

AN ANALYTICAL STUDY OF RESEARCH EXCELLENCE OF CENTRAL UNIVERSITIES OF INDIA IN PSYCHOLOGY

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Abstract This study highlights the bibliometric analysis of research productivity of Central Universities of India in Psychology during 1961 to 2015. The Web of Science and Scopus database has been used to gather the necessary data for the study. The data was also gathered through the structured questionnaires distributed to the faculty members and research scholars. It is found that total 3309 publications have been published by the faculty members and research scholars of the Central Universities in India during the period 1961-2015. Delhi University (DU) has contributed 19.03% publications, is placed on top of the universities under study. Maximum number of 1114 (33.66%) documents are published during 2001-2010. 'Research Articles' were found the most used document type with 1702(51.43%) documents; followed by 'Conference papers' with 954 (28.83%) documents. The journals namely 'Psychology and Developing Societies' gets the highest number of documents published with 321 titles in its share stand on top with rank 1 among the journals. Respondents have contributed maximum number of 457 publications in the subject 'Social Psychology', Degree of collaboration of the study is 0.34.

Keyword: Bibliometric Study, Research Productivity, Research Outputs

INTRODUCTION

The generation and transmission of knowledge through research has long been recognized as an essential requirement for a country's long-term growth and competitiveness as well as for creating capacity to solve social problems. The quality and number of published research articles are regarded as a measure of success of individual scientists, researchers, academic institutes and the scientific establishment in general. Scientists and researchers, therefore, publish results of their work in the form of research articles in prestigious journals. In qualitative terms, accessibility and availability of print and e-resources impact quality of teaching and research, publications, etc. In quantitative terms, the research output of an institute can be measured in terms of the number of research articles published in high-impact journals, citations received by them, number of patents, number and amount of research grants and consultancies, number of research reports, number of honors and awards to faculty and researchers, number of research students and their placements, etc. Quantitative data for all the parameters mentioned above are difficult to get; however, the number of publications and citations received can be obtained and put to use most effectively to measure research output of an institute, which, in turn, reflects the impact of resources available to individuals, researchers and the institutes at large.

Publication productivity is the measure of the relationship between the output of research and inputs. Evaluating the productivity of an institutional research and development activities highlights the contribution of the institution and the individual scientists engaged in research. It also provides some insights into the complex dynamics of research activity and enables policy makers and administrators to provide adequate facilities and gauge the research activities in a proper direction. Over the years, scientometric and bibliometric techniques have become tools to evaluate the productivity of research institutes and individual researcher, as well as to map the growth of the research area.

The research output of universities in India, in terms of research articles, number of books published by them, has increased substantially in the past few years essentially because of increased access to scholarly content made possible through consortia initiatives such as UGC-INFONET Digital Library Consortium. Analysis of research output has been elaborated in this paper.

The data of the research output was collected through the structured questionnaire from the faculty members and research scholars from the Central universities under study. The complete information on the research output has not been received from the faculty members and research scholars. So in order to complete the information, data was collected from

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the website of respective university website. The international multidisciplinary bibliographical database Web of Science and Scopus has been used to gather the necessary data for the study. The detailed analysis of research performance of the faculty members and research scholars in psychology in central universities of India is collected, recorded, analysed and interpreted. The study attempt to examines the Year-wise establishment of psychology department in the Central Universities of India, University-wise research output of faculty members and research scholars, Year-wise/decade-wise distribution of psychology literature, Distribution of research output in term of publication type, Identification of core publications, Subject-wise distribution of the research output by the faculty members and research scholars, Degree of Collaboration, Distribution of the type of research preference of the respondents, Distribution of the preferred mode of research, Country-wise distribution of publications, etc. The first department of psychology was established in 1961 at Allahabad University, so publication collected from the year 1961 to 2015 has been analysed.

Research output of the faculty and researchers in psychology in the central universities have been measured and also the changes in research scenario in recent times in India have been tracked, so that all are informed and research facilities can be enhanced. The growth, contribution and impact of research carried out by the faculty and researchers in psychology in the central universities under the study have also been analysed.

DATA ANALYSIS AND DISCUSSION

The data was recorded, analysed and interpreted as follows:

Establishment of Psychology department in the Central Universities of India

Table 1 shows the year-wise establishment of Psychology department in the Central Universities of India in chronological order.

Table 1: Year-wise Establishment of Psychology Department in Central Universities

S. No.	Name of the Central University/Abbreviation	Year of establishment
1.	Allahabad University, Allahabad (AU)	1961
2.	Banaras Hindu University, Varanasi (BHU)	1962
3.	Dr. Hari Singh Gour University, Sagar (HSGU)	1963
4.	Aligarh Muslim University, Aligarh (AMU)	1964
5.	University of Delhi, New Delhi (DU)	1964
6.	Hemwati Nandan Bahuguna Garhwal University, Garhwal (HNBGU)	1978
7.	Mizoram University, Aizawl (MU)	1983
8.	Jamia Millia Islamia, New Delhi (JMI)	1986
9.	Central University of Jammu, Jammu (CUJ)	2001
10.	Indira Gandhi National Open University, New Delhi (IGNOU)	2007
11.	Pondicherry University, Pondicherry (PUP)	2007
12.	University of Hyderabad, Hyderabad (UHH)	2007
13.	Central University of Karnataka, Gulbarga (CUK)	2009
14.	Sikkim University, Gangtok (SUG)	2009
15.	Central University of Himachal Pradesh, Dharamsala (CUHP)	2010
16.	Central University of Kerala, Kasaragod (CUK)	2011
17.	Indira Gandhi National Tribal University, Amarkantak (IGNTU)	2011
18.	Tripura University, Agartala (TUA)	2011
19.	Central University of Bihar, Patna (CUB)	2012
20.	Nagaland University, Lumami (NUL)	2012
21.	Central University of Haryana, Mahendragarh (CUH)	2013

