CHAPTER V

FINDINGS, OBSERVATIONS AND SUGGESTIONS

5.1 INTRODUCTION

In the previous chapter, detailed discussion on the analysis of data collected from the literature on textile covered in bibliographic databases namely SCOPUS has been considered for the purpose of quantitative analysis. In this chapter, the major findings and observations and suggestions based on the outcome of the Chapter 4 are highlighted to prove the hypotheses and fulfill the stated objectives in Chapter 1. The findings and observations are broadly classified under appropriate headings with reference to the concerned table and figure numbers.

5.2 FINDINGS AND OBSERVATIONS

5.2.1 Quantum of Textile Research Productivity

- SCOPUS is an international multidisciplinary database indexing over 15000 international peer reviewed journals in science and technology, besides more than 500 international conference/seminar proceedings.

- It is found that the number of hits comes to 1,01,074 of which 96,360 research literatures (95.33%) are directly related to Textile during the period 1983 to 2012.
5.2.2 Growth of Textile Literature

- A total of 96,360 publications on Textile can be seen in Scopus database during the period 1983 to 2012

5.2.2.1 Countrywise distribution of publications

- It is seen from the countrywise distribution of publications, USA stands first where in India ranks in 4th place with 5006 publications. (Table 4.1, Figure 4.1)

5.2.2.2 Ratio of Growth in comparison with USA and India

- In comparison with USA, the growth of publications in the three countries China (0.62), Germany (0.60) and India (0.58) has 0.5 and above.

- In comparison with India, USA (1.72), China (1.06) and Germany (1.04), were little edge over in their contribution. (Table 4.2)

5.2.2.3 Average number of publications

- It can be seen that countries USA (287), China (176.53), Germany (172.87), India (166.87) and United Kingdom (117.80) are publishing more than 100 papers per year. (Table 4.3)
5.2.3 Nature of Publication and Distribution of Articles

- It is revealed that the single most prevalent form of Global bibliographic form is journals (81.25%), followed by Conference Proceedings (10.02%), Reviews (3.20%), Gray Literature (1.86%) Books (0.92%) and only fraction of articles were found in Reports. (Table 4.4, Figure 4.2)

5.2.4 Language wise Distribution of Articles

- It is found that the publications in English language dominates followed by German and French. (Table 4.5, Figure 4.3)

5.2.5 Year wise Distribution of Textile Literature

- It is observed that in the year 2006 has recorded highest number of publications (5.58%) followed by 5.56% in 2008. The lowest numbers of publications (1.60%) are in 1991 (Table 4.6).

- It can be seen that the publication of textile research seems to be in curve linear trend of upward direction. During the last ten years there is a substantial increase in the publications. (Table 4.6, Figures 4.5 and 4.6)

5.2.6 Ratio of Growth over the years

- The ratio of growth over 30 years period ranges between 0.83 and 1.29. The ratio of growth is maximum during the year 1996 and 1994. (Figure 4.7)
5.2.7 Publications growth of the Block Period

- It is observed that the global output between the period 2001 and 2012 is 59.90% which shows a substantial growth in the textile literature. (Table 4.7, Figure 4.8)

5.2.8 Relative Growth Rate (RGR)

- It is observed that the Relative growth rate of contributions ranges from 0.04 to 0.78. Average RGR of global output works out to 0.27 and the doubling time ranges from 0.09 to 15.40 over the period. In the year 2011 the Dt(P) is 15.40. (Table 4.8, Figures 4.9 and 4.10)

5.2.9 Authorship Pattern

5.2.9.1 Authorship Pattern in Textile

- It is evident that nearly 61.1% were collaborative research either by two authors or more than two authors in the case of global publications. Nearly 12.7% of publications have no authors. (Table 4.9)

- Single author contributions for every year ranges between 0.7 and 2.1. Every year two author’s contribution ranges from 0.3% to 1.1%. Similarly for three authors it ranges between 0.2 and 1.2. (Table 4.10)

