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Research Productivity in a Management Institute: An Analysis of Research Performance of Indian Institute of Management Ahmedabad during 1999-2010

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ABSTRACT

Indian Institute of Management Ahmedabad (IIMA) is one of the oldest institutes of management and generally accepted as one of the leading business schools in India. Established in 1961, IIMA is frequented by the industry, local and global, to recruit its future leaders. An inherently academic institution of excellence, IIMA has unfortunately not been known for traditional research output in the form of papers in journals, as is the case with many international research institutions. It is in this context that the present study aims to review the research performance of IIMA based on the papers published in journals that have been indexed in *Web of Science* and *Scopus* for the past twelve years. The authors attempt to identify the trends in research output over the period 1999 to 2010 that includes types of publications, most preferred journals, most prolific authors from IIMA, authorship pattern, and the journals most cited by the researchers from IIMA. The findings throw interesting facts like increase in number of papers being published by IIMA over the years 1999 to 2010, increase in collaborations among authors, decrease in single author publications and multi disciplinary nature of research undertaken at the Institute.

Keywords: Bibliometric analysis, management research, citation analysis, research productivity

1. INTRODUCTION

The Indian Institute of Management Ahmedabad (IIMA), was established as an autonomous institution in 1961 by the Government of India in collaboration with the local government and industry. The initial knowledge partner in this project was the Harvard Business School, USA. Established as a teaching institution, the Institute offers a two-year Post Graduate Programme in Management (PGP) in addition to various other programmes like the Post Graduate Programme in Agri-Business Management (PGP-ABM), Post Graduate Programme in Management for Executives (PGPX), Armed Forced Programme (AFP), Faculty Development Programme (FDP), short term Management Development Programmes (MDP) and Fellow Programme in Management (FPM). While the PGP is equivalent to an MBA, the FPM is doctoral programme in management. Like the other programmes at the Institute, the doctoral programme is also very well recognised in the corporate and academic sector with all its doctoral students bagging excellent offers much before they complete their degree requirements. The IIMA is one of the few b-schools in India that is accredited by the EQUIS (European QUality Improvement System). The Institute FTE (Full Time Equivalent) student population is about one thousand that includes about 96 faculty members. The Institute has tie-ups with more than 50 institutions from outside the country for student and faculty exchange programmes.

In addition to teaching programmes, research and publishing has been one of the important activities at the Institute and much of the publications from the Institute have been in the form of papers in journals, books, book chapters, newspaper articles, reviews, conference papers, working papers and cases. However global institutional ranking sources like webometrics, Times QS, US News & World Report, and so on consider research performance as one of the major indicators for finalising the ranking positions and include mainly papers published in journals as the research output[1]. The *Economist* and *Financial Times* also rank b-school programmes and consider research output in the form of papers published in journals as an important basis for the ranking that they develop. One of the problems with these

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research indicators are that they hardly consider Indian journals thereby putting Indian institutions to a disadvantage. A recent report of a study that assesses Indian management research by Kumar & Puranam[2] reflected poor output in terms of papers published from India. The assessment study included specifically 40 journals that were considered by the *Financial Times* rankings of b-schools in 2009. The study had identified a total of 76 papers that were published by Indian institutions in these 40 journals during 1990 to 2009. Among the 9 Indian institutions, Indian Institute of Management Ahmedabad (IIMA) was ranked no. 6 with a total of 6 papers in the sample considered in the study. It was argued that this study had limited the scope to include only papers published in these 40 journals only and it would have been more realistic if it included the research output in the form of cases published at these institutes. The response to this argument by the Kumar & Puranam[3] was that cases were not considered research and that this list of 40 journals sufficiently reflected international standing in research.

Whatever are the implications of the debate on the representative nature of the method or sample adopted in the study, it is but a fact that research publications play a very important role in developing credibility and image of an academic institution. A great institution always exploits new knowledge and becomes competitive as against other institutions by investing in knowledge through research and development. It is in this background that the present study was undertaken to explore in detail the research output of researchers at IIMA. The attempt was to extend the work of Kumar and Puranam[3] and review the publications of IIMA. The aim was to include publications of IIMA that were included in international databases that index publications at a global level. This would bring out a more realistic picture of the publication profile of IIMA and in a way report the potential of these papers in being referred to by international researchers.