It has been observed that some of the universities initially were the state universities later on converted to Central universities and some universities established as central universities. Out of 43 central universities in India only 21

central universities are having the Department of Psychology are mentioned here. It is found that among the Central universities 1st Psychology Department was established in Allahabad University in the year 1961; followed by the

Banaras Hindu University, Varanasi (BHU) in 1962, Dr. Hari Singh Gour University, Sagar (HSGU) in 1963; followed by other universities as indicated in the following table. Central University of Haryana, Mahendragarh (CUH) found as a youngest university where the Psychology Department was established in the year 2013.

University-wise Research Output of Faculty Members and Research Scholars

Table 2 depicts a picture of overall publications produced by the faculty members and research scholars of department of Central Universities from 1961 to 2015.

Table 2: University-wise Research Output of Faculty Members and Research Scholars

S.No.	Name of the Central University	Number of publications	% age
1.	University of Delhi, New Delhi (DU)	630	19.03
2.	Aligarh Muslim University, Aligarh (AMU)	575	17.37
3.	Jamia Millia Islamia, New Delhi (JMI)	560	16.92
4.	Banaras Hindu University, Varanasi (BHU)	480	14.50
5.	Allahabad University, Allahabad (AU)	232	7.01
6.	Hemwati Nandan Bahuguna Garhwal University, Garhwal (HNBGU)	130	3.92
7.	Dr. Hari Singh Gour University, Sagar (HSGU)	116	3.50
8.	University of Hyderabad, Hyderabad (UHH)	110	3.32
9.	Pondicherry University, Pondicherry (PUP)	78	2.35
10.	Mizoram University, Aizawl(MU)	75	2.26
11.	Sikkim University, Gangtok(SUG)	65	1.96
12.	Indira Gandhi National Tribal University, Amarkantak(IGNTU)	51	1.54
13.	Central University of Himachal Pradesh, Dharamsala (CUHP)	36	1.08
14.	Indira Gandhi National Open University, New Delhi (IGNOU)	34	1.02
15.	Central University of Jammu, Jammu (CUJ)	34	1.02
16.	Nagaland University, Lumami (NUL)	26	0.78
17.	Central University of Karnataka, Gulbarga (CUK)	23	0.69
18.	Central University of Haryana, Mahendragarh (CUH)	15	0.45
19.	Tripura University, Agartala (TUA)	15	0.45
20.	Central University of Bihar, Patna (CUB)	13	0.39
21.	Central University of Kerala, Kasaragod (CUK)	11	0.33
Total		3309	

