Chapter 1
INTRODUCTION

1.1 PREAMBLE

Bibliometrics is the study of the use of documents and pattern of publication in which mathematical and statistical methods have been applied. During the last few years, bibliometric and Scientometric analysis has been increasingly used to evaluate the research performance of the scientists and the growth of various disciplines of subject. Hence, The Bibliometric study is widely used for mapping of scientific research growth, authorship pattern, research collaboration, author's productivity, etc. in any discipline of knowledge.

At the University level, the most important requirement for promotion is publications. Therefore, it is necessary to know the research contributions of the faculties over the years and whether the 6th pay scale’s career advancement scheme has motivated them to undertake more research activities. Being centers of research, universities, R & D Institutes and other equivalent higher institutes are considered as vital ports for scientific studies, generates lots of human knowledge and imparting to progress of a nation. Thus, Universities put the center of a strong culture by contributing liberty for higher education and research. The research activities of an institution or universities are reflected through its publications and advancement in knowledge takes place through research publications in the form of journal articles, conference papers and other forms of publications. The research output of the university scientists in the form of research papers in peer-reviewed scholarly journals is being considered as one of the main criteria for assessing the performance of the university scientists and faculty.

1.2 STATEMENT OF THE PROBLEM

The study bibliometric analysis of intellectual assets in the form of research productivity of the academic faculty members is important to the students, research scholars, teachers, librarians and Library & Information Science professionals. For this study the statement of problem is “Intellectual assets of Faculties in Swami Ramanand Teerth Marathwada University, Nanded: A Bibliometric Study”.

1
1.3 REVIEW OF LITERATURE

In the present study researcher scanned the various types of resources like reference books, research articles, theses, relevant journals / periodicals, published unpublished materials, and the relevant web sites for considering the review from the past studies. Thus the operational definitions of the terms used in the study have discussed and summarized based on the literature search.

1.4 DEFINITIONAL ANALYSIS

The definitions of the concepts appeared in the title of the present study are as under:

1.4.1 Intellectual assets:

The term Intellect described as the ability to learn and reason; the capacity for knowledge and understanding, the ability to think abstractly or profoundly. It is the knowledge, experience, and the performance of its employees that an organization can use for its benefit.

1.4.2 Faculties:

Oxford Online Dictionary defines Faculties as, “A group of university departments concerned with a major division of knowledge. The teaching or research staff of a group of university departments, or of a university or college, viewed as a body”. (Oxford online dictionary, 2014)

1.4.3 Research:

The advanced learner’s Dictionary of Current English defines research as, “A careful inquiry or investigation especially throughout search for innovative facts in any branch of knowledge”. (Kothari, 1985, p.7)

1.4.4 Productivity:

Productivity is the efficient use of innovation and assets to boost the value-added content of products and services. It is the factual source of spirited benefit that creates long term cost-effective feasibility and a better standard of existing for all.

1.4.5 Bibliometrics:

The term bibliometrics was coined by Alan Pritchard in a paper published in 1969. He defined the term as "the application of mathematical as well as statistical methods to books and other medium of communication". (Pritchard, 1969, p. 348)
Fairthorne defines Bibliometrics as “Quantitative treatment of properties of recorded discourse and behavior pertaining to it. Bibliometrics is also named as quantitative analysis of bibliographical features of a body of literature”. (Fairthorne, 1969)

According to the British Standards Glossary of Documentation terms (1978), “Bibliometrics is the study of the use of document and pattern of publications in which mathematical and statistical method have been applied”. (Simpson, 1988. p.177; Kumar, 1999)

1.4.6 Informetrics:
Otto Nacke of West Germany in 1979 first proposed the terms “Informetrics” defined as, “As newly form branch of science using mathematical and statistical methods”. (Voverience and Trumpiene, 2006, p. 175)

1.4.7 Scientometrics:
The term Scientometrics means an application of quantitative methods to the account of science. Scientometrics is a complex of mathematical and statistical methods used to explore such aspects as research staff, economics history etc. of science, and to define evolutionary prospects of science. (Kumar, 2004, p. 81)

According to Pouris (1994) "Scientometrics is for science what econometrics is for economics”. Both disciplines attempt to study social phenomena with the rigor provided by the scientific method.

