

# Bibliometric Analysis of Supply Chain Management: An International Journal from 2005-2014

Anil Kumar<sup>1</sup>

Dr. G.S.Kushwaha<sup>2</sup>

<sup>1</sup>VNS Institute of Management Bhopal MP-India (Corresponding Author)

anilkr.iimt@gmail.com

<sup>2</sup>MANIT Bhopal MP – India

gskushwaha2015@yahoo.com

**Abstract** - *The purpose of this paper is to analyse the contributions of researchers in the field of management through this journal in last ten years. Authors conduct a bibliometric analysis of the Supply Chain Management: an International Journal which is indexed in the Social Science Citation Index. This study was developed from a bibliometric survey for expansion of knowledge regarding publications in the supply chain management: an international journal from 2005-14. This study covers the 458 articles of 10 volumes and 59 issues in 10 years from 2005-2014. Authors performed the analysis of scientific publications, reviewed and indexed in databases Emerald. Nonparametric test  $X^2$  was done to test the hypotheses.*

*The Authors attempted to reveal the year wise publication of articles, authorship pattern of articles, citation pattern, No of citations, country wise distribution of articles, average number of citation per articles and length of papers etc. Results showed that, in the year 2006, highest 59(12.94%) articles were published out of 458 articles in last ten years. Dual author contribution has predominant with 35.80%. In geographical distribution of articles, UK has contributed highest 103 articles with 22.49% and highest 49.56% articles are published with page range of 11-20. The  $X^2$  test depict that there is significant relationship between highly cited articles and the most productive author while there is no significant relationship between highly cited articles and the most productive country as well as most productive institute/university.*

*The limitation of this study is that articles were taken from 2005-14 only and the citations are taken from the Google scholar only. This study will helpful for researchers to know which article and which author has major contribution and what kind of study he has done in the past 10 years as well as what will be the future scope. The study is first of its kind with reference to this journal and thus it will contribute to the researchers to enhance the knowledge /information about the kind of study being published in this journal in last ten years.*

**Keywords** - Bibliometric analysis, authorship pattern, citation pattern,  $X^2$  test, Articles type

## 1. Introduction

In the year 1969, Allan Pritchard first described the term bibliometrics as the application of mathematics and statistical methods to books and other media.

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Bibliometric techniques using references made to other documents can be applied to establish statistical models of scholarly communication flow. Citations can be used to identify the flow of topics within and among disciplines [2]. According to [27], Bibliometric studies are used to identify the pattern of publications, authorship, citations and journal coverage with the hope to give an insight in to the dynamics of the field under consideration. This study utilizes quantitative analysis and statistics to describe year wise publication of articles, patterns of authors, average length of article and average number of citations per article and so on. Since the last three decades, supply chain management is being considered as the thrust area of research and thus has importance among researchers and organisations. From the studies of bibliometric analysis, one can learn which scholars from which disciplines cite which articles? Which journals are cited more often? The results of this analysis are used for many purposes, for example, to determine the impact of specific articles or journals on subsequent research and to document the interdisciplinary applicability of various journals [7];[12].

The source journal, 'Supply chain management: an international journal' is publishing six issues per year since 2011 and is being published online by Emerald Inc., UK since 1996

(<http://emeraldgrouppublishing.com/products/journals/journals.htm?id=scm>). This journal is devoted to publish research articles in the field of Contractual relationships, Data interchange and vertical integration, Efficient consumer response, Investment in emerging economies, Just in time, Logistics, Organizational behaviour, Risk management and its practical applications.

Since no study has been carried out yet with respect to this journal as well as what type of contribution in the field of research has been done by this journal. This article is an attempt to fill this gap by doing the bibliometric study of this journal. This paper will analyse the year wise and issue wise distribution of articles; the authorship pattern of the articles; the country wise distribution of articles; the citation patterns of articles; the type of articles contributed in the journal; top ten universities/institutes contribution in the journal; top ten authors contributed to this journal; the length of articles contributed in the journal and the number of special issues being published by the journal since 2005-14.

In the next section literature review will be presented then Methodology and analysis of the study. In the end key findings and limitations as well as future scope of this study will be discussed.

## 2. Literature Review

The authors have reviewed many research papers and articles to have good understanding of bibliometric study

and to find out some possible ways to carry out the present study thoroughly and smoothly in a quantitative way. There are a number of methods to study the body of literature. The most frequently used method is literature review in which a subjective approach is used to organise the past work. The quantitative techniques recently become popular with the availability of online database for use. These techniques are attractive because they are objective in nature [8].

[1], revealed in their study *Bibliometric Analysis of Journal of Knowledge Management Practice, 2008-2012*; that Maximum 125 articles are published within the page range of 11-20, which constitute 69.4% of total contributions. So the page length is good for a research paper. They also found that Single author articles are dominant in the journal. It constitutes alone 47.2% which is about 50% of whole contribution of the journal. It is followed by two and three author articles. [6] revealed in his study *Journal of Informetrics: A bibliometric profile* that most of the contributions in the journals are joint author collaboration. USA has produced highest portion of authors and the impact factor of the journal is highest in the year 2011 with 4.229%. [22] revealed in his study "Journal of Documentation: A bibliometric study" that the degree of collaboration is 0.51 which means majority of the library and information scientists prefer to contribute their papers jointly. About 6.21% citations are self cited by the respective authors. [20] stated in the study "The Journal of Information Literacy: A bibliometric study" that almost all the papers (94.65%) are from academic institutions. The citations in the journal demonstrate that individual research is higher than collaborative research. Both faculty members and professionals are equally contributed to the journal.

[27] Revealed in his study "Pakistani Journal of Library and Information Science: A bibliometric analysis" that about 53.15% of articles are research oriented, whereas 39.64% of articles were having no references. [18] stated in his study "Bibliometric Study of Electronic Journal of Academic and Special Librarianship." that single author contributions have dominated the journal with 47.95% of contributions, and in geographical based distribution of articles India have occupied the top position with 28.41% publications. [25] in his study "Library Herald Journal: A bibliometric study" found that 52.17% authors have single author contribution. Foreign author contribution to this journal is comparatively less with 10.15%.

