Chapter I

INTRODUCTION

This study focuses on mapping the research dynamics of the field gender issues in informatics. It aims at evaluating the research activity of the countries on gender development in informatics by means of their bibliographic output. In recent years there have been a rapid growing interest in the use of quantitative parameters for assessing the quality of research carried out in research institutions, Universities and so on. The need for the study is realized to identify the existing research trends, thrust areas, priorities, gaps and future requirements.¹

Last two decades have witnessed an overwhelming volume of publications pertaining to gender issues in informatics. Hence, the system of storage and retrieval of information in the process of scientific communication has now become more complex than ever. Not only the exponential growth of literature, but also the inter-disciplinary nature and specialization of research have posed many problems both to the information seekers and librarians. Further emphasis on national and international information systems have / signified the need for an analysis of literature used by the scientists:²

This study is designed to analyze the research output pertaining to the gender issues in the field of informatics and to map the factors attributing to the alarming gender gap and a paucity of women’s participation in this field.
Gender in informatics related to information technology and its impact on women's education, training and employment. This study makes special attention on the performance of research output in Gender Studies in Informatics. Today information technology is gaining momentum throughout the globe and extent to which this industry provides employment and livelihood for women in different parts of the world. These issues could be learnt from the publication output.

The analysis is based on the emergence of research areas, research groups and countries with a view to map the cognitive or intellectual structure of research. Further this study spells out the relationship between authors, institutions, journal articles and as a means of assisting the peer review procedure.

The research is based on the published literature on the subject gender issues in informatics. The mapping process consists of conversion of these publication records into a bibliographic database in English language. The co-word mapping technique is used to capture the dimension of knowledge structure or cognitive themes in the field of informatics. This technique consist of building keyword index from the bibliographic database, computing co-occurrence of keywords and measuring the similarity of keywords, cutting up the keyword associations network into clusters, classifying the documents into clusters and building scatter diagrams or maps.
The analysis of growth of literature in gender issues in informatics is an important aspect of this study. It could be observed that the growth of literature has made it difficult for (i) the Scientists to keep in touch with the latest advances in their discipline;(ii) the library professionals to meet the information needs of scientists in various disciplines due to increase in cost of publications and shrinking library budget, and (iii) the policy makers to decide on priorities in resource allocation for scientific activities. If published literature is taken as measure of knowledge, the bibliometric study of these publications would yield useful results regarding the growth pattern of literature in gender issues in informatics. These results are of practical value to the scientists, library professionals and planners in the management of scientific activities in the discipline.5

The study of author productivity is an important aspect. The performance of scientists could be viewed in terms of their productivity. Productivity is referred to as the amount of research output and publication that a researcher has done. It is often measured by counting the number of papers, books, reviews and reports produced by a scientist over a period of time. Productivity of a scientist has been linked to various factors such as subject specialization, economic indicators, institutional prestige, promotion and monetary rewards. In general the above factors playa significant role in output performance among the scientists of Western nations. As a result the majority of the world research papers have been published in a few advanced countries
of the world. Contrastingly little attention has been paid to the scientific output and its impact on developing countries.6

The present study focuses on the publication relating to gender issues in informatics on the basis of country wise analysis. In general bibliometric indicators play an important role in science policy decisions and in evaluation of researcher performance. It is observed that bibliometric indicators help to evaluate the research performance of individual scientists and research group. This study corresponds to analyze the extent of women engagement in the field of information technology on the basis of published output as a yardstick in different part of the world.7

This research is based on the published literature on the subject gender issue in informatics in the last two decades throughout the world. The outcome of the research includes an online database containing the total publication on gender issues in the area of informatics, an online thesaurus representing the themes discussed in the publications. A manual for the construction and use of the magic mapping in gender studies in computing and a state of art illustrating the results of research publications of the various countries on gender dimension in computing education and employment.

Now days publications are widely accepted as one of the indicators of the nature, direction, volume and characteristics of research as they collectively represent data relating to research efforts and scientific progress in that area. Such data over a period of time provide an understanding of the shifts and
changing composition of a discipline. This study aims at analyzing the growth of literature on gender issues in informatics and it helps to analyze the knowledge structure in that field. Hence the major focus of this study is to collect the research outputs of the countries in the world on the areas of women in informatics and to produce cognitive maps. This study evaluates the research scenario of these countries with respect to women in information technology education, women in I.T. industry and gender gap in I.T. labour market and I.T. Education. The map highlights the strength and weakness of the research efforts through thematic mappings. These maps illustrate the research status of the individual countries, the most focused area of specialty (themes/issues), the most active countries in conducting research, and its impact of this research on gender development.

