MAJOR FINDINGS AND
OBSERVATION
CHAPTER – 5
MAJOR FINDINGS AND OBSERVATIONS

The main aim of this study was to investigate the use of electronic information sources and the need for training in the use of these resources by the teachers/scientists, research scholars and postgraduate students of the Fisheries Colleges and Research Institutes in South India with a view to plan the strategies the libraries could use to improve their services.

The analysis and interpretation of the data collected through the survey could reveal several aspects of use of EIS by the respondents of the Fisheries institutions. This Chapter highlights the summary of the major findings and observations based on the analysis made in Chapter 3 and 4, so as to substantiate the hypotheses formulated and to fulfill the objectives listed in Chapter 1. The findings are broadly classified under appropriate headings with supporting table and figure.

5.1 Major findings of the study

5.1.1 Fisheries Education in South India

i) It is found that the professional education in Fisheries sciences is offered at 4 Fisheries Colleges in addition to 3 Central Fisheries Research Institutes in South India (Table 3 1).

ii) All the Fisheries Colleges offer a broad-based 4-year undergraduate programme and some of these Fisheries Colleges and the Central Fisheries Research Institutes offer M F Sc and PhD programmes in various branches of Fisheries Sciences (Table 3 1).
5.1.2 Respondents

i) The respondents were categorized under 2 groups, namely the respondents with Fisheries degree and with Non Fisheries degree and the respondents under both these groups were stratified into 3 categories belonging to teachers/scientists, research scholars and postgraduate students. Three hundred and thirty five respondents were drawn from 4 Fisheries Colleges and 3 Central Fisheries Research Institutes in South India (Tables 4.1, 4 2 & 4.3)

5.1.3 Characteristics of the respondents

i) The majority of the respondents are in the age group of 21-30 years and they account for 42.1% There is a significant presence of respondents in the age group of 41-50 years as well and they account for 23.9% of the users in the Fisheries institutions in South India. Majority (74.03%) of them are male respondents (Table 4 4).

ii) Out of 335 total respondents, 179 have their basic degree in Fisheries Sciences and the remaining 156 have their basic degree in Non Fisheries Sciences to account for 53.43 % and 46 57% respectively (Table 4.4)

iii) All the different subject fields in Fisheries Sciences are grouped broadly into 7 departments. Majority of the respondents (31.9%) were from Aquaculture department, followed by 21 50% from Fish processing technology department and 15.2% belonged to Fishery resource and management department (Table 4.4).
5.1.4 Perceived computer skill

i) It is observed that the respondents self perceived ability to use the computer is quite high. A majority of the respondents (67.46%) have average skill in the use of computers and 29.25% possess above average skills (Table 4.5).

ii) There exists slight variation in the use of computer skills according to the professional status of the respondents (Table 4.6 & Fig 4.1). The computer literacy depends on the professional status of the respondents, which has been evidenced by Chi-square test ($\chi^2 = 31.808; p = 0.05$).

iii) There exists no significant difference in the computer skills among the respondents according to their basic degree (Table 4.7 & Fig 4.2). This has been proved through Chi-square test ($\chi^2 = 11.358, p = 0.05$).

5.1.5 Experience in the Usage of EIS

i) It is observed that the majority of the respondents have rich experience in the use of EIS, where 85.36% have more than 3 years of experience (Table 4.8).

ii) There exists a difference in the experience of EIS use according to the professional status of the respondents. The teachers/scientists are more experienced in EIS use than the research scholars. The postgraduate students are the least experienced group (Table 4.9 & Fig 4.3). This has been evidenced by Chi-square test ($\chi^2 = 41.644; p = 0.05$).

iii) There exists a marginal difference in the experience of EIS use according to the basic degree of the respondents (Table 4.10 & Fig 4.4). As observed by Chi-square test ($\chi^2 = 12.20, p = 0.05$).
5.1.6 Location of use of computer for EIS

i) The respondents use the computer for EIS from a number of locations in spite of the limited facilities on campus in some of the institutions under study (Table 4.11) Fairly good numbers of respondents use the computers in their departments (60%), followed by the computer laboratory in campus (52.83%).