1.4.8 Cybermetrics:
Cybermetrics incompasses statistical studies of discussion groups, mailing list and other computer mediated communication on the Internet including the. (Bjorneborn and Ingwersen, 2004, p.1216)

1.4.9 Webometrics:
Webometrics is defined as “Research of all network based communication using informetrics or other quantitative measures”. Webometrics is the study of the quantitative aspects of the creation and utilization of wide range of information resources, structures, and technologies on the World Wide Web (WWW) representation on bibliometric and informetric approaches. (Almind and Ingwersen, 1997)
1.4.10 Content analysis:
The term content analysis refers to methods that, count occurrences of selected lexical (related to words) features in samples of text or speech (Dooley, 2007, p.105). However, Content analysis is a research practice for the organized, structured, systematic and quantitative explanation of visible content of communication. (Berelson, 1952)

1.4.11 Citation analysis:
Citation analysis is the examination of the regularity, patterns, and graphs of citations in research articles and books; it rather uses citations in academic and scholarly works to ascertain relations to other works or other researchers. Citation analysis is one of the most broadly used methods of bibliometrics.

1.4.12 Maharashtra State:
Maharashtra is located on the western coast of India, is divided into thirty five districts which are grouped into six divisions. The state is surrounded by Gujarat to the North West, Madhya Pradesh to the north, Chhattisgarh to the east, Telangana to the south east, Karnataka to the south and Goa to the south west. Maharashtra is the third largest state by area in India. The Universities in Maharashtra state are serving the students by giving value-added higher education throughout academic environment. Moreover, most of the universities in Maharashtra provide eminence education to the community of the state. The qualified professors along with multcultural enthusiasm of the Maharashtra universities is informed the society and thus helping the country to develop by creating scholarly research work.

1.4.13 S.R.T.M. University, Nanded:
The Swami Ramanand Teerth Marathwada University is recognized as one of admirable state university of Maharashtra state, was established on 17th September 1994 at Nanded by bi-furcating the Marathwada University, Aurangabad. Nanded is a pleasant city as well as a district headquarters located on the banks of Godavari River in southeastern part of Maharashtra state. The University has been named after Swami Ramanand Teerth, a famous educationalist and social campaigner known also as the ‘Doyen of the Hyderabad’ state freedom Struggle. The SRTM University is to gratify for southern part of Marathwada region of Maharashtra State, particularly to the
districts of Nanded, Latur, Parbhani and Hingoli. The wide spread central university campus is about 20 km south of Nanded township at Vishnupuri occupies around 525 acres (2.12 km$^2$), and there is a 22-acre (89,000 m$^2$) sub-campus situated at Latur. The SRTM University, Nanded has made a success in 2015 by securing ‘A’ grade through appraisal by NAAC (National Assessment & Accreditation Council) located at Bangalore, Karnataka.

The University runs with a School system for Campus teaching and offers non-conventional multiple courses to initiate and promote interdisciplinary and multidisciplinary studies.

1.5 OPERATIONAL TERMINOLOGY

The following concepts have operationally been defined for the purpose of the present study.

1.5.1 **Relative Growth Rate:**

Relative growth rate is a tool to quantify the pattern of information growth when the growth rate of a function is always comparative to the function's existing size. Such growth is said to follow an exponential law. This implies for any exponentially growing quantity, the larger the quantity gets, the faster it grows.

1.5.2 **Doubling Time:**

The doubling time is the period of time which is essential for a quantity to double in size. When the relative growth rate is constant or stable, the quantity undergoes exponential increase and has a constant doubling time or phase which can be calculated directly from the growth rate. If the number of publications of a subject doubles during a given period, then the difference between the logarithm of the numbers at the beginning and at the end of the period must be the logarithms of the number 2. (Tamilselvan, 2011)

1.5.3 **Authorship Pattern:**

It denotes the percentage concentration of single authored papers in relation to multi-authored papers. Authorship pattern indicates the number of authors per paper and analysis of documents on how many authors wrote that document whether by single author, joint authors, three authors, and more than three authors is called as authorship pattern. (Barooah & Sharma, 1999).
1.5.4 Degree of Author collaboration:

Subramanian (1983) proposed a mathematical formula for calculating author’s degree of collaboration in a discipline. The degree of collaboration among authors is the ratio of the number of papers published in a discipline during certain period of time. The Degree of collaboration among authors is the ratio of the number of papers published in a discipline during certain period of time. It is measured mathematically as:

\[ C = \frac{NM}{NM + NS} \]