According to [16] journal form is the predominant in bibliography distribution of citations while [26] revealed in his study "Analysis of contributions in Annals of Library and Information Studies" that most of the contributions of this journal are contributed by single author.

[3] stated in his study "Economic Botany: A bibliometric study" that the highest number of articles 217(60.61%) has been contributed by academic institutions while [10] in his study "Bibliometric Analysis of Indian Forester: 1991-2000" found that 1996 is the year which got highest 156 articles contribution.

[11], identified the most influential authors and studies in electronic commerce field by using citation analysis. [17] used citations from accounting dissertations completed during 1999-2003 to provide a ranking of accounting journals; [9], explored the research dimensions of international management research by applying factorial analysis techniques in an author co-citation study; [21], examined the intellectual structure change of strategic management research by conducting a bibliometric study of the Strategic Management Journal. [24], conduct research on

supply chain management (SCM) technology trends and forecasts using bibliometric analysis from 1989 to 2009 years. [5], study the productivity distribution related to virtual community through bibliometric methodology. They proposed a theoretical model, based on Lotka's law with regard to author productivity for serving as reference for different areas of study in the evaluation of author productivity models.

### 3. Research Methodology

This study was developed from a bibliometric survey to expand knowledge regarding publications in Supply chain management: an international journal from the database Emerald in the period 2005-2014. We performed the analysis of scientific publications, reviewed and indexed in database. Emerald database was used as the source for data collection. Over the years of 2005-2014, a total number of 59 issues including 458 articles from supply chain management: an international journal abstract has been downloaded from the source site [http://emeraldgrouppublishing.com/products/journals/journal\\_s.htm?id=scm](http://emeraldgrouppublishing.com/products/journals/journal_s.htm?id=scm) in the year 2014. The required data of all the articles related to the bibliographic analysis, such as title of the articles, number of authors, address of authors, number of pages etc. were taken from the emerald database.

Authors used Google Scholar in place of the Thomson ISI Web of Science to calculate its citations because Google Scholar presents a more complete picture of an academics impact than the Thomson ISI Web of Science. According to [4], Google Scholar is freely available to anyone while The Web of Science is only available to those academics whose institutions are able and willing to pay the subscription costs of the Web of Science and other databases in Thomson ISI' Web of Knowledge. According to [23], who compared citation counts from Google Scholar to the research output from universities under New Zealand's PBRF (Performance Based Research Funding) research assessment exercise and found a very high (0.94) correlation between the PBRF output and the total number of citations returned by Google Scholar. The major disadvantage of the Web of Science is that there are always chances of providing substantial underestimation of an individual academics actual citation impact. [19] Found in their study that there is small overlap among Google Scholar, Scopus and Web of Science citations. This small overlap is because of Google Scholar includes citations which came from conference papers, doctoral dissertations, master's theses and books and book chapters. They also found that when Google Scholar results were added to those of Web of Science and Scopus separately its results did not significantly change the ranking of the 15 academics in their survey. Although Google Scholar is not completely free from disadvantages. Google Scholar may includes non-scholarly citations as well as not all scholarly journals are indexed in Google Scholar.

The collected data were then recorded for observation and analysis. Hypotheses were set to test the relationship among different variables of this study. The collected data were organised and presented using MS-Excel spread sheet and SPSS was used to test the hypotheses.

### 4. Hypotheses

**Ha0:** There is no significant relationship between the number of citations and the most productive author

**Hb0:** There is no significant relationship between the number of citations and the most productive country

**Hc0:** There is no significant relationship between the number of citations and the most productive Institute/university.

**5. Analysis and discussion**

**5.1. Year wise and issue wise distribution of articles**

Table-1 depicts the year wise publication statistics of Supply chain management: an International Journal. Within this

specified period of 2005-2014, a total number of 59 issues including 458 articles have been published. Out of these 458 articles 99 articles were published as special issues. The highest number of 59 articles published in the year 2006 at a rate of 12.94%. The lowest numbers of articles are published in the year 2011 having 39 articles at a rate of 8.55%. On the other hand, in the row of issues, fourth issue in 2005 has highest number of articles 13 in its credit individually while in 2014 5<sup>th</sup> & 6<sup>th</sup> issue published combine and thus scored 14 articles in its credit. The average number of publication per year is 46 articles and per issue is 8 articles. (rounded off to nearest figure).

Years	No of Papers in each Issue							Total Papers Published	% of Publication	
	Issue	1	2	3	4	5	6			
2005	5	8	6	11	13	7	0	45	9.65	
2006	6	11	11	11	10	10	6	59	12.94	
2007	6	7	9	5	9	5	9	44	9.65	
2008	6	9	7	9	8	7	6	46	10.09	
2009	6	6	8	8	8	7	8	45	9.87	
2010	6	8	7	7	6	7	7	42	9.21	
2011	6	6	7	5	7	6	8	39	8.55	
2012	6	9	8	8	6	6	8	45	9.87	
2013	6	8	8	8	9	6	6	45	9.87	
2014	6	9	8	9	8	14	0	48	10.3	
<b>Total</b>	<b>10</b>	<b>59</b>	<b>81</b>	<b>79</b>	<b>81</b>	<b>84</b>	<b>75</b>	<b>58</b>	<b>458</b>	<b>100%</b>