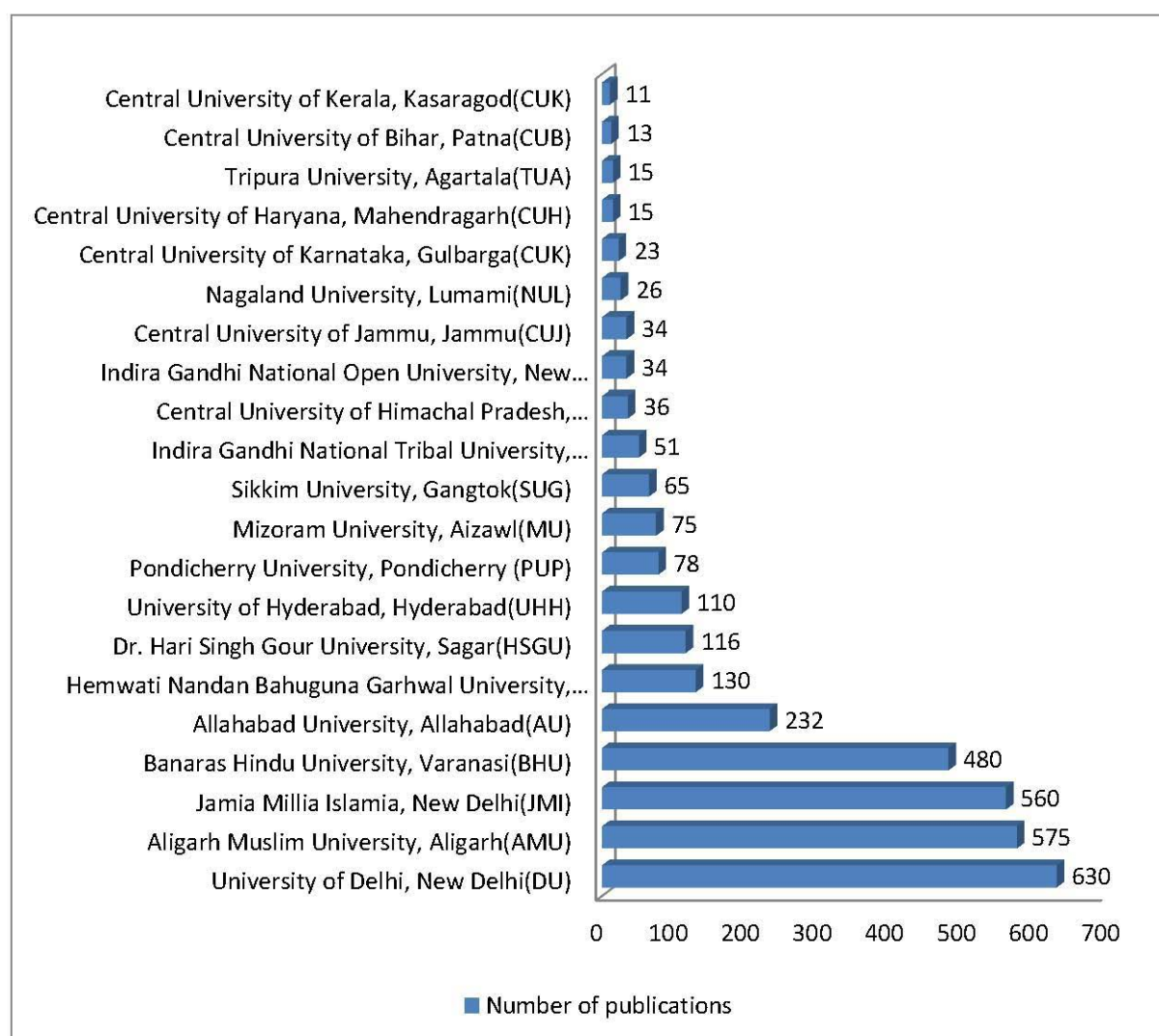


Fig. 1: University-wise Research Output of Faculty Members and Research Scholars

Table 2 and fig. 1 shows the university-wise performance of central universities in relation to their contribution in psychology research during the period 1961-2015. Total 3309 publications have been published by the faculty members and research scholars under study. It is found that DU has contributed 19.03% publications, is placed on top. The share of AMU comes to 17.37 per cent of the total research output of Indian universities during the period of study. It is placed second in order. The Faculty in JMI contributed 16.92 per cent of the literature of the total psychology research output and is placed third. BHU, AU, and HNBGU occupied the next three positions contributing 14.50 per cent, 7.01 per cent and 3.92 per cent, respectively. The other ranked universities are HSGU 3.50 per cent, UHH 3.32 per cent, PUP 2.35 per cent, and MU 2.26 per cent respectively. From the above analysis, it can also be deduced that SUG shares 1.96 per cent, IGNTU 1.56 per cent of total psychology

research output over the period of study. The share of CUHP is 1.08 per cent while IGNOU and CUJ got only 1.02 per cent each. The contribution of remaining three universities namely NUL, CUK, CUH, TUA, CUB and CUK was less than one per cent of total research output.

A lot of variation is found in the research output of the universities under study due to difference in the year of establishment of central universities. Out of 21 universities under study, it is found that seven central universities are established in last five years.

Distribution of Psychology Literature

Year-wise Distribution of Psychology Literature

Table - 3(a) depicts the year-wise distribution of total research output by the faculty members and research scholars in psychology at central universities in India.

Table 3(a): Year-wise Distribution of Psychology Literature

S. No.	Year	Number of Publications	% age
1.	2015	245	7.40
2.	2014	280	8.46
3.	2013	144	4.35
4.	2012	136	4.11
5.	2011	194	5.86
6.	2010	118	3.56
7.	2009	143	4.32
8.	2008	173	5.22
9.	2007	99	2.99
10.	2006	111	3.35
11.	2005	88	2.65
12.	2004	98	2.96
13.	2003	104	3.14
14.	2002	94	2.84
15.	2001	86	2.59
16.	2000	113	3.41
17.	1999	79	2.38
18.	1998	66	1.99
19.	1997	57	1.72
20.	1996	61	1.84
21.	1995	42	1.26
22.	1994	64	1.93
23.	1993	48	1.45
24.	1992	35	1.05
25.	1991	64	1.93
26.	1990	31	0.93
27.	1989	34	1.02
28.	1988	18	0.54
29.	1987	26	0.78
30.	1986	19	0.57
31.	1985	29	0.87
32.	1984	35	1.05
33.	1983	23	0.69
34.	1982	25	0.75
35.	1981	20	0.60
36.	1980	12	0.36
37.	1979	23	0.69
38.	1978	14	0.42
39.	1977	16	0.48
40.	1976	14	0.42
41.	1975	16	0.48
42.	1974	12	0.36

Contd.

43.	1973	14	0.42
44.	1972	14	0.42
45.	1971	17	0.51
46.	1970	14	0.42
47.	1969	18	0.54
48.	1968	14	0.42
49.	1967	20	0.60
50.	1966	11	0.33
51.	1965	17	0.51
52.	1964	17	0.51
53.	1963	18	0.54
54.	1962	15	0.45
55.	1961	11	0.33
Total		3309	

The above table illustrates the yearly allocation of publications of 3309 publications of central universities under study. It has been observed that the most productive year in the term of publication count is 2014 with highest number of 280 publications with 8.46 per cent of total publications; followed by 2015(7.40%); 2011(5.56%); 2008(5.22%); 2013(4.35%) respectively. Increasing trend has been observed in the terms of number of publication count of central universities under study. It has been found that the output of central universities has grown steadily during the period of study from 11 in 1961 to 280 in 2014. However, there was a sudden increase in the output in the years 2003, 2000 and 2011 producing 104, 113 and 194 records, respectively while a decreasing trend was observed in the years 2002, 2004, 2005 and 2007.