2. OBJECTIVES OF STUDY

The broad objectives of this study were to:

- Measure the research output in terms of papers published by IIMA during the latest twelve years (1999 to 2010)
- Identify the journals that were most preferred by authors from IIMA
- Identify the most prolific authors from IIMA
- Identify the authorship pattern of the papers published from IIMA during the period
- Identify the journals most cited by the researchers from the institute.

3. LITERATURE REVIEW

The simplest form of bibliometric indicator is the publication count and the indicator that is most frequently used in research evaluation[4]. Moed[5], et al. found that when used properly bibliometric indicators can act as a 'monitoring device' for university research management and science policy. In line with this school of thought, studies have been undertaken to evaluate the research output or publications of an institution and attempted to highlight the research contribution to subjects, identify most productive authors at the institution and so on. Some of the Indian studies that are similar in nature, in terms of studying the publication count and citation as an indicator for research evaluation are reviewed in this section.

To find out the productivity and publication behaviour of the researchers of Tata Institute of Social Science (TISS), Koganuramath[6], *et al.* analysed 663 papers published by the scientists of TISS during 1990-2000 and provided the collaboration pattern, identified prolific authors and core journals that were most preferred for publication by the scientists. The main objective of this study was to provide a bird's eye view of the productivity of TISS scientists and their specialisations.

Kumbar[7] extracted 1518 papers in different disciplines of science and technology during 1996-2006 as seen from the Scopus database and analysed the strong and weak areas University of Mysore research, their growth rate, impact generated in terms of average citations received, the collaboration pattern in different subjects and collaboration pattern with authors from various countries. The study reports that the research publication at the University was growing at an average rate of 23 per cent per annum in terms of the papers published.

A similar study was undertaken by considering the *Science Citation Index* (SCI) instead of Scopus as a tool to extract institution research publications by Singh[8] , *et al.* . The study included 901 papers in various subjects during the period 1993-2001 and it was observed from the study that three subject domains namely mathematics, biology and clinical medicine, although contributing a small number of papers, secured first three ranks in the normalised impact factor.

Garg and Rao[9] examined the publication data of an Indian laboratory in the field of physics that were published in journals covered by SCI and the study also included non SCI journals and Indian patents filed during the period 1965-82. The study aimed to identify the pattern of productivity, sub areas of physics that were more productive and authorship pattern in the research work. The study interestingly reported a positive relationship between manpower expenditure and research publication.

To analyse the research productivity, publication growth, national and international collaboration, etc., of PEC University of Technology, Chandigarh, Vasishta[10] undertook a study with publication data from 1996 to 2009 extracted from Scopus. On analysing the 177 papers, the author finds that though there was a steady growth in research publications there was a need to substantially improve the publication output in comparison to the other engineering institutions. Sharma[11] in his study found that majority of the research publications were an outcome of joint authorship and the degree of collaboration was very high among the scientists. This study included 2603 research papers published by the scientists of Central Potato Research Institute during the period 1991-2007.

4. METHODOLOGY

Among the well known and internationally accepted secondary databases that could be considered as most comprehensive, to assess or review the impact of research in terms of published papers, are Web of Science from Thomson Reuters and Scopus from Elsevier. The impact factor of journals and the citation indices of papers are provided in the Web of Science database. To take a broader view and extend earlier work of Kumar & Puranam[3], it was decided to explore both these databases to study the papers published by IIMA authors.

With the objective of receiving the research output of IIMA over a reasonable time period, it was decided to study the period 1999 to 2010. For this purpose the researchers opted to explore Scopus and Web of Science for IIMA affiliated publications. The study revealed that IIMA as an institutional affiliation yielded 172 hits in Web of Science and 284 hits in Scopus. The results were tabulated in MS Excel and the duplicates (138) were removed from the total of 456 entries. The final list included 318 unique entries for IIMA, from both Web of Science and Scopus during the period 1999 to 2010.

5. DATA ANALYSIS

5.1 IIMA Publications in Web of Science and Scopus

As indicated in Table 1, Scopus included more entries for IIMA as an author affiliated institution, perhaps reflecting higher coverage of journals that published papers by authors affiliated to IIMA. Even the unique content in Scopus was quite high with almost 46 per cent of the total number of unique entries (318) across both the databases.

5.2 Types of Publications Published during 1999-2010

Figure 1 reveals that among the 318 unique publications that were included in Scopus and Web of Science, 234 were articles (papers published in journals) that constituted almost 74 per cent of the total publications during the period of 1999 to 2010. The category of reviews (research reviews) scored the next highest position with 30 numbers constituting a little over 9 per cent of the total publications and conference papers were 24 in number and accounted for nearly 8 per cent of the publications. the others category (9%) included editorials, erratum, letters, meeting abstracts, notes, book reviews, etc.