Table 1. Year wise and issue wise distribution of articles

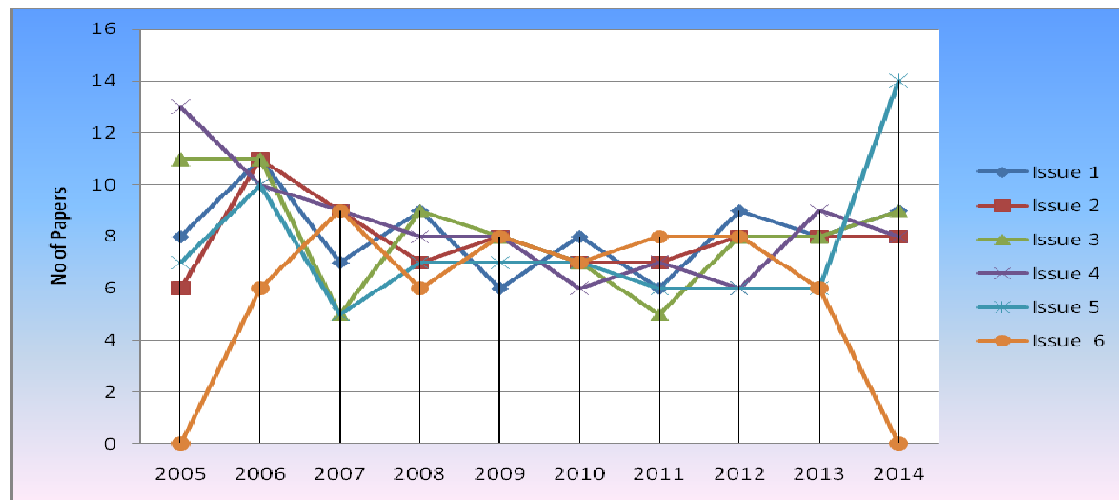


Figure1. Year wise and issue wise distribution of articles

**5.2. Authorship pattern of the articles**

Authors have identified six kind of authorship pattern by analysing the contributed articles to study the authorship pattern of the articles in the journal. The numbers of articles contributed

by each category of authors have been depicted in the table2 to make a clear understanding of authorship pattern.

Table2.Authorship Pattern

No of Authors	Year of contributions										Total Papers Published	% of Publication
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		
1	11	16	8	8	8	5	4	8	4	4	76	16.59%
2	19	20	17	20	18	16	14	13	13	14	164	35.80%
3	11	19	10	15	12	12	12	12	18	18	139	30.35%
4	3	3	7	3	6	7	6	7	10	10	62	13.54%
5	1	0	2	0	1	1	3	4	0	1	13	2.84%
6	0	1	0	0	0	1	0	1	0	1	4	0.87%
<b>Total</b>	45	59	44	46	45	42	39	45	45	48	458	100%

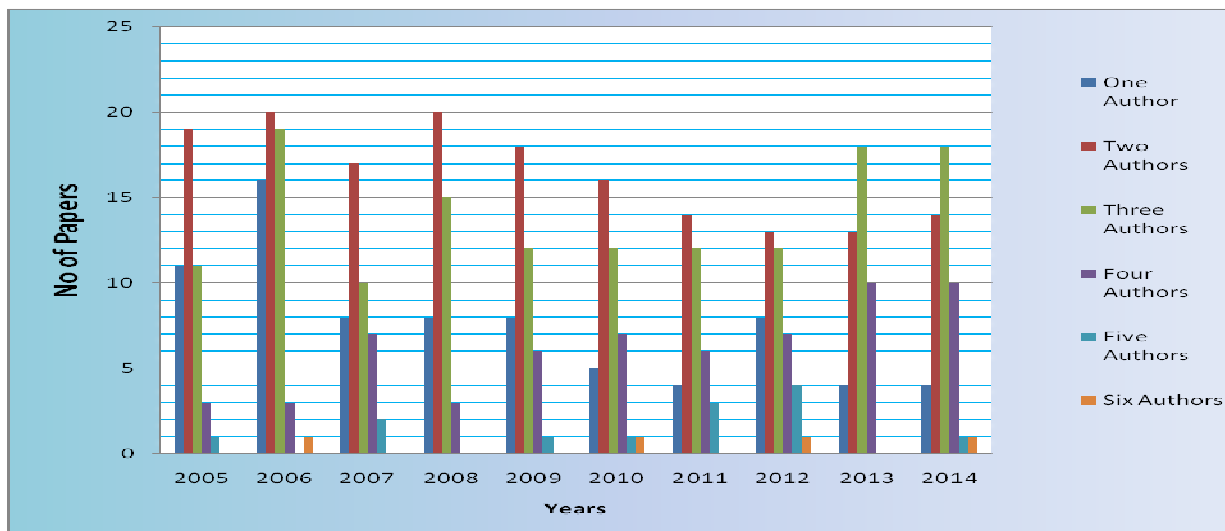


Figure2.Authorship Pattern

It is clear from the table2 that maximum no of 164 articles have published by dual authors' contribution and it is followed by 139 articles by three authors' contribution. The single author contribution is 76 articles while four authors contribution is 62

and five authors contribution is 13 articles. The six authors' contribution is just 4 articles which is the lowest number of articles. Thus authorship pattern is dominated by double authors in the journal since 2005-14.

### 5.3. Country wise distribution of the articles

It is revealed from the table-3 that, during this period 2005-2014 of study total 37 countries have contributed there papers in Supply Chain Management: an International Journal. The geographical distribution of the articles has been decided on the basis of the affiliation and the address of the first author.

From the analysis it is observed that, United Kingdom (UK) USA, Australia, Spain and Taiwan are the top five contributors and contributed 103,81,28, 24 and 23 papers respectively during 2005-2014 which is 22.49%, 17.69%, 6.12%, 5.24% and 5.02% respectively. Table3 is depicting the details with respect to country-wise distribution of articles.

Table3.Countrywise distribution of articles

Country	Years of contribution										Total Papers Published	% of Publication
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		
UK	8	15	9	4	11	8	11	12	15	10	103	22.49
USA	12	17	12	13	9	5	2	5	3	3	81	17.69
Australia	6	3	1	2	2	1	4	5	1	3	28	6.12
Spain	0	0	2	3	2	3	4	3	5	2	24	5.24
Taiwan	1	2	1	6	3	1	0	2	5	2	23	5.02
Netherland	1	2	2	1	1	2	4	1	0	5	19	4.14