Decade-wise Distribution of Publications

Table 3(b) and fig. 2 depicts the decade-wise distribution of total research output by the faculty members and research scholars in psychology at central universities in India.

Table 3(b): Decade-wise Distribution of Publications

S. No	Year	No. of Publications	%age
1.	1961-1970	155	4.68
2.	1971-1980	152	4.59
3.	1981-1990	260	7.85
4.	1991-2000	629	19.00
5.	2001-2010	1114	33.66
6.	2011-2015	999	30.19
Total		3309	

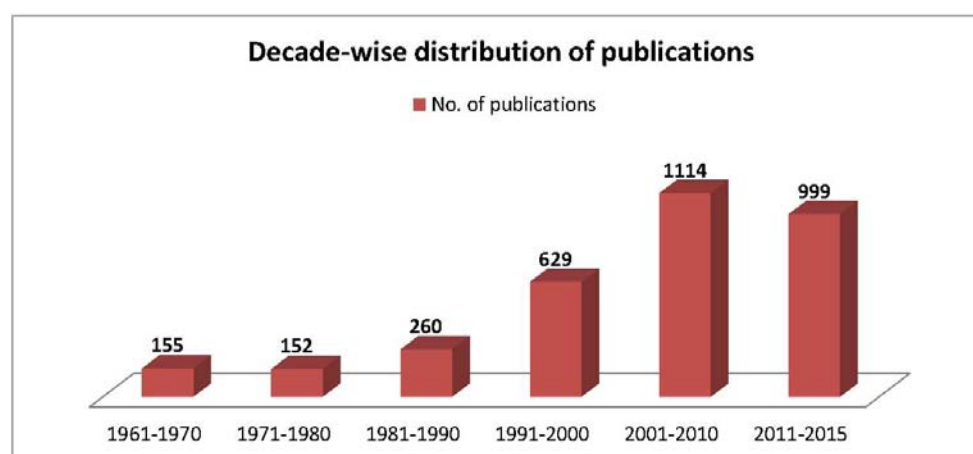


Fig. 2: Decade-wise Distributions of Publications

It has been revealed from the above table that out of total 3309 publications, maximum number of 1114 (33.66%) documents are published during 2001-2010; followed by 999 (30.19%) publications from 2011-2015; 629 (19%) publications during 1991-2000. The lowest number, 152 (4.59%) documents are published during the 1971-1980. There is continuous growth of publications of the central universities, the number of publications have increased consistently from year 1961 to the year 2015.

Chapters' with 120 (3.62%) documents, 'Review' with 99 (2.99%) documents. The least used document type was found as 'Editorial' with 34 (1.02%) documents only. It means the faculty and researcher scholars of the psychology of the central universities under study are mostly publishing their research work as 'Journal article', 'conference papers', 'books' and 'book chapter'.

Table 4: Document type Distribution

S. No.	Document Type	No. of Publications	% age
1.	Articles	1702	51.43
2.	Conference Papers	954	28.83
3.	Books	400	12.08
4.	Book Chapters	120	3.62
5.	Review	99	2.99
6.	Editorial	34	1.02
Total		3309	

Distribution of Research Output in Term of Publication Type

Table - 4 and fig. 3 demonstrates the distribution of publication in terms of documents types. The 'Articles' were found the most used document type with 1702 (51.43%) documents; followed by 'Conference papers' with 954 (28.83%) documents, 'Books' with 400 (12.08%), 'Book

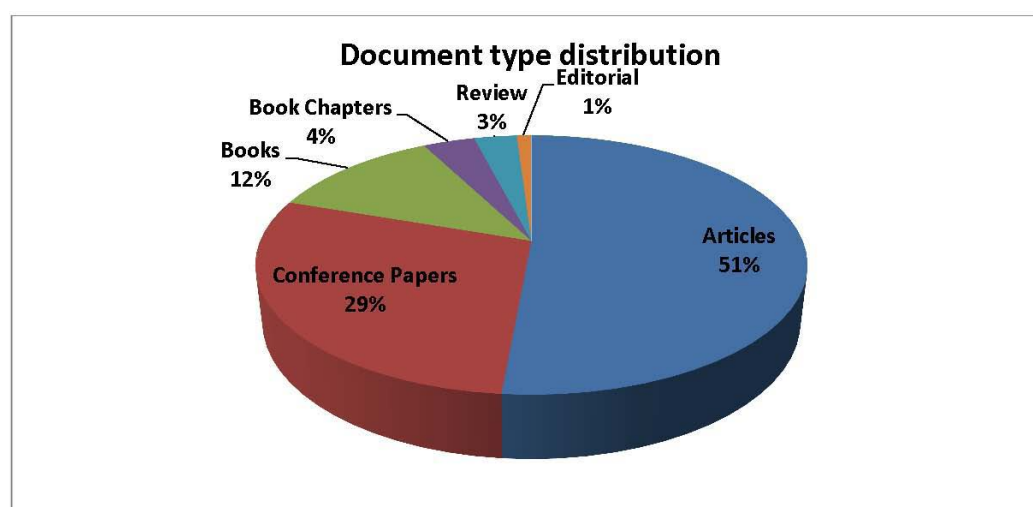


Fig. 3: Document Type Distribution

Identification of Core Publications

where the faculty and researchers of psychology of the central universities published their work.