- There is a considerable reduction in single author CAGR (6.49%) whereas the two authors (19.94%), three authors (35.53%) so on so forth. (Table 4.11)
• It is observed that during block year 2007-2012 the collaborative research value of CAI was more than 100 which shows that they preferred to work in small and big teams. (Table 4.12)

• CAGR shows the negative trend in solo research and where as for collaborative research it shows positive trend. (Table 4.13 and 4.14)

• It is observed that the Degree of collaboration(DC), Collaborative Coefficient (CC) and Collaborative Index (CI is more from 2010 onwards. (Table 4.15)

5.2.10 Citation of Papers

• During the 30 years 96360 publications were found with a total output 6,22,621 pages. Average page per article works out 6.46 pages. (Table 4.16)

• It is observed that number of publications, pages, authors and citation were more during the last two block years viz. 2001-2006 and 2007-2012. (Table 4.17)

• During the year 2010 onwards, the textile research articles were ranges 7 or 8 pages. Average pages during the 30 years of textile research come to 6.46 pages. (Table 4.18)

• It is found that the importance of citation in textile research has been realised from the block period of 1989-1994. (Table 4.19)

• Single author publications were cited by 11.8% and collaborative author citation were 88%. (Table 4.20)
• Two authors, three authors and four authors have number of pages more in their article where as five and above authors the number of pages were precise. Similarly citations were more for two authors (22.70%), three authors (23.20%) and four authors (17.70%) paper than that of others. (Table 4.21)

5.2.11 Journals of Highest Contribution

• Nearly 18.72% of articles are published in top 20 journals. Textile Research Journal has a maximum of 1783 (1.90%) of articles during the period of 1983-2012. It is followed by Textile Asia (1466, 1.52%) and MelliandTextilberichte (1391, 1.44). (Table 4.22)

5.2.12 Highest Contributed Institutions

• It is observed that 7.74% of the contributions were published by 20 institutions. Among the top 20 Donghua University with 926 (0.96%) publications top the list followed by North Carolina State University (660, 0.68%) and Hong Kong Polytechnic University (662, 0.65%). (Table 4.23)

• Two Indian institutions namely IIT Delhi ranks seventh and PSG college of Technology ranks 18 among the highest contributed institutions in the globe. (Table 4.23)
5.2.12.1 Highest Cited Papers

5.2.12.2 Indian contribution

- During 1983-2012, about 5006 papers were published on Textile by Indian authors. The average number of papers produced per year was 166.86. The highest numbers of papers (95) were published in the years 2010. (Table 4.26 and Figure 4.22)

- It can be seen from the table that the Indian publication on textile research seems to be in linear trend. During the last ten years there is a substantial increase in the publications. This indicates that the awareness and importance of textile has been in increasing trend. The CAGR indicates

- The awareness on textile research has gaining momentum only after 2000. (Table 4.27)

- Only 6.83% of the textile research in India has collaborative in nature. The Indian authors collaborated with 51 countries for their contribution. USA, South Korea, UK, Portugal and Germany are the top five countries that were collaborated (Table 4.29)

- It is found that Indian Institute of Technology, Delhi has contributed more than 309 (6.17%) publications and seems to be the major contributor from India followed by PSG College of Technology 217 (4.33%), University of Mumbai 141 (2.82%) and Technocrat Society 127 (2.54). (Table 4.30)

- Majority of the textile research appeared in colourage (635, 12.68%) followed by Asian Textile Journal (351, 7.01%).
Man Made Textiles in India (342, 6.83%), Journal of the Textile Association (184, 3.68%) and Textile Magazine (174, 3.48%). (Table 4.31)

**Highest Cited Indian Papers**

- The age of highly cited paper ranges between 2 to 26 years. Collaborative research has highest citations. Four solo research papers were highly cited and citations were 223, 163, 134 and 114. The Solo research authors are Malik (223); Bhattacharya (163); Kumar (134) and Husain (114). (Table 4.32)

- Nair G P has contributed more than 139 publications with his “h index” 8followed by Pandian S P (93), Kothari V K (54) and Chellamani K P (52). (Table 4.33)

**Mapping of Top 10 Authors Publications**

- Mapping the publication nature of top ten others both global authors were attempted (Figures 4.12 to 4.21)

- Similarly top ten Indian authors publications were mapped. (Figures 4.28 to 4.37)

**5.2 SUGGESTIONS**

Following were few suggestions based on the review of literature and findings of the present study.
5.2.1 Role of Textile Associations

- The textile associations have to come forward to bridge the academic institutions and the industry in incorporating the Technological advancements. This will enable to refine the production process.