China	1	1	0	2	1	3	2	3	1	2	16	3.5
Finland	1	1	2	0	0	1	1	1	4	4	15	3.28
Sweden	0	0	2	1	0	2	1	3	1	5	15	3.28
Italy	1	1	1	0	2	2	2	3	1	1	14	3.05
Germany	1	1	0	1	2	1	1	2	0	5	14	3.05
Canada	2	4	1	1	2	1	0	0	0	1	12	2.62
Norway	0	2	2	1	1	2	0	1	1	0	10	2.18
India	1	4	0	2	1	0	1	0	0	0	9	1.96
Turkey	1	0	1	1	0	3	0	0	1	1	8	1.74
South Korea	2	2	2	1	0	0	0	0	0	0	7	1.52
Denmark	1	0	0	1	2	0	1	1	1	0	7	1.52
Greece	0	1	2	1	0	2	0	0	0	0	6	1.32
Hong Kong	0	2	1	0	0	1	1	1	0	0	6	1.32
France	0	0	0	1	2	0	0	1	1	0	5	1.09
Switzerland	2	0	0	0	0	0	1	0	0	2	5	1.09
Belgium	0	0	0	0	1	1	0	1	1	0	4	0.87
Brazil	0	0	0	2	1	0	0	0	0	1	4	0.87
Ireland	0	1	2	0	0	0	0	0	1	0	4	0.87
Malaysia	2	0	0	1	0	0	0	0	0	1	4	0.87
Iran	0	0	0	0	0	2	1	0	0	0	3	0.66
Singapore	1	0	0	1	0	0	0	0	0	0	2	0.44
Japan	0	0	0	0	1	0	0	0	0	0	1	0.22
Jordan	0	0	0	0	0	0	0	0	1	0	1	0.22
Maxico	0	0	0	0	0	1	0	0	0	0	1	0.22
New Zeland	0	0	0	0	0	0	1	0	0	0	1	0.22
Republic of Korea	0	0	0	0	0	0	0	0	1	0	1	0.22
Slovenia	0	0	1	0	0	0	0	0	0	0	1	0.22
South Africa	0	0	0	0	0	0	0	0	1	0	1	0.22
Thailand	0	0	0	0	0	0	1	0	0	0	1	0.22
UAE	0	0	0	0	1	0	0	0	0	0	1	0.22
VietNam	1	0	0	0	0	0	0	0	0	0	1	0.22
<b>Total</b>	<b>45</b>	<b>59</b>	<b>44</b>	<b>46</b>	<b>45</b>	<b>42</b>	<b>39</b>	<b>45</b>	<b>45</b>	<b>48</b>	458	100

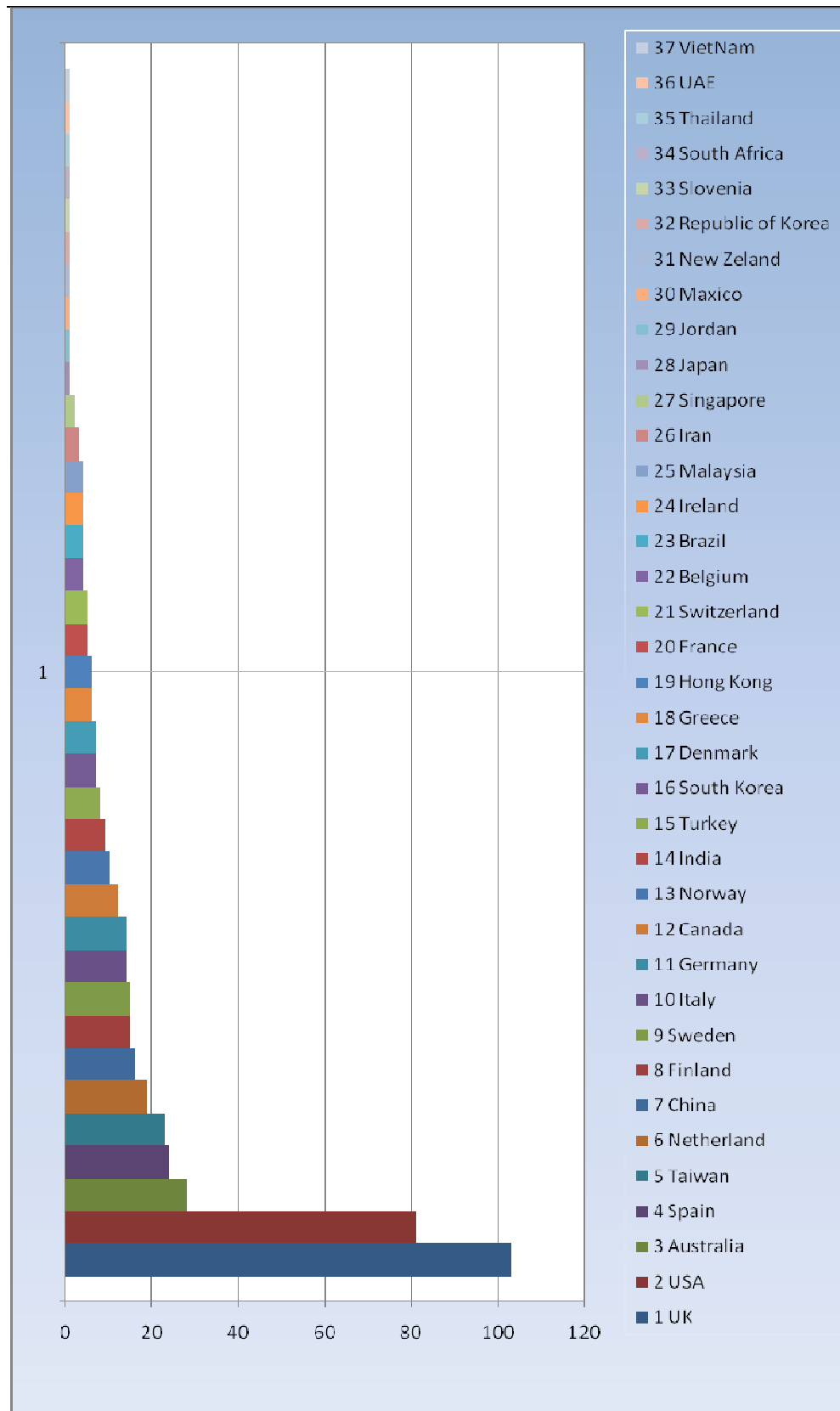


Figure3. Countrywise distribution of articles

#### 5.4. Citation Pattern of the articles

Since 2005-2013, the 53 issues of 410 articles in 9 years, a total of 17038 citations have been found from the Google scholar. The average no of citations per article is varying from year to year. In the year 2005 it is 72 which is the highest whereas 4 in the year

2013 which is the least. The average no of citations since 2005-13 for all the articles is 41. There is not seems any relationship between the average number of citations and the total number of articles in a year.