ii) It is found that the location of use of computers for accessing EIS depends on the professional status of the respondents (Table 4.12 & Fig 4.5) as evidenced by Chi-square test ($\chi^2 = 91.0, p = 0.05$).

iii) It is also found that the locations of computer use for accessing EIS depends on the basic degree of the respondents (Table 4.13 & fig 4.6) This has been evidenced by Chi-square test ($\chi^2 = 36.60, p = 0.05$)

5.1.7 Frequency of use of Electronic Information Sources

i) E-Mail is the most frequently used Electronic Information Source followed by Web resources and CD-ROMs. Frequency of use of professional groups/ News groups and IRC’s are found to be less than that of E-Mail, Web and CD-ROMs FTP and TELNET constitute the least frequently used Electronic Information Source by the respondents.

ii) It has been found that the frequency of use of Electronic Information Source depends on the professional status of the respondents Through Chi-square test it has been inferred that the frequency of use of E-Mail, Web resources, CD-ROMs and IRC depends on the professional status of the respondents, where as the use of Mailing lists/Professional groups is independent of the professional status of the respondents (Table 4.15).
On the other hand, the frequency of use of E-Mail and Web resources depends on the basic degree of the respondents, whereas use of the other 3 Electronic Information Sources (CD-ROMs, Mailing lists/Professional groups and IRC's) are independent of the basic degree of the respondents which has been proved by the Chi-square test (Table 4.16).

5.1.8 Use of specific types of Fisheries and Allied areas Electronic Information Source

i) Among the various fisheries information sources in electronic format, Subject Specific Information Websites (86.86%), International/Regional Institution Websites (80.29%), E-journals (73.13%), CD-ROM Bibliographic Databases (66.56%), and Research Project Sites (62.08%) are found to be used by the majority of the respondents. Almost equal percentages (55.52% and 55.22%) of respondents use Online Bibliographic Databases and Professional Association Websites respectively. E-Books are not used by majority of the respondents (Table 4.17).

ii) There exists a marginal variation in the use of specific types of Fisheries and allied areas Electronic Information Sources according to the professional status of the respondents. Research scholars are making greater use of these resources when compared to teachers/scientists and postgraduate students (Table 4.18 & Fig. 4.7).

iii) The use of specific types of Fisheries and allied areas Electronic Information Sources vary slightly according to the basic degree of the respondents. It is also observed that more percent of Non Fisheries degree respondents (65.38%) use Online Bibliographic Databases than the Fisheries degree respondents (46.92%). Also Professional Association Websites are used more by respondents with Fisheries
degree than respondents with Non Fisheries degree (Table 4.19 & Fig 4.8).

5.1.9 Frequently used Electronic Sources/Titles

i) ‘ASFA’ database was the single resource which is most frequently used by majority of the respondents. In addition to ‘ASFA’, ‘FAO sites’ is another most widely used resource by majority of the respondents. The discipline-oriented databases like the Biotechnology Abstracts, Pollution Abstracts, Oceanic Abstracts, etc, are cited to a lesser percentage as the frequently used electronic resources (Table 4.20).

ii) There exists a variation in the citing of frequently used electronic titles according to the professional status and basic degree of the respondents (Table 4.21 and 4.22).