Table 6.5 and figure 6.4 presents a list of top 25 ranking Source journals titles with their total no. of publications

Table 5: Top 25 Source Titles in Terms of Number of Publications

S. No.	Source Title	Number of Publications	Rank
1.	Psychology and Developing Societies	321	1
2.	Indian Journal of Psychology	146	2
3.	Journal of Cross-cultural Psychology	110	3
4.	Psychological Bulletin	101	4
5.	British Journal of Clinical Psychology	91	5
6.	Social Science and Medicine	82	6
7.	Journal of Environmental Psychology	82	6
8.	Journal of Social Psychology	82	6
9.	Psychological Studies	82	6
10.	Journal of Psychiatric Research	75	7
11.	International Journal of Psychology	74	8
12.	Culture and Psychology	73	9
13.	Indian Journal of Psychological Medicine	65	10
14.	Journal of Human Values	64	11
15.	Journal of Cross Cultural Psychology	64	11
16.	Physiology and Behavior	64	11
17.	Journal of Clinical Psychology	63	12
18.	International Journal of Behavioral Development	63	12
19.	Journal of General Psychology	62	13
20.	Journal of Experimental Child Psychology	62	13
21.	Psychological Reports	58	14
22.	Integrative Psychological and Behavioral Science	54	15
23.	British Journal of Social Psychology	54	15
24.	Journal of Economic Psychology	53	16
25.	Journal of Creative Behavior	53	16
26.	American Psychologist	53	16
27.	Asian Journal of Social Psychology	51	17
28.	British Journal of Psychology	50	18
29.	Psychology Health and Medicine	43	19
30.	European Journal of Personality	41	20
31.	Technological Forecasting and Social Change	34	21
32.	American Behavioral Scientist	34	21
33.	Developmental Psychology	32	22
34.	Quarterly Journal of Experimental Psychology	31	23
35.	Current Research in Social Psychology	26	24
36.	Journal of Applied Developmental Psychology	23	25

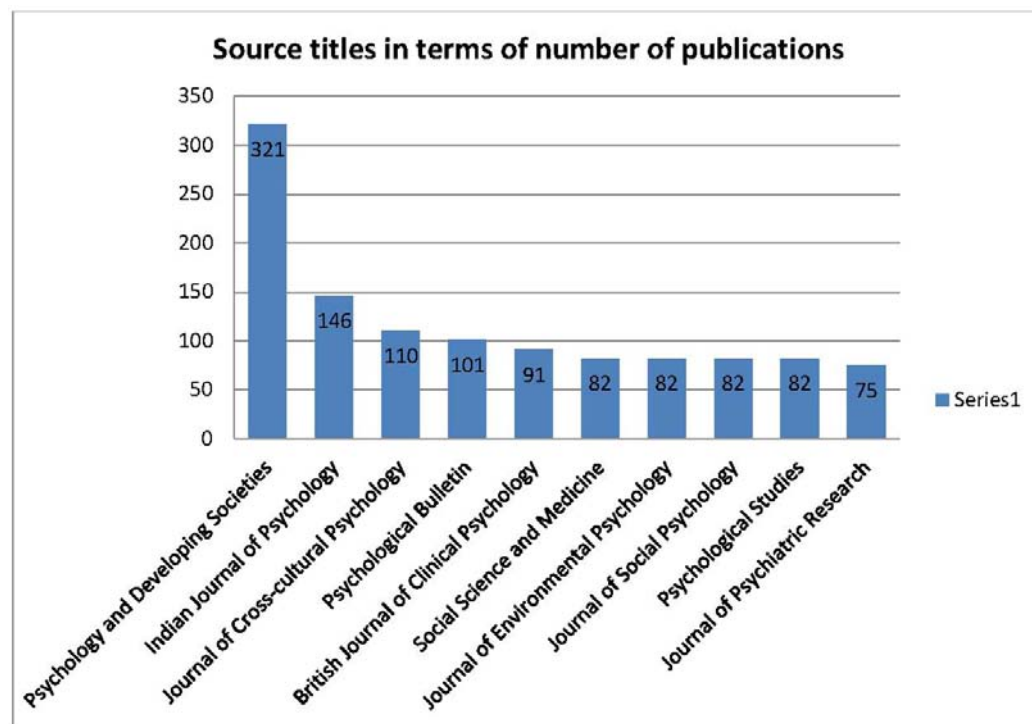


Fig. 4: Source Titles in Terms of Number of Publications

The above list shows the source title up to 25 ranks which are proved in this study. It is found that the 'Psychology and Developing Societies' gets the highest number of documents published with 321 titles in its share stand on top with rank 1; followed 'Indian Journal of Psychology' with 146 titles in its envelop gets at rank 2; followed by the 'International Journal of Applied Psychoanalytic Studies' with 110 titles, 'Psychological Bulletin' with 101 titles stand at 3rd and 4th position respectively on the above list. Other source title gets less than 100 titles comes from 5th to 25th rank and so on.