Year	No of articles	No of Citations	Average No of Citations
2005	45	3237	72
2006	59	3099	53
2007	44	2909	66
2008	46	2513	55
2009	45	1994	44
2010	42	1129	27
2011	39	979	25
2012	45	1021	23
2013	45	157	3.48
<b>Total</b>	<b>458</b>	<b>17038</b>	<b>368.48</b>

Table4. Citation Pattern of the articles

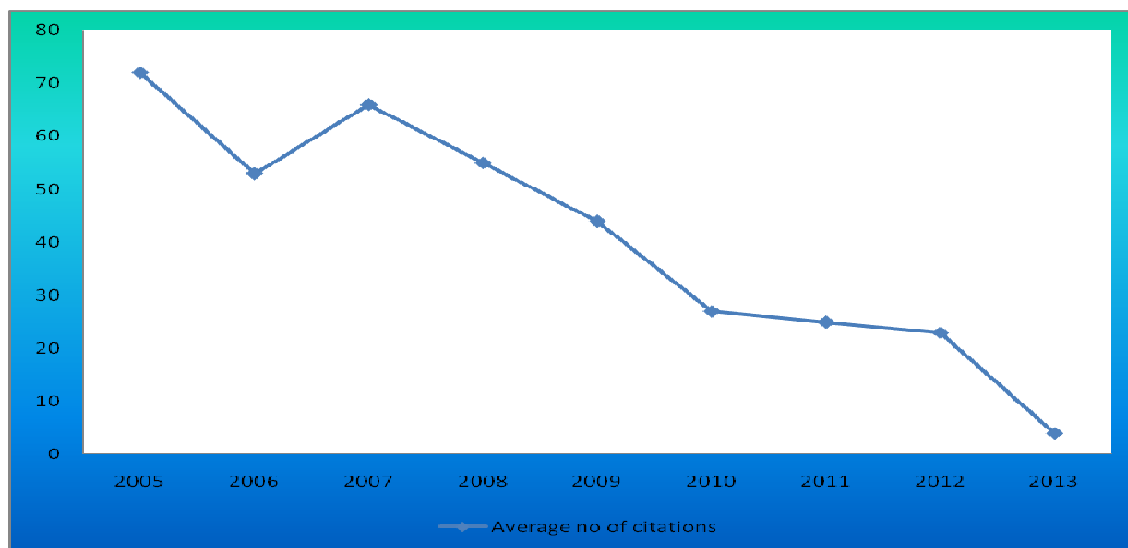


Figure4.Citation Pattern of the articles

### 5.5. Length of the articles

From the table 5 it is clear that maximum articles were published in the range of 11-20 pages while the least number of articles which is one and published in above 30 pages range. It is also

clear from the table that in year wise 40 papers were published in 2013 in the page range of 11-20.

No of Pages	Year of Paper Contributions										Total	% of Papers
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		
1-10	33	47	27	32	25	18	18	7	5	13	225	49.13
11-20	12	12	17	14	20	23	21	37	40	31	227	49.56
21-30	0	0	0	0	0	1	0	1	0	3	5	1.09
Above 30	0	0	0	0	0	0	0	0	0	1	1	0.22
<b>Total</b>	45	59	44	46	45	42	39	45	45	48	458	100

Table5. Length of the articles

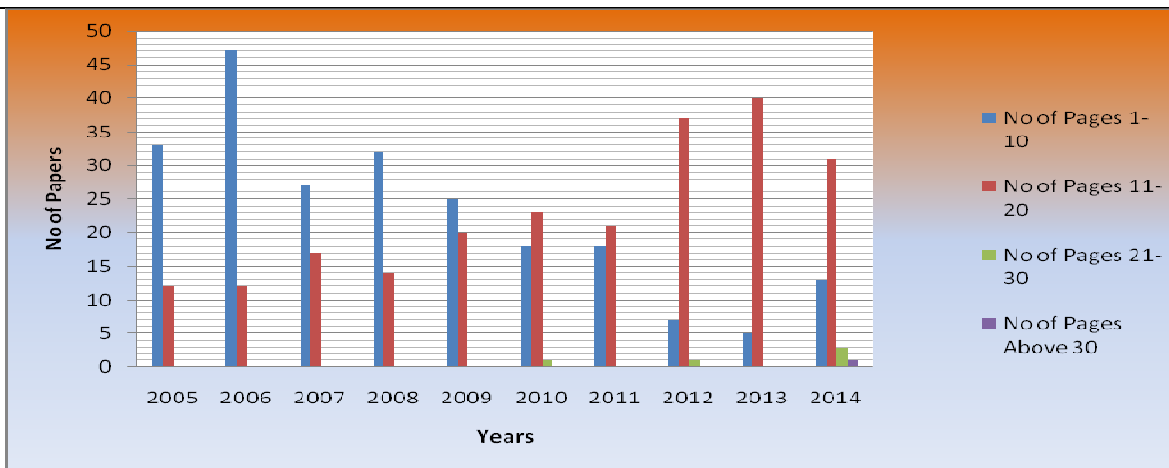


Figure5. Length of the articles

### 5.6. Special Issues Published by the Journal during 2005-2014

From the table 6 it is clear that except 2006 and 2008, every year a special issue had been published since 2005-14. The three special issues have been published in 2011 and 2012 with 19 and 18 articles respectively. The special issues are contributed the 21.61% of the total publication which is approximately one

fourth of the publications and thus it could be said that these special issues are vital part of the journal. It is also clear from the table that special issue 5 is contributing highest number of articles during 2005-14.

