. It refers to the philosophy on which the research is based. Research methodology involves the systematic procedures by which the researcher starts from the initial identification of problem to its final conclusions. The role of methodology is to carry on the research work in a scientific and valid manner. The method of research provides the tools and techniques by which the problem is approached.

The present study is an investigation to understand the application of Information and Communication Technology for the Rural Development in the state of Kerala. The methodology followed for the study is described under the following headings.

1. Variables,
2. Tool used for data collection,
3. Sample used for the study,
4. Sampling technique used,
5. Sample size,
6. Break up of the sample,
7. Data collection procedure,
8. Consolidation of data and
9. Statistical techniques used.

4.2. VARIABLES

The variables used for the study are broadly divided into two, namely classificatory variables and study variables. The variables are selected in accordance with the literature reviewed for the purpose.

Some of the major physical components of rural development are taken as the study variables of the study. They are as follows:

- E- Governance
- Community Information Centers
- Akshaya
- Agriculture
- Health care
- Youth welfare
- Women welfare
- Education and
- Communication

The classificatory variables used for the study are:

Community Level

Professionals

Students

Housewives

Labor workers

Gender

Male

Female

4.3. TOOLS USED FOR DATA COLLECTION

The investigator has used both primary and secondary data for the research work. A questionnaire was administered for collecting the required primary data. Secondary data were collected mainly from the brochures, newsletters, records and different publications of panchayats and local self government institutions in Kerala. Vikasana guide is an important document used for identification and locating panchayats. Addresses of collectorate and panchayats are collected from the website of the concerned district. Expertise of academicians working in the field of library and information science, psychology and statistics were sought for preparing the questionnaire.

4.3.1. Questionnaire on Effectiveness of ICT among the Rural Masses

Questionnaire is a widely employed tool for data collection in research. It is a systematic compilation of questions logically related to problem under study. Structured questions were prepared after the consultation with the supervising teacher. The questionnaire has three parts. The first part deals with the personal information regarding the users and it contains seven items such as, name of the district, block and panchayat they belongs to, name, gender, occupation, category of users like professional, student, housewives and labor workers. Necessary instructions were given at appropriate places to help the respondents in filling the questionnaire.

The second part of the questionnaire deals with user perception and the advantages of rural development programmes and Information and Communication Technology among the rural community in Kerala. This

part is divided into five according to the study variables used for the research work. Description of data collected under these heads is detailed below.

4.3.1.1. Perception on Rural Development & ICT

It refers to the reaction of rural public on the perception regarding the Rural Development and the concept of Information and Communication Technologies. The investigator also tries to assess the opinion of rural people regarding the applicability of ICT for the development of the rural community in Kerala. Under this head 9 questions are offered for user response. It consists of awareness of rural people on Rural Development, the benefited areas, reason for not availing the benefits. The awareness of rural people on ICT, areas they are enjoying the benefits and opinion on applicability of ICT for Rural Development in Kerala are also included in the same heading. It includes both open and closed ended questions and multiple type questions.

4.3.1.2. Information Needs of the Rural Community

Under this head the respondents are requested to reveal their various kinds of information needs and its sources. A total of 12 questions are presented before the people for this purpose.

4.3.1.3. Relevance of Community Information Centres

Here the rural public is requested to disclose the attitude towards establishing a community information center in their locality. Out of 7 questions coming under this head consists of opinion of rural community on establishing a community information center, desired information from such a centre, preferred location, and opinion regarding the accessibility of computer with internet facility from the centre.

4.3.1.4. IT Literacy

A total of 7 questions relating to assess the computer knowledge of rural people and the methods which are choosing for computer knowledge are included in this head.

4.3.1.5. Advantages of Computer in the Daily Life

Here the respondents are requested to reveal the purpose of computer utility; advantages achieved through computer knowledge in the daily life, changes happed in their lifestyle, advantages of ICT in the routine activities and visit of internet café. A total of 5 questions are presented for this purpose.