- Association has to organise the workshops, seminars, conferences frequently with the industry people towards sharing the knowledge on current development in the industry.

- Providing advanced educational facilities to the textile industry workers.

- Provision for visiting global industries in learning the current developments.

- Funding the R & D Institutions and extending the continuous support.

5.2.2 Role of Women’s

- Women are working in majority of the Textile industry with the minimum educational qualifications. The knowledge they gained through sheer experience is to be shared with R&D organisations and be documented.

- Women’s were facilitated to enrich their academic qualifications.

5.2.3 Government Initiatives

- More number of R & D institutions in Textile is to be established at national, state and regional level.
• More recognition is to be given for the researchers in Textile through awards, financial initiatives.
• Bridging the gap between the textile industries and academic institutions.
• Textile parks and R & D institutions are to be established in textile industrial areas.
• The state that shows more productivity can be considered for tax benefits

5.3 FINDINGS IN RELATION TO HYPOTHESES

The study undertaken has indicated that the hypotheses:

1. Research productivity in textile research is comparatively higher in developed countries. There is significant difference on the publications with respect to country wise distribution.

2. There exists a significant level of difference between textile research performance of Indian scientists and scientists of other countries.

3. Among the third world countries, India contributes substantially in Textile research.

4. Journal plays major role in publishing papers on Textile research. There is a significance difference in form of publication in publishing research papers.

5. Maximum number of articles published in English language.

6. There exist the collaborative research dominates in the field of Textile research.
Stated in Chapter 1, under section 1.7 have been tested in Chapter 5 and found valid. Similarly the objectives stated in section 1.6 have also been fulfilled in the Chapter 4.

5.4 BYPRODUCTS OF THE STUDY

This study has facilitated for the compilation of directory of Textile Associations India.

i. Appendix A : Directory of Textile Associations of India.
ii. Appendix B : Database based on Textile Technology
iii. Appendix C : Websites based on Textile Technology
iv. Appendix D : Core Journals on Textile
v. Appendix E : Functions of Textile Association

5.5 DIRECTIONS FOR FURTHER RESEARCH

Based on the literature reviews and findings of the present study, the future areas of research are suggested for the benefit of the forthcoming research scholars in the filed of library and information science and allied areas of research.

- The collaboration of academic institutions and the textile industry contribution in textile research.
- The contributions of the Textile industry towards Textile literature
- The role of textile association in textile research and their contribution
- Women’s contribution in textile research and their Performance at State, Regional and National level
5.6 CONCLUSION

The literature output of global textile research has been studied in the light of the Indian research output. The study reported the findings to determine the publication trend with respect to growth of literature on countrywise, yearwise, blockyearwise, languagewise and document type.

- Publications data included in the Scopus database alone have been taken up for the study.
- 96360 data has been identified from the Scopus database listed during the period 1983 to 2012 only taken up.

The objectives, stated in the chapter 1, section 1.7 of the study formulated for the purpose were thoroughly investigated and reported in the respective chapters.

The results computed are quite encouraging particularly on the implications of textile research output between global and Indian context in the facets countrywise contribution, languagewise contribution, document type, yearwise, block yearwise. Further authorship pattern, collaboration pattern such as collaborative coefficient, collaborative index, relative growth rate, doubling time. Besides highly cited papers both global and Indian point of view were computed. Similarly highest number of publications both global and Indian were not only identified, mapping also carried out. But there is always scope for improvement for betterment of projection of growth of literature output on the discipline.