Table6. Special Issues

Year	No of Papers with special Issue						Total Papers
	1	2	3	4	5	6	
2005	0	6	0	0	7	0	13
2006	0	0	0	0	0	0	0
2007	0	0	5	0	5	0	10
2008	0	0	0	0	0	0	0
2009	0	8	0	0	0	0	8
2010	0	0	0	6	7	0	13
2011	6	0	5	0	0	8	19
2012	6	0	0	6	6	0	18
2013	0	0	0	9	0	0	9
2014	0	0	9	0	0	0	9
<b>Total</b>	12	14	19	21	25	8	99



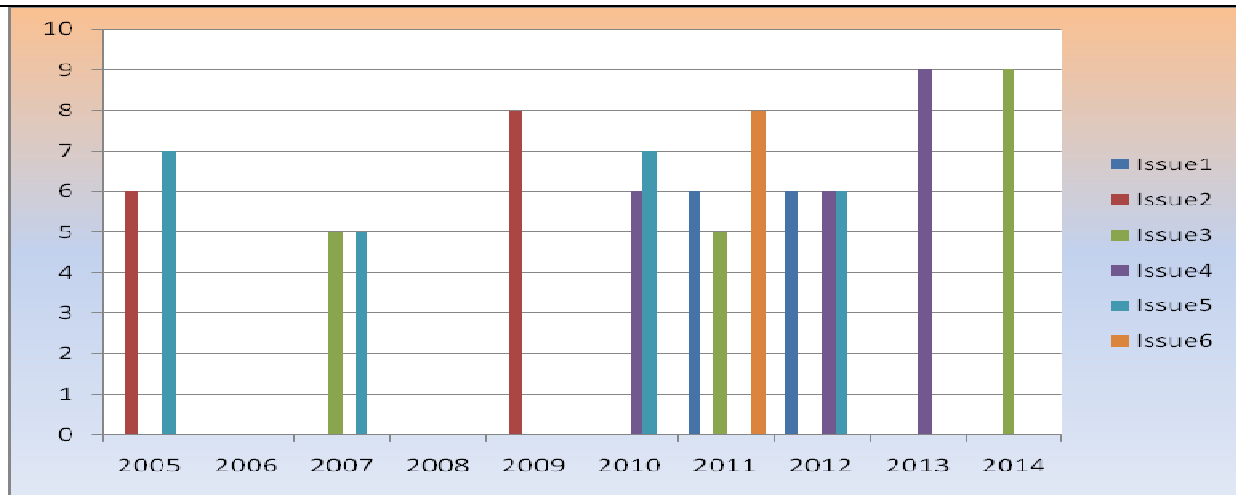


Figure6. Special issues articles distribution

### 5.7. Paper Type

From the table7 it is clear that research papers are dominating by the researchers in type of publication during the last 10 years and contributing 71.18% of total publications. From this it must be cleared in everybody mind that Journal is publishing the real research work. The case study is second most preferred way for

contributors in this journal. Book review and technical papers are least preferred either because contributors not much interested in such type of contribution or the journal policy not to entertain much with reference to such contributions.

Table7. Paper Type

Paper Type	Years of Contribution										Total no of Papers	% of Total
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		
Research Paper	31	32	27	34	31	31	34	23	40	43	326	71.18
Case studies	5	14	11	9	9	8	3	6	4	5	73	15.94
Conceptual Paper	3	4	4	2	4	2	1	2	0	0	22	4.8
Literature Review	1	2	0	1	0	1	0	13	0	0	18	3.93
View Point	5	0	1	0	1	0	1	0	1	0	9	1.97
General Review	0	4	1	0	0	0	0	1	0	0	6	1.31
Technical Paper	0	2	0	0	0	0	0	0	0	0	2	0.44
Book Review	0	1	0	0	0	0	0	0	0	0	1	0.22
<b>Total</b>	<b>45</b>	<b>59</b>	<b>44</b>	<b>46</b>	<b>45</b>	<b>42</b>	<b>39</b>	<b>45</b>	<b>45</b>	<b>48</b>	<b>458</b>	<b>100%</b>

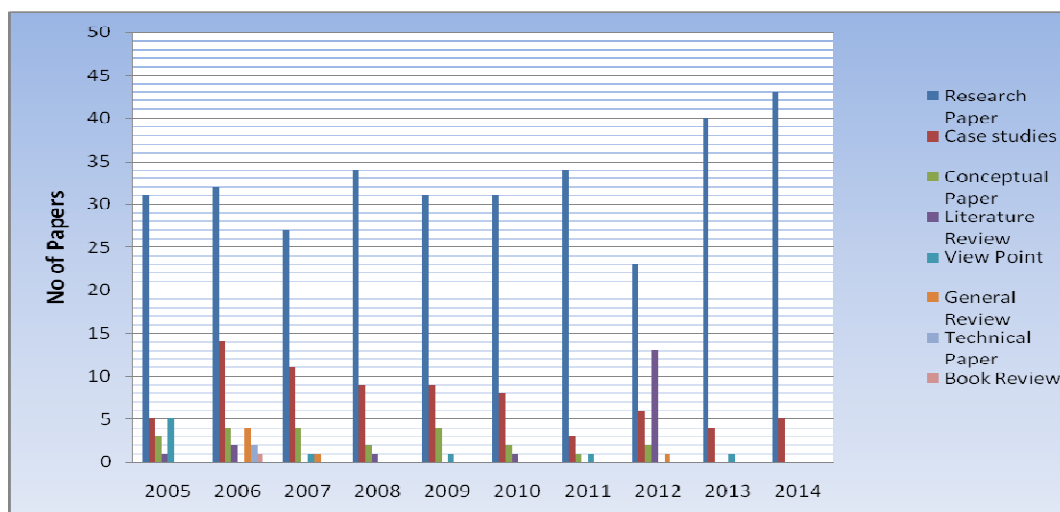


Figure7.Paper Type

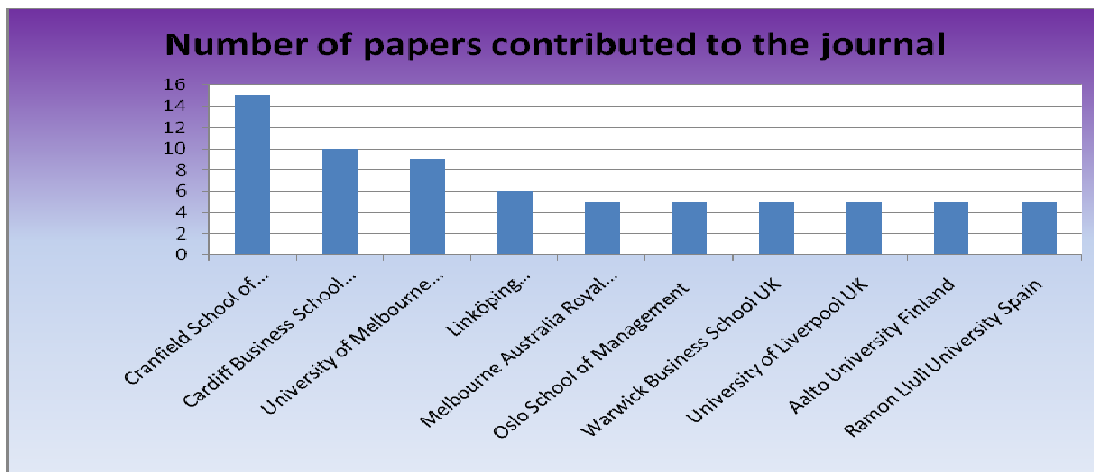
**5.8. Top 10 Universities /Institutes contribution**