Thus it can be observed that the two Indian journals entitled, 'Psychology and Developing Societies: A Journal' and 'Indian Journal of Psychology' are the most favoured journals used by the faculty members and Research Scholars publish their research articles. In foreign journals 'Journal of

Cross-cultural Psychology' and 'Psychological Bulletin' are being preferred by the faculty members for the publication of their research articles. The result shows that the researchers of psychology in central universities of India opt for international sources also to get international recognition, international standard, and international collaboration.

Subject-wise Distribution of the Research Output by the Faculty Members and Research Scholars

Table - 6 and fig. 5 presents top 25 ranking with regards to Subjects distribution of the research output by the faculty members and research scholars.

Table 6: Subject-wise Distribution of the Research Output

S. No.	Subject	No. of publications	% age
1.	Social Psychology	457	1
2.	Social processes and issues	325	2
3.	Human Experimental Psychology	241	3
4.	Developmental Psychology	211	4
5.	Adaptive Behavior	195	5
6.	Applied Social Psychology	112	6

Contd.

S. No.	Subject	No. of publications	% age
7.	Clinical Psychology	103	7
8.	Consulting Psychology	98	8
9.	Educational Psychology	87	9
10.	Ecological Psychology	85	10
11.	Evolution and Human Behavior	83	11
12.	Health Psychology	79	12
13.	Industrial and Organizational Psychology	77	13
14.	Applied Behavior Analysis	74	14
15.	Applied Social Psychology	65	15
16.	Community and Applied Social Psychology	65	15
17.	Advanced techniques in psychology	61	16
18.	Personality and Social Psychology	60	17
19.	Professional Psychology	56	18
20.	Psychology of Addictive Behaviors	54	19
21.	Psychological Medicine	49	20
22.	Philosophy and Psychology	34	21
23.	Personality and Women studies	25	22
24.	Industrial Psychology	21	23
25.	Psycho-linguistics	21	23
26.	Gender Issues	20	24
27.	Mind and Behavior	15	25

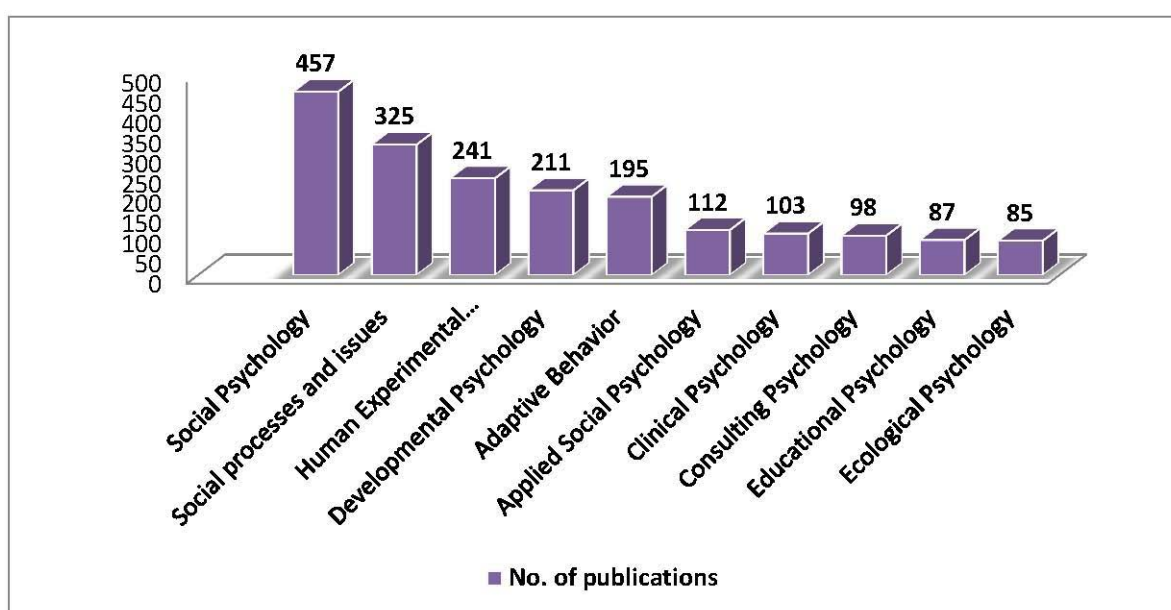


Fig. 5: Subject-wise Distribution of the Research Output

The bibliographical analysis of research output of the faculty members and Research Scholars identifies that the respondents have contributed 457 publications in the subject 'Social Psychology' is placed on top. The faculty members and researchers of the universities in contributed

325 publications of the total psychology research output in 'Social processes and issues' is placed at second. The share of 'Human Experimental Psychology' comes to 241 out of the total research output of Indian universities during the period of study. It is placed third in order. Other subjects get

less number of publications comes in the order from 4th to 25th. Less number of faculty members and research scholars are publishing in 'Mind and Behavior' comes at the last in the list of top 25 subjects.

Thus, core subject areas of research in psychology are found as 'Social Psychology', 'Social processes and issues', and 'Human Experimental Psychology' placed on top.

Degree of Collaboration

Degree of collaboration is an examination of the prominent area of inquiry in bibliometrics, which is shown in table 6.7. for the central universities under study for the period of 1961-2015.