In the present study, since the main objective was to review the published papers by IIMA, the category of Articles was only considered for further analysis. A study of this category was important as it could very well reflect the research output of IIMA during this period as this category represented 74 per cent of the publication output of the Institute.

5.3 Pattern of Growth in Papers

Figure 2 clearly indicates a steady increase in the number of papers from IIMA during the selected period 1999 to 2010. The distinct increase in number of papers being published was seen in the last two years of the study, i.e., 2009 and 2010. The almost doubling of the percentage of papers published in 1999 to that of 2010, clearly reflects the gradual shift of emphasis to publishing of papers by the IIMA authors. It is interesting to note that in the last six years (2005 to 2010) there has been a major turnaround from a meager 3.42 per cent to an impressive 13.68 per cent of the total publications. It may be worth noting that in the years 2004 and 2005 the percentage of papers published was a dismal 3.42 per cent, the lowest in the 12 years of the study.

Since the category of 'papers' constitute 74 per cent of the total publications of IIMA during this period, it was also found that the same pattern was true for research output of the Institute.

Table 1. Publications of IIMA (institutional affiliation) during 1999-2010

	Web of Science	Total unique publications (%)	Scopus	Total unique publications (%)
Unique entries	34	11	146	46
Duplicates entries	138	43	138	43
Total entries	172	54	284	89
Total unique entries	318 (100 %)			

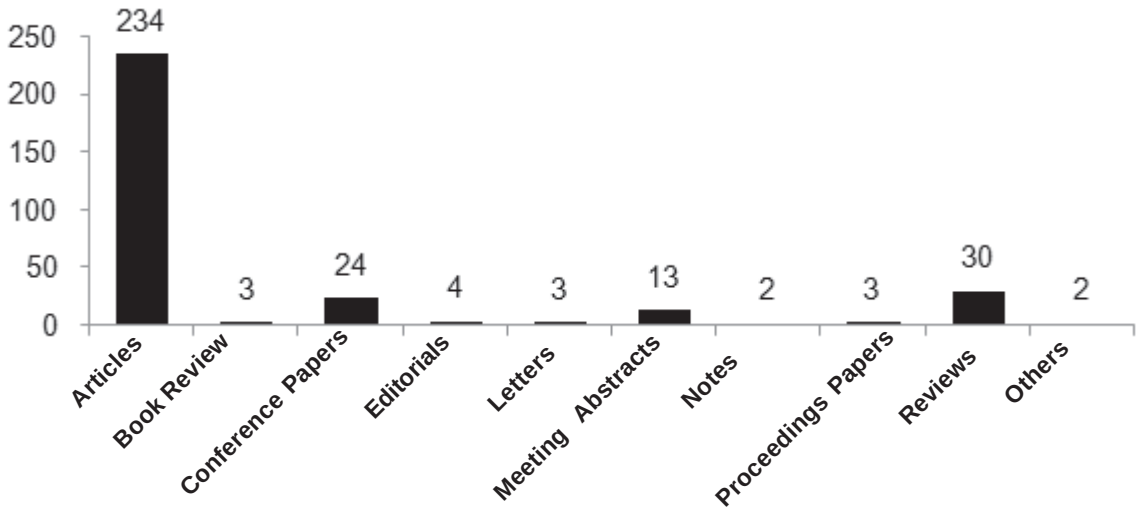

Figure 1. Types of publications.