4.3.1.6. Akshaya

Akshaya is the e-literacy project of Kerala government; under this head the investigator tries to asses the impact of Akshaya among the rural communities of Kerala. Out of 7 questions included under this head consists of visit of Akshaya centres by the rural people, computer training attained, level of satisfaction on the training and services offered by Akshaya and opinion regarding the success of Akshaya to entrust to the common people.

4.3.1.7. ICT for Area of Working

For this purpose the investigator prepared separate questions for 4 categories of rural people under study. It includes 6-10 questions related with application of ICT in their area of working. The questions prepared for the professionals include the awareness on the Rural Development programmes developed for the benefits for employees and level of application of ICT in their workplace. There are 7 questions are included under this head. A total of 10 questions are presented to assess the application status of ICT for the academic purpose among the students under study. The housewives under study are requested to reveal their awareness relating to the Rural

Development programmes particularly developed for the empowerment of the women in Kerala and what extent they are making use of such programmes. It includes a total of 7 questions. And finally the questionnaire for farmers consists of questions related with awareness of farmers on the Rural Development programmes especially developed for the benefit of them, ICT oriented agricultural projects developed by the government of Kerala, and what extent the target community enjoying the benefits of such projects. A total of 10 questions are presented for this purpose.

The third portion of the questionnaire is specially prepared for the concerned group like professionals, students, housewives and labor workers. It consists of questions related with the application status of the rural development programmes and Information and Communication Technology in the area of their work.

The questionnaire consists of 45 general questions and about 10 questions for each category, to understand the awareness of the public on Rural Development programmes as well as Information and Communication Technology and what extent the rural people could attain the benefits of these programmes. It includes both close ended and open-ended questions. The well-structured questionnaire has been administrated among the rural community in different panchayats of Kerala state.

4.3.2. Interview Schedule on the Application Status of ICT in Panchayats

The investigator used a well structured interview schedule for conducting interview. The schedule consisted of questions regarding the panchayat level implementation status of Information and Communication Technology for the Rural Development of Kerala state. The investigator tries to identify the ICT oriented activities taking place in different areas like administration, agricultural, health care, youth welfare, women

empowerment, education and communication. The investigator also tries to understand panchayat secretaries perception regarding the Relevance of Community Information Centres in rural areas/ local level. The interviewer directly visited and met the panchayat secretaries of 12 panchayat offices selected for the study. The information collected on the basis of the schedule is filled out by the interviewer personally.

4.3.3. Personal Interview

In order to identify the potentialities of ICT application for Rural Development in Kerala, the investigator conducted detailed interview with the resource persons in the department of Rural Development and Information Technology of government of Kerala. The investigator directly visited the following institutes and collected data through a well structured interview schedule.

- ◆ Commissionate of Rural Development, Thiruvananthapuram
- ◆ Kerala State IT Mission, Thiruvananthapuram
- ◆ National Informatics Centre, Thiruvananthapuram
- ◆ Kudumbasree, Thiruvananthapuram
- ◆ C-DIT, Thiruvananthapuram
- ◆ C-DAC, Thiruvananthapuram
- ◆ Information Kerala Mission, Thiruvananthapuram
- ◆ Resource Centre, IT @ School, Kozhikode
- ◆ Sarva Shiksha Abhiyan, Kozhikode
- ◆ Collecterate of selected districts
- ◆ DRDAs of selected districts

- ◆ Economic & Statistical Department
- ◆ Women Welfare Department
- ◆ Agricultural Department
- ◆ Health Department

The interview schedule consists of both open and closed ended questions on different sectors selected for the study. The interview intended to determine the ICT oriented rural development programmes formulated by the government and the projects to be implemented in the rural development sector.

4.3.4. Observation Method

Observation is the most natural way of gathering data. The investigator visited all panchayat offices selected for study and observed the organizational and administrative practices, functioning, facilities and recourses of the offices. It helped the investigator to have a clear picture of the computerised activities taking place in the panchayat offices in rural Kerala.