Where,

- \( C \) = Degree of collaboration
- \( NM \) = Number of multi-authored publications
- \( NS \) = Number of single-authored publications

1.5.5 Lotka’s law of scientific productivity (1926)

Lotka's Law describes the occurrence of publication by authors in a given field. It also states that “the number (of authors) making \( n \) contributions is about \( \frac{1}{n^2} \) of those making one; and the proportion or percentage of all contributors, that make a single contribution, is about 60 percent”. (Lotka 1926, cited in Potter 1988)

1.5.6 Bradford’s law of scattering (1934)

To identify the core journals of a particular discipline, Bradford’s law has been tested. This law describes studying the extent to which literature in a particular discipline is scattered over a range of journals mostly dedicated to the subject and several zones, the succeeding zones will be as \( 1:n:n^2 \ldots \) (Brookes, 1969)

1.6 THE SIGNIFICANCE OF THE RESEARCH

The present study focuses attention on the bibliometric analysis of the intellectual assets in the form of research productivity, pattern of publications, authorship pattern, degree of collaboration, Collaborative Co-efficient value, applicability of Empirical laws, relative growth rate and doubling time, communication channels, motivational factors, preferred e-resources by the faculty members thus, journal coverage (core journals in specific discipline), most productive author during the study period of the SRTM University, Nanded.
1.7 SCOPE AND LIMITATIONS OF THE STUDY

Scope of the present study is limited to total No. of 53 faculties from different six Schools of Swami Ramanand Teerth Marathwada University, Nanded viz. 1. School of Commerce & Management Sciences, 2. School of Educational Sciences, 3. School of Fine & Performing arts, 4. School of Languages, Literature & Cultural Studies, 5. School of Media studies, and 6. School of Social Sciences. The study was also limited to the data collected from the faculties from 2009 up to 2014 only.

1.8 OBJECTIVES OF THE STUDY

The objective of the present study is to analyze the research productivity of Faculty members working in six different schools of SRTM University, Nanded during 2009 to 2014. In particular, the study focuses on the following objectives:

- To find out the School wise analysis of research publications
- To find out Gender wise analysis of faculty
- To identify Designation wise analysis of research publications
- To analyze Year wise Growth of Literature
- To identify the Form wise Distribution of Research publications
- To find out Journal wise distribution of publications
- To identify the core journals of a particular discipline
- To examine Authorship pattern and Degree of Author Collaboration
- To know Authorship pattern of Publications
- To analyze the Degree of collaboration of publications
- To find out Relative Growth Rate $[R(P)]$ And Doubling Time $[Dt(p)]$
- To identify the most prolific author having largest number of publications
- To identify channels of Communication preferred by faculties
- To survey the motivational factors behind the research writing

1.9 HYPOTHESES

The following hypotheses are formulated and further tested in the present study.

1. H$_0$: Use of Information Technology tools does not vary on channels of communication preferred by faculties
H1: Use of Information Technology tools does vary on channels of communication preferred by faculties

2. $H_0$: Faculty members not likely to publish their research work in different forms of publications
   $H_1$: Faculty members likely to publish their research work in different forms of publications

3. $H_0$: Female faculty members produce less number of research outputs than male faculties
   $H_1$: Female faculty members produce good number of research outputs than male faculties

4. $H_0$: Single authorship is not predominant on multi-authorship
   $H_1$: Single authorship is predominant on multi-authorship

5. $H_0$: A motivational factor does not vary on type of family member
   $H_1$: A motivational factor does vary on type of family member

1.10 RESEARCH METHODOLOGY

The Descriptive Research Method has been used for the present study with survey as a research technique. The primary data for the present study has been collected using questionnaire as a tool of data collection.

1.10.1 Data Collection

Questionnaire will be used as a tool for collecting the personal information of the faculties thus, to know the educational and family background of the faculties a well structured Questionnaire designed and distributed among the faculties of each School taken under study. The detail Curriculum Vitae (CV) of the individual faculty members had collected regarding their research publications during 2009 to 2014. Along with this researcher did directly contact with the faculties for conducting the interviews and collected the information, which is useful for this study.