5.1.10 Use of Electronic Information Sources in relation to other sources of information

i) It is evident from the weighted mean value of each information source, with standard deviation and co-efficient of variation values that, the most preferred information source by the respondents is the printed journals followed by EIS as the next preferred source. Though the most preferred information source is the printed journals, the use of EIS is comparatively high which clearly indicates the growing importance of electronic resources in higher education. The respondents also prefer printed text books, discussion with faculty and other experts, thesis/research reports and Fisheries & related areas bibliographic databases in print format. The higher consistency was observed (21.53) in printed journals followed by EIS with co-efficient of variation being
33.97 Most inconsistency was observed in ‘Fisheries and related areas bibliographic databases in print format’ and ‘Seminar/Workshop/Conference proceedings’ (Table 4 23)

ii) Though the teachers/scientists and research scholars ranked EIS as their second preferred source, more consistency (28 72) in Electronic Information Sources is observed among the research scholars which shows that the preference for EIS among the research scholars is slightly more. The post graduate students ranked printed journals and printed text books as their first and second preferences. EIS being ranked third preferred source indicating that postgraduate students preferred printed sources to the electronic sources (Table 4 24). The variation in preferred information sources according to the professional status of the respondents has been observed as insignificant through Kruskal-Wallis non-parametric ANOVA test (H= 0.09).

iii) Fisheries degree respondents are slightly more consistent (35 93) in the preference of printed text books than the Electronic Information Sources (36 28) Whereas, the Non Fisheries degree respondents are more consistent (31.35) in the preference of EIS than in the preference of printed text books (Table 4 25) The variation in the preference of information sources between the 2 groups (as per basic degree) of respondents has been found to be insignificant by Mann-Whitney U test (U= 22 at P= 0.05).

5.1.11 Purpose of use of EIS

5.1.11.1 General purpose of use

i) The general purpose of EIS use is very common among the respondents of the Fisheries institutions. Majority of the respondents use EIS to get
background information on a topic (93.13%), with equal percentage (88.95% and 88.05%) use to find relevant, additional information and to acquire information that is difficult to get from other sources respectively, for communication with others (87.46%) and to keep abreast of new developments in the discipline (81.19%) (Table 4.26).

ii) It is observed that huge majority of teachers/scientists, research scholars and postgraduates (92.34%, 95.77% and 92.59% respectively) use EIS for the general purpose to get background information on a topic. Only a slight variation exists in the general purpose of EIS use according to the professional status of the respondents (Table 4.27 & Fig 4.9).

iii) There exists slight variation in the general purpose of EIS use according to the basic degree of the respondents (Table 4.28 & Fig 4.10).

5.1.11.2 Specific professional purpose of use

i) Majority of the respondents (89.55%) use EIS for the purpose of ongoing research work. Almost equal percentages of respondents (83.88% & 83.58%) use EIS for the purpose of thesis/project work and for searching subject specific information respectively. Use of EIS for writing a research paper for publication is 76.41% and for preparation of teaching/lecture notes is 57.91% (Table 4.29)

ii) Huge majority of the teachers/scientists (95.08%) and research scholars (94.37%) use EIS for ‘ongoing research work’ and also large majority of research scholars (95.77%) and postgraduate students (92.59%) use EIS for their ‘thesis/project work’, while 75.41% of teachers/scientists use it for the same reason. All the 3 categories of respondents use EIS almost equally for searching subject specific information. Variations are observed in the use of EIS for writing a research paper for publication, teaching related activities, for guiding researchers/PG students, in
exploring for research grant and to locate information on funding/donor agencies among the teachers/scientists, research scholars and postgraduate students. There exists variation in the specific professional purposes of use of EIS according to the professional status of the respondents (Table 4.30 & Fig 4.11).

iii) There also exists some difference in the use of EIS for the specific professional purposes according to the basic degree of the respondents (Table 4.31 & Fig 4.12)

5.1.12 Tools/Agents for the identification of EIS

i) It is evident from the weighted mean value for each tool/agent of EIS identification with standard deviation and co-efficient of variation values, that the most frequently used tools are the print literature followed by internet search engines and discussion with co-workers/experts. The next frequently used tools are consulting supervisor/experts in the field, attending seminars/conferences and subscribing to mailing lists or Newsgroups. The consistency observed in the frequency of use of printed literature in locating the relevant e-resources followed by the use of internet search engines indicated that even though print literature is considered as an important tool to locate relevant e-sources, respondents also depend on some readily available e-sources (search engines) to find information for their work (Table 4.32).