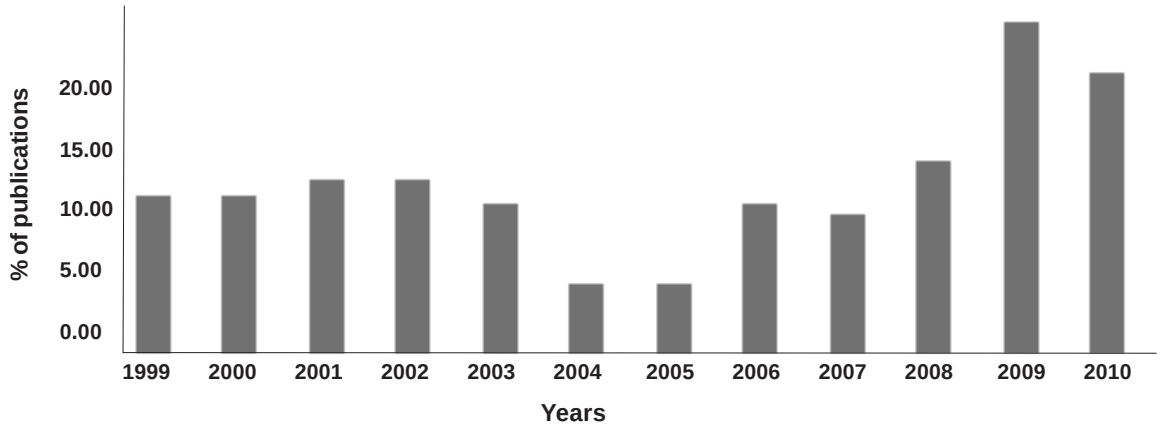

Figure 2. Year-wise growth of papers.

5.4 Author Productivity during 1999-2010

The 234 papers included in this study were contributed by authors, among whom at least one was affiliated to IIMA. In other words, these 234 papers published during 1999 to 2010 were authored by a total of 367 authors and not all of them were from IIMA. To extend the study to identify the productivity of each author from the group of these 367 authors, a ranking of these authors was developed based on the number of papers contributed, as given in Table 2. The results indicated that during the period 1999-2010, the most prolific authors were P. R. Shukla who topped with 21 papers followed by D. Malvankar with 20 papers. S. Lahiri had 14 papers followed by D. Ghosh with 13 papers, A. Garg with 11 papers and T. Bandyopadhyay with 10 papers. Among the authors who had contributed to 4 or more papers B. Goldengorin, G. Sierksma and A. Desai were not affiliated to IIMA. Table 2 indicates that the largest portion of the author population consisted of a group of 279 authors who contributed a single paper each, followed by 46 authors who contributed to 2 papers each, 18 authors contributed to 3 papers each and 24 authors contributed to more than 4 papers each. Six authors contributed to 10 papers.

Table 2. Ranking of authors by productivity (papers published)

Rank	Author's name	No. of papers
1	Shukla, P.R.	21
2	Mavalankar, D.	20
3	Lahiri, S.	14
4	Ghosh, D.	13
5	Garg, A.	11
6	Bandyopadhyay, T.	10
7	Ramani, K.V.	9
8	Vohra, N.	8
9	D'Cruz, P.	7
9	Kapshe, M.	7
10	D'Souza, E.	6
10	Dutta, G.	6
10	Goldengorin, B.	6
10	Sharma, V.P.	6
10	Sierksma, G.	6
11	Bhat, R.	5
11	Noronha, E.	5
12	Bhatnagar, D.	4
12	Desai, A.	4
12	Jain, S.K.	4
12	Jaiswal, A.K.	4

12	Laha, A.K.	4
12	Naik, G.	4
12	Sastry, T.	4
13	18 authors contributed 3 papers each	54
14	46 authors contributed 2 papers each	92
15	279 authors contributed 1 paper each	279

5.5 Authorship Collaboration Patterns

Table 3 reveals the authorship pattern among the 612 authors, i.e., 367 unique names, contributed the 234 papers published included in this study. While single authors, i.e., without any collaboration contributed 62 papers and that constituted about 26 per cent of the total papers included in the study. The largest group of 34 per cent of papers was contributed by 2 authors, followed by 19 per cent papers by 3 authors and 12 per cent of papers by 4 authors. Together about 65 per cent of the papers were contributed by collaboration among 2 to 4 authors. The maximum collaboration was found in two papers that had 14 authors each and it is interesting to note that 7 or more (8, 10, 11 and 14) authors contributed to less than 1 per cent of the papers each. Figure 3 also clearly reveals that as the number of authors collaborating increases the number of papers decreases. A significant portion of the papers, about 90 per cent, are covered by single author, two-author, and three-author and four-author partnerships.