1.10.2 Data Analysis

A total no. of 953 publications of the faculties from six different schools of SRTMUN during 2009 to 2014 was collected through questionnaire and Curriculum Vitae (CVs) for the present study. The Collected data has been entered and analyzed by using the Statistical Package for Social Sciences (SPSS Inc) Version 16 as well as in
MS-Excel 2007 as per the various parameters. For this Frequency and Descriptive statistics, Chi-square test, ANOVA, One Sample T-test, Cross-tabulation was used to analyze the different variables and testing of Hypotheses, all tests were two-tailed with a statistical significance level of 0.05. Thus, the various Bibliometric techniques such as Lotka’s law, Bradford’s law, relative growth rate & doubling time, channels of communication, degree of collaboration, collaboration co-efficient, etc. used to analyze the research outputs of the faculties under study.

Further, the analyzed data was presented in the form of tables, figures and graphs using Pie charts, Bar charts, line charts etc. as per the various parameters.

1.11 SUMMARY OF MAJOR FINDINGS AND CONCLUSIONS

As per the objectives and hypotheses stated above validity tested and some of the major findings and implications are given below:

1) The School wise analysis of respondents shows that out of 54 faculty members, 51 Questionnaire were received accordingly with (94.14%). The reason behind this was some core faculty members got retired currently or transferred to other places. While, out of 54 faculty members among six different schools, the response of 45 (83.33%) core faculty members received regarding their research outputs. The highest number of response was received from School of Commerce & Management Sciences (SCMS) with 12 i.e. (22.22%) followed by School of Languages, Literature & Cultural studies with 11 i.e. (20.37%) response and School of Social Sciences (SSS) with 9 i.e. (16.67%) response was received. (Table No. 5.1 and Figure No. 5.1; Table No. 5.18 and Figure No. 5.18)

2) Majority of the faculties are on the position of Assistant Professors i.e. 25 (49.01%), this is followed by Associate Professors i.e. 10 (19.61%). Only 6 (11.76%) faculty members were having Professors position, followed by 5 (9.81%) having Assistant Professors (Contractual) position and 3 (5.89%) Research Associates working within the schools under study and only 2 (3.92%) are holds the other position i.e. Training & placement officer and Producer. The mean value is 2.90 and Standard deviation is 1.171 with skewness of .587. (Table No. 5.3 and Figure No. 5.3)
3) The present study depicts that E-mail is the most popular channel of communication preferred by the faculties with 44 (26.5%) followed by Mobile phones with 39 (23.5%) and social media sites with 31 (18.7%). The mean value is 2.921 and Standard deviation is 1.537 with skewness of .254. This is because increasing use of Mobile phones and Social media sites gives platform to the professionals to share their ideas and update their knowledge and it seems to be more convenient channel of communication as it is the fastest communication channel and takes less time as compare to Telephone with 20 i.e. 12.0% and other communication channels used by only 9 (5.4%) respondents. (Table No. 5.7 and Figure No. 5.7)

4) Majority of the faculties uses E-resources for teaching purpose i.e. 31 (41.9%), followed by research purpose with 25 (33.8%) and publications with 10 (13.5%). Only 7 (9.5%) faculties are of the view that they used e-resources for self improvement while only 1 (1.4%) opinion about the any other purposes. The mean value is 1.919 and Standard deviation is 1.030 with skewness of 1.015. (Table No. 5.10 and Figure No. 5.10)

5) E-books is used by majority of the faculties with 38 (31.9%) followed by 26 (21.8%) make use of E-journals/magazines and While 15 (12.6%) faculties make use of E-reference sources followed by E-thesis & dissertations with 14 (11.8%). Only 9 (7.6%) faculties used Abstracting & indexing data and 8 (6.7%) faculties make use of E-learning reports. Thus, only 6 (5.0%) faculties used Library portals followed by 3 (2.5%) faculties used any other sources. The mean value comes out to be 3.303 and Standard deviation is 3.303 with skewness of .402. (Table No. 5.11 and Figure No. 5.11)

6) Maximum number of the respondents i.e. 35 (34.0%) gives preference to access online journals from publisher websites, followed by Consortia provider websites with 22 (21.4%) and library websites with 18 (17.5%). Aggregators/Vendors sites received 13 (12.6%) and directories received 12 (11.7%) responses. Only 3 (2.9%) respondents preferred any other sites to access online journals. The mean value is 2.757 and Standard deviation is 1.361 with skewness of .595. (Table No. 5.12 and Figure No. 5.12)