ii) All the 3 groups of respondents depend mainly on print literature and internet search engines and there exists some variation in the frequency of use of the tools/strategies for EIS identification according to the professional status of the respondents (Table 4.33). The significance of variation in the frequency of use of tool/strategies for identifying the EIS according to the professional status of the respondents is tested.
using Kruskal-Wallis test and found that there is no significant difference in the average frequency of use of the tools/strategies for identifying EIS for their work ($H=0.3191$).

iii) It is observed that the Non Fisheries degree respondents are more consistent than the Fisheries degree respondents in the frequency of use of these tools/strategies of EIS identification. There is slight variation in the frequency of use of tools/strategies in the EIS identification among the Fisheries degree and Non Fisheries degree respondents (Table 4.34) which has been evidenced as insignificant by Mann-Whitney test ($U=23$).

5.1.13 Benefits of use of EIS

i) It is found that the respondents are highly benefited by the use of EIS. A great majority of the respondents agreed that they are getting access to more information and are able to save their time considerably in addition to improving their professional competency due to the use of EIS. Better access to current up-to-date information and decrease in usage of postal mail is another outcome of EIS usage. They are benefited by increased professional collaboration with distant colleagues and better access to comprehensive information. More than half of the respondents stated that the use of EIS decreased the use of telephone calls and also the printed sources (Table 4.35).

ii) There exists only slight variation in the benefits of EIS usage according to the professional status and basic degree of the respondents (Tables 4.36, 4.37 & Fig 4.13, 4.14)
5.1.14 Constraints in the use of EIS

i) Weighted mean analysis with standard deviation and co-efficient of variation values revealed the nature of constraints faced by the respondents. It is observed from the table 4.38 that 'Poor connectivity or slow access', 'Lack of information about important EIS in the subject fields' and 'Retrieval of irrelevant information' are the major problems identified by the respondents in the use of e-resources.

ii) Slight variation is observed in the constraints faced while using EIS according to the professional status of the respondents (Table 4 39). The variation in the constraints faced while using EIS is tested using Kruskal-Wallis test (H=3.876) and it is found that there is no significant difference in the nature of barriers faced according to the professional status of the respondents.

iii) It is observed that the constraints faced by the Fisheries degree respondents are different from those faced by Non Fisheries degree respondents (Table 4 40). But it is found that there is no significant difference in the nature of constraints faced while using EIS between the Fisheries degree and Non Fisheries degree respondents which has been proved by the Mann-Whitney test (U=30 at P=0.05).

5.1.15 User satisfaction with access to EIS use

i) It is found that a large majority (96.4%) are moderate to highly satisfied with the level of access they are having to EIS in their institutions whereas 3.6% indicated to be dissatisfied (Table 4 41).

ii) There exist some differences in the satisfaction level of access to EIS use according to the professional status and basic degree of the respondents (Tables 4.42, 4.43 & Fig 4.15, 4.16).
5.1.16 Methods of learning to use EIS

i) The respondents learnt to use EIS by self study, through manuals, handbooks, articles, etc. They also sought the help of their colleagues to learn EIS. This was followed by the courses offered by their institutions and also learnt to use EIS by attending courses either paid or through official training (Table 4.44).

ii) There exists marginal variation in the methods of learning according to the professional status and the basic degree of the respondents (Tables 4.45, 4.46 & Fig 4.17, 4.18)

5.1.17 Areas of training needed in the use of EIS

i) It has been found that the levels of perception of the usefulness of all types of suggested training (essential, useful, not useful and no opinion) are high. Majority (79.40%) of the respondents indicated that training in ‘basic computer handling’ skill is most essential and about 16.11% perceived it to be useful. More than half of the respondents expressed training in ‘browsing information on internet’, ‘using CD-ROM databases’ are essential and a considerable percentage also felt it to be useful. A lesser percentage is of the opinion that ‘browsing online journals’ and ‘browsing online databases’ are essential. The preference for ‘evaluating information on internet’ skill was the lowest among the respondents (Table 4.47).