Table 7: Degree of Collaboration

Year	Single authored publications(N_S)	Multiple authored publications(N_M)	N_M+N_S	Degree of Collaboration(DC)
2006	144	101	245	0.41
2007	168	112	280	0.40
2008	80	64	144	0.44
2009	103	33	136	0.24
2010	154	40	194	0.20
2011	84	34	118	0.28
2012	93	50	143	0.34
2013	104	69	173	0.39
2014	67	32	99	0.32
2015	66	45	111	0.40
Total	1063	580	1643	0.34

It is found from the table that the average degree of collaboration is 0.34 which is the not a high degree of collaborative research. The formula given by K. Subramanyam is useful for determining the degree of collaboration in quantitative terms. The extent of collaboration in research can be measured with the help of the formula:

$$DC = \frac{N_M}{N_M + N_S}$$

Where, DC = Degree of Collaboration
 N_M = Number of multiple authors
 N_S = Number of single authors

Distribution of the Type of Research Preference of the Respondents

Table - 8 and figure - 6 shows the distribution of the type of research preference of the faculty and research scholars in psychology at central universities under the study.

Table 8: Distribution of the Type of Research Preference of the Respondents

S. No.	Type of research preference of the respondents	Responses	% age
1.	In-depth specialization	91	41.3
2.	Interdisciplinary research	66	30.0
3.	Multidisciplinary research	63	28.6
	Total	220	100

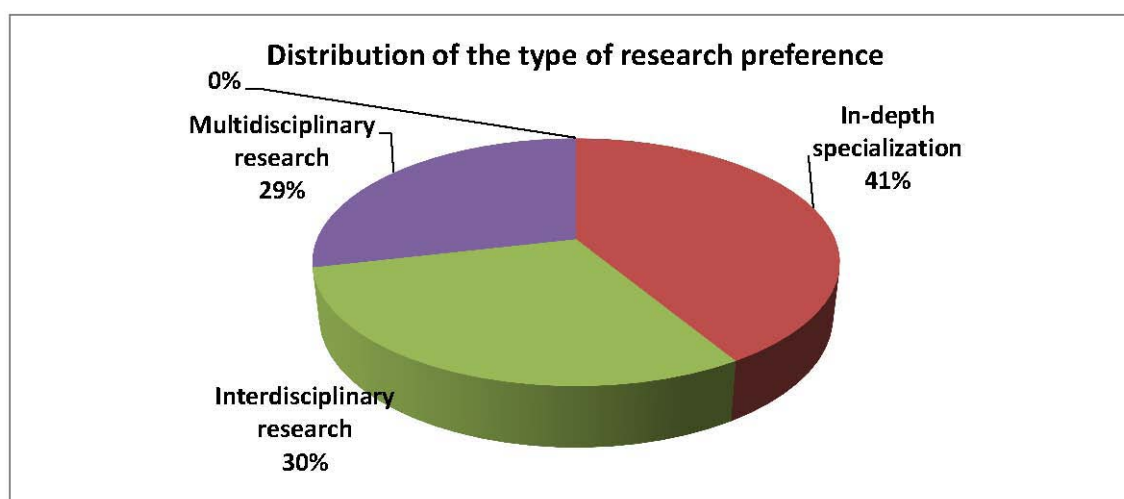


Fig. 6: Distribution of the Type of Research Preference of the Respondents

It has been revealed from the above table and figure that the maximum rate of response of 41.3% is in favour of 'In-depth specialization'; followed by the 'Interdisciplinary research' with 30%. The lowest rate of response of 28.6% is in favour of 'Multidisciplinary research'. Thus, 'In-depth subject specialization' is the most preferred form of

research as compared to 'Interdisciplinary research' and 'Multidisciplinary research'.

Distribution of the Preferred Mode of Research

Table - 9 depicts the distribution of the preferred mode of research by the faculty and research scholars.