4. 3.5. Examination of Records

In order to collect data on the population statistics of the state, the investigator examined the census report, 2001. The information regarding the high and low levels of population and literacy rate of each panchayat in selected districts also identified from the census report. The investigator also examined the brochures, leaflets and other advertising materials provided by agencies. Vikasana Guide provides detailed information about Rural Development programmes, authorities and description about the panchayats of the state. The investigator has collected several important information from Vikasana Guide, 2008.

4.4. SAMPLE USED FOR THE STUDY

It is not practical to study the whole population to arrive at generalisations though the result of the research is to have universal application. The process of sampling makes it possible to draw valid inferences or generalisations on the basis of careful observation of variables within a relatively small proportion of population.

The total population of Kerala state is 318.39 lakhs and among these 235.71 lakhs are living in rural areas (Census report, 2001)¹. This is too large in size to collect data from the entire population. Hence the investigator selected a representative part of this population to conduct the study.

The researcher has selected three districts from the fourteen districts of Kerala state, one from the northern region, Kasaragod; one from the middle region, Thrissur; and last and third one from the southern most region, Thiruvananthapuram. On the basis of classificatory variables the investigator has collected data from four panchayats from each district, having higher and lower distribution of population and literacy rate. Hence the total number of panchayats taken for study is twelve ($4 \times 3 = 12$).

4.4.1. Sampling Technique Used

The population consists of rural people belonging to different panchayats with different characteristics. In order to get samples from all groups, the investigator has grouped the users into four, based on the status of living. The groups thus obtained are:

Professionals-Professional is a person who has the type of job that needs a high level of education and training². In the present study the investigator considers the persons who have a permanent job, and they are financed by central government, state government or any non governmental organization.

Students-student is a person who is learning at a college or university, or some times at a school³. In the present context the investigator collected data from the students belongs to the category under higher secondary classes.

Housewife a woman whose work is inside the home doing the cleaning, cooking, etc., and who usually does not have any other job⁴. In the present study the investigator collected data from the women in the selected rural areas of Kerala.

Labor workers-the term labor/labour (UK) refers the practical work, especially that which involves physical effort⁵. In the present study the investigator included the persons who are engaging in agriculture and related daily wage works.

Stratified random sampling technique has been used to ensure representation of all the identified categories.

4.4.2. Sample Size

For the present study the investigator decided to collect a total of 1200 sample from the rural areas of Kerala by giving equal weight to the panchayat secretaries as well as to the rural people from the selected panchayats. The break up of the sample is as follows:

Number of groups	= 4
Samples from each group	= 25
Samples from each panchayat	= 100 (25 × 4)
Total number of districts in Kerala	= 14
Number of sample districts	= 3
Total number of panchayats in Kerala	=991
Number of sample panchayats	= 12 (3x4)
Total sample	= 1200 (100x4x3)

4.4.3. Break up of the sample

Questionnaire was distributed in such a way as to give representation to all subgroup within the group. All the respondents did not return the questionnaire and some of the questionnaires returned were incomplete. Hence a final sample of 810 questionnaires complete in all respect was selected for the study. The break up final sample is as follows.

4.4.4. District wise distribution of the sample

The distribution of the sample on the basis of districts and panchayats is given in the Table 4.1.

Table 4.1
District wise distribution of the sample

District	Name of the panchayats	Professionals		Students		Housewives		Labor workers		Total	
		Distri buted	Respo nded	Distri buted	Respo nded	Distri buted	Respo nded	Distri buted	Respo nded	Distri buted	Respo nded
Kasaragod	Chengala	25	14	25	15	25	16	25	11	100	56
	Bellur	25	16	25	14	25	13	25	12	100	55
	East Eleri	25	15	25	13	25	16	25	14	100	58
	Delampady	25	13	25	18	25	17	25	12	100	60
Thrissur	Puthur	25	18	25	20	25	20	25	16	100	74
	Athirappally	25	19	25	18	25	24	25	21	100	82
	Edavilangu	25	20	25	21	25	15	25	23	100	79
	Desamangalam	25	18	25	19	25	12	25	25	100	74
Thiruvananthapuram	Parasala	25	18	25	20	25	19	25	18	100	75
	Kallikkad	25	16	25	14	25	15	25	18	100	63
	Kudappanakkunnu	25	15	25	17	25	18	25	14	100	64
	Anjuthengu	25	19	25	17	25	18	25	16	100	70
Total	12 panchayats	300	201	300	206	300	203	300	200	1200	810

4.4.7. Category Wise Distribution of Sample

On the basis of the categories selected for the study, the sample break up is given in the Table 4.2.