From the table 8 it is depicted that Cranfield School of Management UK has contributed maximum number of papers to this journal since 2005-14. A very interesting point here to

note down is that in top 10, 8 universities/institutes are from Europe. The reason may be either the journal is popular in Europe or the researchers feel proud to write for this journal or the Journal does not have easy reachability to the readers as well as researchers or the outside Europe researchers are not writing as per the journal criteria.

**Table8.Top Universities/Institutes**

Sr. No.	University/Institute	Number of Papers contributed
1	Cranfield School of Management UK	15
2	Cardiff Business School Cardiff University UK	10
3	University of Melbourne Australia	9
4	Linköping University, Linköping, Sweden	6
5	Melbourne Australia Royal Melbourne Institute of Technology University	5
6	Oslo School of Management Norway	5
7	Warwick Business School UK	5
8	University of Liverpool UK	5
9	Aalto University Finland	5
10	Ramon Llull University Spain	5



**Figure8.Top 10 Universities/Institutes**

**5.9. Top Authors**

Rank	Author	Contribution in number of articles	Rank	Author	Contribution in number of articles
1	Andrew Fearne	9	16	Baofeng Huo	4
2	Damien Power	8	17	Chee Yew Wong	3
3	Jan Holmström	6	18	B.S. Sahay	3
4	Göran Svensson	6	19	Kenneth W. Green Jr	3
5	Brian Fynes	6	20	Felix T.S. Chan	3
6	Frank Wiengarten	6	21	David H. Taylor	3
7	Joseph Sarkis	5	22	Yen-Chun Jim Wu	3
8	Remko van Hoek	5	23	S.C. Lenny Koh	3
9	M.L. Emiliani	4	24	Stefan Seuring	3
10	Mihalis Giannakis	4	25	Joe Miemczyk	3
11	Paul Humphreys	4	26	Richard Wilding	3
12	Prakash J. Singh	4	27	Xiande Zhao	3
13	Martin Christopher	4	28	Michael Bourlakis	3
14	Helen Walker	4	29	Carlos Mena	3
15	Janet Godsell	4	30	Dotun Adebajo	3
<b>Total 125 articles (27%)</b>					

**Table9. Top Authors**

The above table depicted those authors who have contributed in more than two papers in the journal since 2005-14. Total 125

papers constituting the 27% of total contribution and only 30 authors fulfil this criterion.