Table 9: Distribution of the Preferred Mode of Research

S. No.	Mode of research	Responses	% age
1.	Solo research	135	61.3
2.	Team research	85	38.6
	Total	220	100

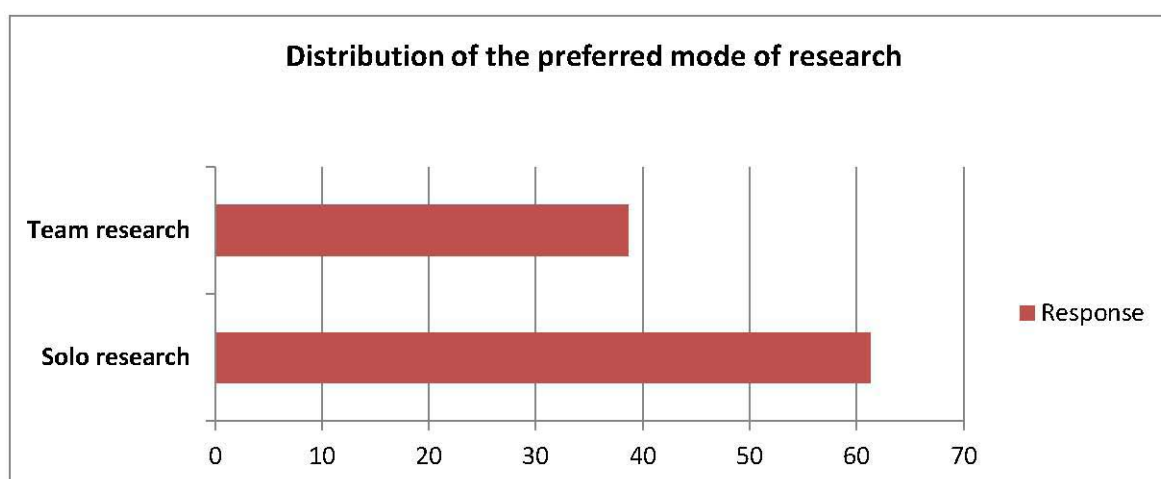


Fig. 7: Distribution of the Preferred Mode of Research

The above table shows that the maximum rate of response of 61.3% is in favour of 'Solo research', followed by the 'Team research' with 38.6% response. Thus, it can be observed that 'Solo Research' is the most preferred mode of research as compared to 'Team Research' by the faculty and research scholars in psychology at central universities under the study.

Country-wise Distribution of Publications

Distribution of research output by geographical regions illustrates in the table 10, it shows the collaboration of other countries with the faculty and research scholars in psychology at central universities under the study.

Table 10: Geographical Distribution of Top 25 Collaborated Countries

S. No.	Country	No. of Publications	Rank
1.	United States	765	1
2.	United Kingdom	653	2
3.	Switzerland	232	3
4.	China	201	4
5.	Germany	110	5
6.	Canada	87	6
7.	Brazil	58	7
8.	Italy	45	8
9.	Austria	26	9
10.	Pakistan	24	10
11.	Netherlands	23	11
12.	New Zealand	21	12
13.	Turkey	17	13
14.	Thailand	16	14

15.	Belgium	16	14
16.	Malaysia	16	14
17.	Australia	15	15
18.	South Korea	15	15
19.	Japan	11	16
20.	Czech Republic	11	16
21.	Portugal	10	17
22.	Hungary	9	18
23.	Poland	8	19
24.	Israel	5	20
25.	Russian Federation	5	20
26.	South Africa	5	20
27.	Taiwan	5	20
28.	Spain	4	21
29.	Finland	4	21
30.	France	4	21
31.	Georgia	4	21
32.	Egypt	4	21
33.	Indonesia	4	21
34.	Iran	3	22
35.	Ireland	3	22
36.	Saudi Arabia	3	22
37.	Nepal	3	22
38.	Sri Lanka	3	22
39.	Ukraine	3	22
40.	Greece	3	23
41.	Mexico	3	23
42.	Colombia	2	24
43.	Zimbabwe	1	25
44.	Singapore	1	25

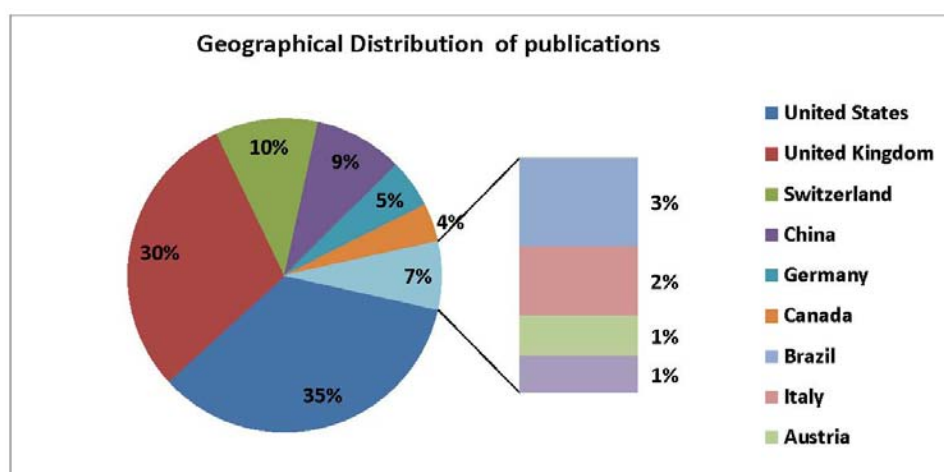


Fig. 8: Country-wise Distribution of Publications

It can be observed from above table and figure that, on the whole 3309 contributors belonging to the central universities, the collaborative contributors are from United States with 765 publications; followed by 653 publications with United Kingdom and Switzerland 232 publications stands on 1st, 2nd and 3rd position respectively. The minimum number of publications was collaborated with Zimbabwe and Singapore with 1 publication stands at 25th position on the above list.

CONCLUSION

The popularity in the use of bibliometric techniques in various disciplines stimulated stupendous growth of literature on bibliometric and its related areas. The above study has elucidated the variety of bibliometric measures which can be useful for understanding various aspects. Aim of this study was to measure and track the changes in research scenario in recent times in India, so that all are informed and research facilities can be enhanced.

The present study is a bibliometric assessment of scientific research output of Central Universities in India in Psychology during the 1961 to 2015. The study analyse the growth, contribution and impact of research carried out by the faculty members and researchers of the Central Universities. It also attempts to analyze the growth and development of research activity of these universities as reflected in publications output. As the research outputs of the faculty members and researchers is dependent on the use of information is linked with availability of the sources of information,

there is a need to make the information available either on demand or in anticipation of the users need. The availability of information may be augmented by providing Internet, Computerized, On-line access facilities to the users. This may held in improving the quality of research output.

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