Table 3. Authorship pattern in the collaboration

No. of authors	No. of papers	Total No of authors	% of papers
1	62	62	26.50
2	80	160	34.19
3	44	132	18.80
4	28	112	11.97
5	8	40	3.42
6	4	24	1.71
7	1	7	0.43
8	2	16	0.85
10	2	20	0.85
11	1	11	0.43
14	2	28	0.85
	234	**612**	**100.00**

The data collected for the study was analysed for looking at the collaboration pattern undertaken by IIMA authors. The country of other co-authors was explored and Table 4 shows that collaboration with authors from other parts of the same country contributed to about 41 per cent of the papers and was followed by 31 per cent of papers wherein at least one author was from a different country. It is interesting to note that the number of papers under the no-collaboration category have reduced over a period of time. It can be seen that collaboration with authors from abroad was highest in 2003 and 2006, though the number of papers published during those years was relatively less. It may also be noted that the number of papers being published also increased during the same period and hence the opportunities of international collaboration might have also increased. Its also shows that the collaboration pattern or distribution of all three types, i.e., no colloboration, international collaboration and national collaboration is disctinct across years with the no collaboration category reducing with time giving way to more colloborative authoring. Table 5 shows the list of most preferred journals, listed in the order starting from most papers published by IIMA authors. It can be seen that *Indian Journal of Agricultural Economics* was the

Table 4. Authorship collaborations across institutions

Year	Collaboration		
	International (%)	National (%)	No collaboration (%)
1999	27.78	38.89	33.33
2000	22.22	38.89	38.89
2001	20.00	40.00	40.00
2002	35.00	20.00	45.00
2003	58.82	29.41	11.76
2004	25.00	37.5	37.5
2005	12.5	62.5	25.0
2006	47.06	35.29	17.65
2007	25.00	43.75	31.25
2008	36.36	36.36	27.27
2009	26.32	57.89	15.79
2010	31.25	53.13	15.63
1999-2010	**30.61**	**41.31**	**28.26**

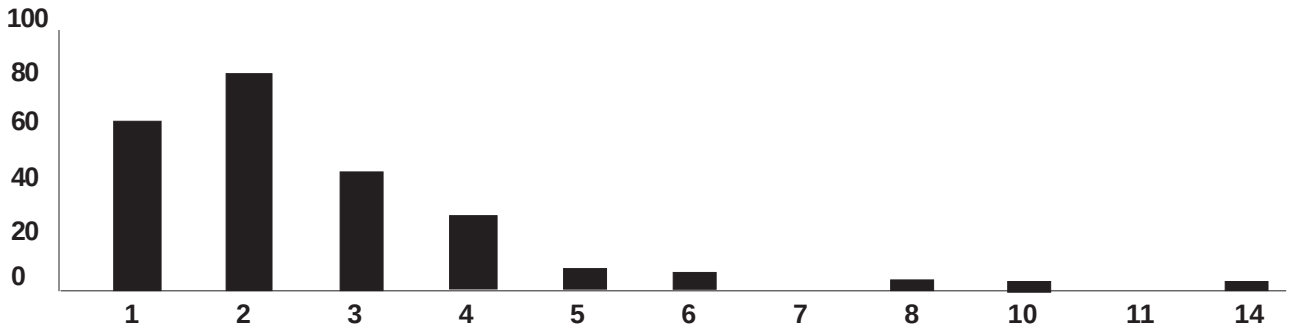

Figure 3. Number of authors contributing to the publications.

Table 5. Most preferred journals by IIMA authors for publication

Journal's name	Publisher	No. of papers	Impact factor 2009
Indian Journal of Agricultural Economics	Indian Society of Agricultural Economics	14	NA
European Journal of Operational Research	Elsevier	7	2.093
Indian Journal of Labour Economics	Indian Society of Labour Economics	7	NA
Asian Case Research Journal	World Scientific	6	0.077
International Journal of Gynecology and Obstetrics	Elsevier	5	1,408
Journal of Health, Population and Nutrition	International Centre for Diarrhoeal Disease Research, Bangladesh	5	0.859
Atmospheric Environment	Elsevier	4	3.139
Journal of Entrepreneurship	Sage	4	NA
Energy Policy	Elsevier	3	2.436
Mathematical Social Sciences	Elsevier	3	0.426
Telecommunications Policy	Elsevier	3	0.969
22 journals have 2 paper each		44	-
129 journals have 1 paper each		129	-

most preferred journal in the list with 14 papers followed by *European Journal of Operational Research* and *Indian Journal of Labour Economics*. The list also indicates multidisciplinary nature of management research with IIMA authors publishing papers in a diverse set of journals that cover Health, Energy, Entrepreneurship, Environment, Economics and Agriculture areas. Data on the citations revealed that there was in all 808 journal titles from which 2632 citations were cited in the 234 papers during 1999 to 2010. Table 6 indicates 30 journals