ii) It is observed that there exists minor variation in the level of perception of the usefulness of all types of suggested training needs in the use of EIS according to the professional status and basic degree of the respondents (Tables 4.48, 4.49 & Fig 4.19, 4.20).
5.1.18 Preferred modes of training in the use of EIS

i) It has been found that majority of the respondents preferred formats to training sessions are workshop or hands-on. The other preferred modes of improvement are, on screen presentations, support when needed, informal small group classes, one-to-one demonstrations and self-help guides/handouts (Table 4.50).

ii) There exists only slight variation in the preferred modes of training for improving skills in the use of EIS according to the professional status and the basic degree of the respondents (Tables 4.51, 4.52 & Fig 4.21, 4.22).

5.1.19 Factors affecting the use of EIS

The factors that affect the use of EIS as seen from the various sections of the chapter 4 are level of computer literacy, experience in EIS use and location of computer use for EIS. The dependency of the various factors and the frequency of use of EIS have been proved through chi-square test in each of these sections.

5.1.20 Findings in relation to the hypotheses

All the hypotheses formulated in the present study are tested in chapter 4.

Hypothesis 1: E-Mail is the most popular EIS among the respondents.

Results of Chi-square test shown in section 4.7 of chapter 4 shows that E-Mail is the most frequently used EIS by the respondents. Hence the hypothesis 1 may be accepted.
Hypothesis 2: ASFA is the most important and widely used information source among the respondents

The analysis of the frequently used EIS by the respondents in section 4.9 of chapter 4 brings out the evidence in support of the hypothesis 2 that ASFA is the most widely used information source (Table 4.20). Hence the hypothesis 2 may be accepted

Hypothesis 3: The use of EIS has changed the traditional information seeking habits of the respondents.

Based on analysis of Table 4.23, the use of EIS in relation to other information sources, presented in section 4.10 of chapter 4 reveals that the respondents ranked the traditional print sources of information as their most preferred information sources compared to EIS. Hence the hypothesis 3 may be rejected

Hypothesis 4: The users face various constraints in accessing the EIS

Section 4.14 of the chapter 4 reveals that the respondents face several constraints while using EIS. They include poor connectivity, lack of information about important EIS in the subject field and retrieval of irrelevant information. Hence the hypothesis 4 may be accepted.

Hypothesis 5: The respondents are satisfied with the level of access they have to EIS in their institutions

Section 4.15 of the chapter 4 reveals that majority (96.4%) of the respondents are satisfied with the current state of electronic information resources access in their institutions. About 36.11% of them are moderately satisfied and only 3.6% are dissatisfied with the access they are having in using EIS in their institutions. Thus the hypothesis 5 may be accepted.
Hypothesis 6: The respondents learnt to use EIS without the aid of any training programme

Analysis presented in section 4.16 of chapter 4 shows that a clear majority (75.5% and 74.3%) of the respondents acquired the necessary skills to use EIS through self-instruction with the help of reading books, articles and tutorials and also with the assistance of colleagues/friends respectively. Only some of the respondents learnt with the help of training programmes. Hence the hypothesis 6 may be accepted.

Hypothesis 7: The respondents are in need of training for handling the Electronic Information Sources

The analysis presented in section 4.17 of the chapter 4 indicates that majority of the respondents require training in all the areas in the use of EIS and hence the hypothesis 7 may be accepted.

5.2 BY-PRODUCTS OF THE STUDY

The study generated the following by-products.

i) List of Fisheries Education Institutions in India

A list of Fisheries education institutions in India has been compiled which come under the State Agriculture Universities and ICAR institutes. (Appendix IV)
ii) Selective list of some important Electronic Information Sources in the field of Fisheries Sciences

This study also facilitated the compilation of selective list of some important Electronic Information Sources in the field of Fisheries and allied areas (Appendix I)