7) It was seen that majority of the faculties i.e. 25 (29.8%) highlighted academic rank as the most crucial factors amongst the other seven factors which affected on research activity followed by Awards and rewards factor with 16 (19.0%)
and salary with 15(17.9%). Whereas, 13 (15.5%) respondents opted to family support followed by Self confidence factor with 10 (11.9%) and least response was received to organizational culture with only 5 (6.0%). While, Table No. 5.16 (a) shows the Descriptive Statistics for the same wherein, the mean value comes out to be 2.845, Std. Deviation is 1.690 and Skewness is seen .263. It reflects that different motivational factors motivate faculties to write and it depends on person to person. (Table No. 5.16; Table No. 5.16 (a) and Figure No. 5.16)

8) It was observed that out of 45 core faculty members 36 are male faculties and 9 are female, of which 36 (80%) male faculties published 741 research papers with (77.75%) and 9 (20%) female faculties published 212 research papers with (22.25%). It reveals that Female faculty members produce less number of publications than male faculties. (Table No. 5.19 and Figure No. 5.19)

9) It was seen that out of 953 research publications the school of Commerce & Management Sciences is top with 298 publications, which was 31.27% of the total contributions. The second rank is to the School of Educational sciences with 223 i.e. 23.40% publications. This is followed by School of Languages, Literature & Cultural studies with 177 i.e. 18.57% and School of Social sciences with 147 i.e. (15.42%). The less number of research publications is brought out by the School of Media studies with 108 i.e. (11.34%). While, School of Fine and Performing arts not having single output, however the reason behind this is that only one faculty is there and this school is moreover engaged with the Performing arts, dramas plays etc. however, least focus given on theoretical research by faculty. (Table No. 5.20 and Figure No. 5.20)

10) It was found that out of 953 research publications majority of the contributions was made by Assistant Professors with 536 (56.24%) followed by Associate Professors with 196 (20.57%) contributions and Professors with 175 (18.36%) contributions. In contrast to this only 32 (3.36%) contributions was made by Assistant Professors on CHB and 14 (1.47%) by others. It seems to be that younger faculties are more likely to contribute in research activities to granting of promotion under Career Advancement Scheme of 6th pay. (Table No. 5.22 and Figure No. 5.22)
11) The highest number of research publications were in the year 2012 with 233 (24.45%), followed by 2013 with 219 (22.98%) and 2014 with 190 (19.94%) followed by 2011 with 157 (16.47%). While 102 (10.70%) research outputs seen in the year 2010 and the minimum number of articles were published in the year 2009 with 52 (5.46%). It shows a tendency of steady increase in the number of publications per year and research output has almost doubled in the year 2012 and 2013 as compared to earlier years. (Table No. 5.23 and Figure No. 5.23)

12) The present study reveals that out of 953 research publications maximum number with 343 (35.99%) publications are in the Conference/Seminar proceedings, followed by 315 (33.06%) publications are in the Journal articles and Workshops with 191 (20.04%) followed by Books/Book chapters with 104 (10.91%). The study shows that majority faculty members were likely to publish their work in the Conference/Seminar proceedings followed by Journal articles; it may be reviewed or peer-reviewed. This is because Conference and seminars at State, National or International level gives platform to the professionals to share their ideas and update their knowledge. Moreover participation and presentation of papers in national and international seminar and conference is important under Career Advancement Scheme of 6th pay and it takes less time compared to book writing. It also depicts that publication in published book or Book chapter is less by faculty members, it may be because of the publishing a book is lengthy and time consuming task. (Table No. 5.24 and Figure No. 5.24)

13) The study depicts that out of 315 journals articles, International Journal World's Genius is the most preferred journal by the School of Educational Sciences faculties with 16 (5.08) articles on the 1st position, followed by International journal of Academic and education with 15 (4.76%) articles on 2nd position, and Patron with 13 (4.13%) articles is on the 3rd position. International Journal of Management & Economics with 11 (3.49) articles is on 4th position. Further, Asian journal of management science and Variorum multi-disciplinary e-research journal with 10 (3.17%) articles is on the 5th position and so on. It may be revealed that the authors are more likely to publish their work in different journals with their area of Specialization. (Table No. 5.25 and Figure No. 5.25)
14) It can be seen that the total number of 315 Journal articles were separated into 3 equal zones with 105, while numbers of authors writing similar number of papers in each zone were in the ratio of 10: 47: 142. This indicates that the data verbally not fits into the Bradford’s law of scattering while, the data set of overall Journal articles with number of authors graphically fit into the Bradford’s law of scattering. (Table No. 5.26 and Figure No. 5.26)