This would benefit the academic researchers, policy planners, funding agencies and the professional associations and organizations. The resulting database of this work would be a ready reckoner for the researchers to decide upon their future areas of researches, while it helps them to avoid duplication of research efforts. This database could be used by planners for identifying the gender problems in information in order to device schemes for improving the situation. This type of studies give insight about monitoring numerical data, geometric properties of the data distribution, and searching for clusters and thereby become an intuitive and inspiring interactive process. Further
knowledge discovery in database is concerned with extracting useful information and
data mining to be a single step in a large process.

This study helps the conference organizers in the choice of the most vital themes for deliberations at various point of time and periodical conducting of seminars and conferences on women in informatics are the pre-requisition to get the essential input to the research. A constant interaction with the subject specialists would help to formulate the knowledge structure of the discipline gender in informatics and it would help to sharpen the domains, sub-domains and the foci of this subject that are essential in the construction of the thesaurus on this subject.

One could be aware of the knowledge sharing behaviours on the Gender Studies in Informatics. It helps to trace out the publications of authors, their affiliation, type of study, the type of data used, the nature of methodology, geographical coverage, institutional coverage, key words and an extended abstract that include the objectives, hypotheses and the findings.

This study explains the possible ways of constructing the magic mapping Gender Studies in Informatics. These mapping would help to find some important policy oriented issues, such as status of the individual countries in women in informatics, most focused area, distribution of research efforts, identification of major countries in the area of research and impact of information on gender development.
This study takes into account a wide research output in women in informatics. The study of institution wise growth rate and pattern of growth of literature on gender issues in informatics is considered to be an important attribute of scientometric analysis. Depending on the nature and content and identification of major countries in the area research and impact of information on gender development.

**Statement of the Problem**

This study attempts to examine the trend on gender issues in informatics. It aims at evaluating the research activity of the countries on gender issues in informatics, by means of their bibliographic output. The last two decades have witnessed an overwhelming volume of publications addressing the gender Issues in informatics. These studies have brought into lime light the contribution of scholars, researchers and academicians on this subject. This study attempts to explain the theoretical and empirical discussions relating to gender relations in informatics from the published reports. This analysis helps to identify the key issues affecting or favoring women in this field. Bibliometric techniques are employed to analyze the publications on gender studies to identify the trend in the publication, the thematic pattern etc.

Many of the publications have addressed the issue of passive participation of women in the informatics and its consequence on maintaining the gender equity in the society. Due to scattering of publications, the findings of this research have not been visible to the policy makers, who have been
concerned with the gender disparity in the informatics education and employment. In order to overcome this problem, this study attempts to convert the publications into a comprehensive database. This would be a major step towards consolidating the research findings on one side and facilitating the visibility of the publications on the other. This database covers information relating to the authors and their affiliation; thematic coverage; methodology adopted and the institutional and regional coverage of the publications.

This study plans to analyse the growth of literature on the basis of growth rate analysis. The growth of literature on gender studies may vary from one country to another and from one continent to another. Hence this issue is taken into consideration in the present study. This study would indicate the research status of the countries on this subject, and identification of active research area and their impact of I.T on gender development. This research would offer a base for integrating the corpus of these research outputs into the process of improving the curriculum, recruitment and retention activities in computing in order to create women friendly environment and also to encourage more women in all areas of education, employment and training in informatics.

This study takes into account the shortage of women in informatics education and the efforts being taken by the governments and I.T employers of the world countries to achieve gender equity in informatics. The lack of participation of women in this sector would lead to serious socio-economic
implications. This study plans to prepare cognitive map for evaluating the research scenario of the selected countries on the major subjects domains like women in I.T. Education, women in I.T. industry, gender gap in I.T. labour market and I.T. Education.

The analysis of sub-field in gender studies is informatics is one of the aspects of the present study. It traces out the potential areas and research-wise concentration in Gender Studies in Informatics. This type of analysis helps to identify the research gap in the previous studies.

**Objectives**

The following objectives are framed for the purpose of present study:

1. To examine the growth of literature in Gender Studies in Informatics during the period 1982-83 to 2002-2003.
2. To study the continent wise and country wise research output performance in Gender Studies in Informatics.
3. To analyse the cognitive structure of Gender Studies in Informatics and to identify changes, shifts during the period of study.
4. To examine the premier institutions, publishing the research output in gender studies at the global level.
5. To identify less productive and neglected areas of Gender Studies in Informatics.
6. To identify the nature of authorship pattern and determine the degree of collaboration.