Table 4.2
Category Wise Distribution of Sample

District	No. of panchayats	Professionals		Students		Housewives		Labor workers		Total	
		Distributed	Responded	Distributed	Responded	Distributed	Responded	Distributed	Responded	Distributed	Responded
Kasaragod	4	100	58	100	60	100	62	100	49	400	229
Thrissur	4	100	75	100	78	100	71	100	85	400	309
Thiruvananthapuram	4	100	68	100	68	100	70	100	66	400	272
Total	12	300	201	300	206	300	203	300	200	1200	810

4.4.8. Gender wise distribution of sample

The gender wise distribution of respondents on the basis of each category is given in the Table 4.3.

Table 4.3
Gender wise Distribution of Respondents

Gender	Professionals	Students	Housewives	Labor workers	Total
Female	102	121	203	28	454
Male	99	85	-	172	356
Total	201	206	203	200	810

4.5. DATA COLLECTION PROCEDURE

Sufficient copies of the questionnaires were prepared initially. The investigator then personally visited all the twelve panchayats and collected general information about the concerned panchayat from the panchayat secretary. The investigator also sought permission from the panchayat secretaries concerned to administer the data collection tool among the general public of the panchayats. The data collected from the public with the help of a representative of that particular panchayat by giving proper instructions by the investigator. Most of public responded positively by filling up and returning the same. The experience was encouraging.

4.6. CONSOLIDATION OF DATA

Data pertaining to classificatory and study variables were consolidated separately by using spreadsheet package 'Excel'. The data were then subjected to further statistical treatment by using the statistical package 'Statistical Package for Social Sciences' (SPSS).

4.6.1. Statistical Techniques Used

The researcher has used mainly four statistical techniques at different stages of the study to draw the conclusions. They are:

- ◆ Arithmetic Mean
- ◆ Standard Deviation
- ◆ Chi-square Test

4.6.1.2. Chi-square Test

The chi-square test (χ^2) is one of the simplest and most widely used non-parametric tests in statistical analysis. Chi-square is a measure of actual divergence of the observed and expected frequencies (or values). If there is no difference between actual and observed frequencies, the value of the chi-square is zero. The greater discrepancy between observed and expected frequencies, the greater is the value of χ^2 . If the calculated value of chi-square is less than the table value, it indicates that the difference between actual observed frequencies may have arisen due to chance of fluctuation and can be ignored. The quantity χ^2 is defined as

$$\chi^2 = \sum (O-E)^2 / E$$

Where O refers to the observed frequencies and E refers to the expected frequencies. Steps to determine the value of χ^2 are

- I. Calculate the expected frequencies
- II. Take the difference between observed and expected frequencies and obtain the square of these difference i.e. obtain the value of $(O-E)^2$.
- III. Divide the quality $(O-E)^2$ obtained in step (ii) by the expected frequency and obtain the sum over all cells $\sum (O-E)^2 / E$.

This gives the value of χ^2 and is compared with the table value of χ^2 for given degree of freedom at certain specific level of significance. If the calculated value χ^2 is more than table value of χ^2 the difference between the theory and observation is considered to be significant; i.e. it could not have arisen due to fluctuations of simple sampling. If, on the other hand, the calculated value of χ^2 is less than the table value, the difference between theory and observation is not considered as significant i.e. it is regard as due to fluctuations of simple sampling and hence ignored.

For the present study Chi- square test was employed to test the association between the categories whenever necessary. For this, two way tables to observed frequencies for the four categories were obtained first and then chi-square value corresponding to each cell of the two way table were computed and some of the these chi-square values were calculated. If the computed value is greater than table value it indicates that there is an association (dependence) between the categories. Otherwise the four categories were independent.

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