15) It was found that out of 762 research publications during 2009 to 2014, there were 589 (77.30%) articles written by single authors, 128 (16.80%) belonged to two-authored, 32 (4.20%) articles by three authors and very less i.e. only 13(1.70%) articles were written by more than three authors. While, only 173 (22.70%) articles written by co-authors or multiple authors. It reveals that collaborative research was least preferred by the faculties. (Table No. 5.28 and Figure No. 5.28)

16) The degree of author collaboration of publications is varies from 0.31 to 0.16 during 2009-2014 and the total is found to be 1.37%, the mean value of group co-efficient (g₉) was only 0.203 while, Degree of Collaboration is seen 0.228. So it can be revealed that collaborative research is not much popular and the authors prefer to work separately as solo research. (Table No. 5.29 and Figure No. 5.29; Table No. 5.30 and Figure No. 5.30)

17) It has been observed that Relative Growth Rate of publications [R (P)] for the six years from 2009 to 2014 is decreased 1.04 to 0.22. The mean Relative Growth [R(P)] showed 0.475. The data reveals that Doubling Time [Dt (P)] gradually increased from 0.66 in 2009 to 3.15 in 2014. The mean Doubling Time [(Dt(P))] was increased to 1.351. Thus, as the rate of growth of publication was decreased, the corresponding Doubling Time was increased. (Table No. 5.31 and Figure No. 5.31)

18) The study analyzed that Dr. Sinku Kumar S. from School of educational Sciences hold 1st position and was the most productive author among the faculties with largest publications i.e. 65 (6.82%) during 2009 to 2014. The second highest position was occupied by Dr. S. D. Pathak, School of Media studies having 43 (4.51%) publications on IIInd position followed by Dr. (Mrs.) V.N. Laturkar School of Commerce & Management having 40 (4.20%) research contributions on IIIrd position. Further, Dr. (Mrs.) V.N. Patil and Dr. D. M. Shinde having 39 (4.09%) and 37 (3.88%) contributions on IVth and
Vth position respectively. This is followed by Dr. J. V. Joshi and Dr. R. D. Biradar having 33 (3.46%) and 31 (3.25%) contributions each and so on. It reveals that senior faculties having Doctoral degrees were highest number of research publications on their credits. (Table No. 5.32 and Figure No. 5.32)

Dr. Sinku Kumar S. from School of Educational Sciences hold Ist position and he is the most productive author among the faculties with largest publications i.e. 65 (6.82%) during 2009 to 2014. The second highest position occupied by Dr. S. D. Pathak, School of Media studies having 43 (4.51%) publications is on IInd position followed by Dr. (Mrs.) V.N. Laturkar, School of Commerce & Management having 40 (4.20%) research contributions is on IIIrd position. Further Dr. (Mrs.) V.N. Patil, School of educational Sciences and Dr. D. M. Shinde, School of Media studies having 39 (4.09%) and 37 (3.88%) contributions respectively.

1.12 TESTING OF HYPOTHESIS

I. The Chi-square test is administered to test the Hypothesis No. 1 and the analysis of the data depicts that the P-value = 0.044 is less than the assumed value i.e. alpha (α) level = 0.05. Hence, the H₀ is not significant at 0.05 levels of significance and H₁ is significantly valid at 0.05 levels. (Therefore, Null hypothesis (H₀) is rejected & Alternative hypothesis (H₁) is accepted) It is confirmed that Use of Information Technology tools does vary on channels of communication preferred by faculties (H₁). [Table 5.33 and Table 5.33 (a)]

II. The Chi-square test is administered to test the Hypothesis No. 2 and it can be seen that the Level of significance (α) = 0.05, P-Value = 0.422 is greater than the alpha (α) level (=5%). Hence, the H₁ is not significant at 0.05 levels of significance and H₀ is significantly valid at 0.05 levels. (Therefore, Null hypothesis (H₀) is accepted & Alternative hypothesis (H₁) is rejected) It means faculty members are not likely to publish their research work in different forms of publications (H₀). [Table 5.34 and Table 5.34(a)]