Table 6. Most cited journals by IIMA faculty

Rank	Journal title	Citations	% of total citations	Cumulative citations	Impact factor 2009
1	*Journal of Marketing*	66	2.51	2.51	3.779
2	*Economic and Political Weekly*	49	1.86	4.37	NA
3	*Management Science*	47	1.79	6.16	2.227
4	*Journal of Marketing Research*	45	1.71	7.87	3.099
5	*European Journal of Operational Research*	43	1.63	9.50	2.093
6	*Operations Research*	35	1.33	10.83	1.576
7	*Academy of Management Review*	33	1.25	12.08	7.867
8	*Indian Journal of Agricultural Economics*	32	1.22	13.30	NA
9	*Journal of Retailing*	31	1.18	14.48	4.567
10	*Energy Policy*	28	1.06	15.54	2.436
11	*Harvard Business Review*	26	0.99	16.53	1.655
12	*Journal of Consumer Research*	25	0.95	17.48	3.021
13	*Journal of Applied Psychology*	24	0.91	18.39	3.84
13	*Journal of Personality and Social Psychology*	24	0.91	19.30	4.732
14	*Administrative Science Quarterly*	23	0.87	20.18	3.842
14	*Atmospheric Environment*	23	0.87	21.05	3.139
14	*Journal of The American Statistical Association*	23	0.87	21.92	2.322
15	*Lancet*	22	0.84	22.76	33.63
16	*Econometrica*	21	0.80	23.56	4.00
16	*Mitigation & Adaptation Strategies for Global Change*	21	0.80	24.36	NA
17	*Journal of the Academy of Marketing Science*	18	0.68	25.04	1.578
18	*Academy of Management Journal*	17	0.65	25.69	6.483
18	*Biometrika*	17	0.65	26.33	1.933
18	*Journal of Finance*	17	0.65	26.98	3.764
18	*Telecommunications Policy*	17	0.65	27.62	0.969
19	*International Journal of Gynaecology & Obstetrics*	16	0.61	28.23	1.408
19	*Journal of Management Studies*	16	0.61	28.84	2.805
19	*Social Indicators Research*	16	0.61	29.45	0.835
20	*European Journal of Work and Organizational Psychology*	15	0.57	30.02	1.467
20	*World Development*	15	0.57	30.59	1.225

secure top 20 ranks when scored on number of citations sourced from. It was also found that the top 30 journals contributed to the 30 per cent of the total citations. The journal titles that were cited more than 40 times included *Journal of Marketing* (66), *Economic and Political Weekly* (49), *Management Science* (47), *Journal of Marketing Research* (45) and *European Journal of Operational Research* (43). *Economic and Political Weekly* and *Indian Journal of Agricultural Economics* were the only journals from India in list of these top cited journals.

In an earlier study[12] of doctoral dissertations submitted at IIMA during the period 2004 to 2009, it was found that the 49 dissertations cited 4319 references from 793 journal titles. When these 793 titles were compared with the 808 journal titles from the present study, a list of 267 titles were found to be common, indicating more than 30 per cent titles were commonly cited by faculty in their papers and by doctoral students in their dissertations. This finding could be used in developing the list of core group of journals in the collection of the Institute's library.

6. CONCLUSIONS

With the main focus on studying the research output of IIMA, the data collected and analysed revealed interesting findings. Some major conclusions that could be drawn from the findings are:

(a) The potential and need to improve the research output in form of papers is quite evident from the study. It may be useful to look at research output of institutions with similar academic output like programmes offered, faculty time involvement in academic administration, faculty contribution in developing teaching materials, and so on.

(b) The data from the study indicates improvement in research output of IIMA in the recent years and it may be the right time to further the strategy of developing research friendly policies and take the research output of the Institute to the next level.

(c) Evaluation of individual authors, based on productivity data can be considered either by number of papers or by the impact factor of journals in which they publish or by the average weightage per paper published by the author.

(d) The authorship pattern indicates that increased collaboration with multiple authors and with international authors may have also lead to increase in publications and this aspect could be considered while refining the research policy of the Institute.

(e) The citation data of the IIMA authors and the findings could be useful in building and evaluating the library collection.

(f) Indian journals are cited less by IIMA authors as indicated in the citation data and this may call for a debate on the larger issues of encouraging Indian citations by Indian researchers.

This study could be a useful tool to understand the research trend at IIMA, indicating a fairly accurate direction to be taken based on a data available in Web of Science and Scopus. This study could be supplemented by undertaking a review of all papers published by the IIMA authors, irrespective of being included in Web of Science or Scopus and develop a comprehensive perspective of research at IIMA.

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