III. One-sample test is administered to test the Hypothesis No. 3 and it can be seen that the level of significance (α) = 0.05, P-value = (.000) is less than the alpha value i.e. 0.05%. Hence, the H₀ is not significant at 0.05 levels of significance and H₁ is significantly valid at 0.05 levels. (While, Null hypothesis (H₀) is rejected & Alternative hypothesis (H₁) is accepted) It is confirmed that Female
faculty members produce good number of research outputs than male faculties (H₁). It means that there is no significance difference observed in gender wise research productivity of faculties. [Table 5.35 and Table 5.35 (a)]

IV. One-sample test is administered to test the Hypothesis No. 4 and it can be seen that the level of significance (α) = 0.05, P-value = (.000) is less than the alpha value i.e. 0.05%. Hence, the H₀ is not significant at 0.05 levels of significance and H₁ is significantly valid at 0.05 levels. (Therefore, Null hypothesis (H₀) is rejected & Alternative hypothesis (H₁) is accepted) It is confirmed that Single authorship is predominant on multi-authorship (H₁). [Table 5.36; Table 5.36(a) and Table 5.36(b)]

V. The Chi-square test is administered to test the Hypothesis No. 5 and it can be seen that the Level of significance (α) = 0.05, P-Value = 0.207 is greater than the alpha (α) level (=5%). Hence, the H₁ is not significant at 0.05 levels of significance and H₀ is significantly valid at 0.05 levels. (Therefore, Null hypothesis (H₀) is accepted & Alternative hypothesis (H₁) is rejected). It means that a motivational factor does not vary on type of family member. [Table 5.37 and Table 5.37 (a)]

1.13 CONSPECTUS

The characterizaiton of the thesis is given below:

Chapter 1: Introduction
The chapter highlighted Introduction, Definitional analysis, statement of the problem, conceptual analysis, Objectives of the present study, Hypothesis, Scope & Limitation, Research Methodology, Data analysis & interpretation, major findings and conclusions.

Chapter 2: Review of Related Literature
This chapter deals with the relevant Review of literature based on past literature. The relevant data for the present chapter was collected from various sources like- books, journal articles, online encyclopedias, online dictionaries, Theses & dissertations, online sources, websites, etc. using ETDs, E-databases, Various consortium based databases, Emerald, Springer, E-Repositories such as DOAR, E-Directories such as DOAJ and Open access full-text articles.
Chapter 3: Bibliometric study: An Overview
This chapter deals with an overview to bibliometrics, it further elaborates definitional analysis of bibliometrics, it’s scope, empirical laws of bibliometrics and different Bibliometrics indicators/Techniques.

Chapter 4: School wise Faculty Profile
In this chapter School wise faculty profile has been analyzed, wherein detailed information about Schools, establishment year, intake capacity for each course, faculty members and their research & extension activities was also highlighted.

Chapter 5: Data analysis and interpretation
In the present chapter the collected data of the faculties taken under study during 2009 to 2014 was analyzed by using various parameters. While, the data was entered and analyzed by using the Statistical Package for Social Sciences (SPSS Inc) Version 16 as well as in MS-Excel 2007. Further the analyzed data was presented in the form of tables, figures and graphs using Pie charts, Bar charts, line charts etc. as per the parameters.

Chapter 6: Findings, Conclusions & Implications
This chapter deals with major findings based on the analysis and interpretations based on the objectives and hypothesis of the study. Further this chapter summarized overall conclusions, implications and areas for further studies have been discussed in this unit.

Bibliography & Appendices
The thesis ends with the list of bibliographical references and appendices.

1.14 CONCLUSIONS
It reveals from the present study that the growth rate was not steady through the period of study. All the schools though cannot be expected to display uniformity in growth aspects should have continuity in maintaining the research productivity. The results of individual schools show that some schools are not regular in producing a positive growth and some remain without any productivity in between years. It is also found that the performance of School of Fine & Performing Arts is nil. Major research output is shown in the School of Commerce & Management Sciences.

This chapter will be followed by Chapter No. 2: Review of Literature.