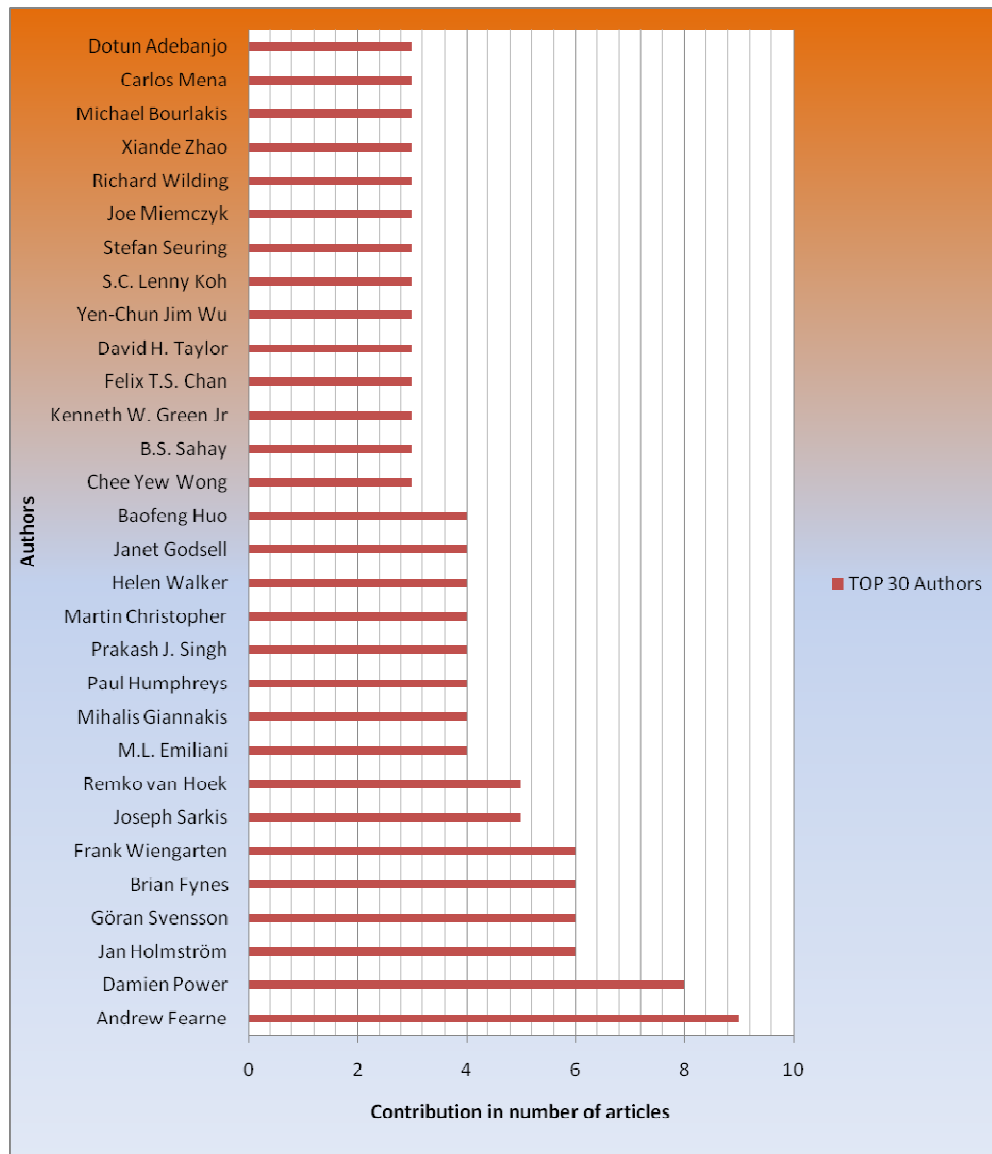


Figure9. Top Authors

### 5.10. Top Cited articles 2005-2013

Sr. No.	Title of the paper	Author Name	No of Citations
1	Supply chain management integration and implementation: a literature review	Damien Power	360
2	Outsourcing decision support: a survey of benefits, risks, and decision factors	Tibor Kremic, Oya Icmeli Tukel, Walter O. Rom	266
3	Benefits, barriers, and bridges to effective supply chain management	Stanley E. Fawcett, Gregory M. Magnan, Matthew W. McCarter	242
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## 6. Hypotheses Testing

Authors test the hypotheses by taking highly cited 40 articles. Thus sample size become 40. The highly cited articles were assigned labels as 1 to 5 (1-100-150 citations, 2-151-200 citations, 3 -201-250 citations, 4 -251-300 citations and 5 - above 300 citations). For relationship three labels were

assigned as 1. None (if author not in top 30), 2. Low (if author is not in top 5), and 3. High (if author is in top 5). Similar criteria are applied in the case of most productive country as well as most productive university/institute.

**Ha0:** There is no significant relationship between the number of citations and the most productive author

### Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.203 <sup>a</sup>	8	.055
Likelihood Ratio	9.695	8	.287
Linear-by-Linear Association	6.391	1	.011
N of Valid Cases	40		

a. 12 cells (80.0%) have expected count less than 5. The minimum expected count is .05.

At 90% confidence level, the critical value obtained from the chi-square table at degree of freedom 8 is 13.3616 while the calculated value of chi-square is 15.203 which is greater than the tabular value and falls in the rejection region. Hence the null hypothesis is rejected and the alternative hypothesis is

accepted. There is enough evidence to indicate that there is significant relationship between the number of citations and the most productive author which is also justified by the analysis of this study.

### Symmetric Measures

	Value	Approx. Sig.
Nominal by Nominal	Phi	.055
	Cramer's V	.055
	Contingency Coefficient	.055
N of Valid Cases	40	

From the obtained contingency coefficient of .525, it can be inferred that the association between dependent and independent variable is significant as the value .525 closer to 1 than to 0. Also from the lambda asymmetric value of .20 authors conclude that

there is a moderate level of association between the two variables. This lambda value tells us that there is 20% reduction in predicting the most productive author when we know the highly cited articles.

### Directional Measures

			Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Nominal by Nominal	Lambda	Symmetric	.077	.048	1.451	.147
		Most productive Author Dependent	.200	.179	1.013	.311
		Highly cited articles Dependent	.048	.046	1.013	.311
Goodman and Kruskal tau		Most productive Author Dependent	.215	.066		.032 <sup>c</sup>
		Highly cited articles Dependent	.049	.022		.473 <sup>c</sup>

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on chi-square approximation

**Hb0:** There is no significant relationship between the number of citations and the most productive country

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.697 <sup>a</sup>	8	.570
Likelihood Ratio	7.932	8	.440
Linear-by-Linear Association	2.417	1	.120
N of Valid Cases	40		

a. 11 cells (73.3%) have expected count less than 5. The minimum expected count is .05.

At 90% confidence level, the critical value obtained from the chi-square table at degree of freedom 8 is 13.3616 while the calculated value of chi-square is 6.697 which is less than the tabular value and falls in the acceptance region. Hence the null hypothesis is accepted and the alternative hypothesis is rejected. There is enough evidence to indicate that there is no significant relationship between the number of citations and the most productive country which is proved by the analysis of this study as well.

## Directional Measures

			Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Nominal by Nominal	Lambda	Symmetric	.098	.126	.735	.462
		Most productive country Dependent	.200	.245	.735	.462
	Goodman and Kruskal tau	Highly cited articles Dependent	.000	.000	. <sup>c</sup>	. <sup>c</sup>
		Most productive country Dependent	.135	.075		.230 <sup>d</sup>
		Highly cited articles Dependent	.043	.033		.567 <sup>d</sup>

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Cannot be computed because the asymptotic standard error equals zero.

d. Based on chi-square approximation

## Symmetric Measures

			Value	Approx. Sig.
Nominal by Nominal	Phi		.409	.570
	Cramer's V		.289	.570
	Contingency Coefficient		.379	.570
N of Valid Cases			40	

From the obtained contingency coefficient of .379, it can be inferred that the association between dependent and independent

variable is not significant as the value .379 is closer to 0 than to 1. Also from the lambda asymmetric value of .20 authors

conclude that there is a moderate level of association between the two variables. This lambda value tells us that there is 20% reduction in predicting the most productive country when we know the highly cited articles.

**H<sub>0</sub>:** There is no significant relationship between the number of citations and the most productive Institute/university.

## Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.015 <sup>a</sup>	8	.201
Likelihood Ratio	7.129	8	.523
Linear-by-Linear Association	3.308	1	.069
N of Valid Cases	40		

a. 12 cells (80.0%) have expected count less than 5. The minimum expected count is .03.

At 90% confidence level, the critical value obtained from the chi-square table at degree of freedom 8 is 13.3616 while the calculated value of chi-square is 11.015 which is less than the tabular value and falls in the acceptance region. Hence the null

hypothesis is accepted and the alternative hypothesis is rejected. There is enough evidence to indicate that there is no significant relationship between the number of citations and the most productive university/Institute and justified by the analysis of this study also.

## Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.525	.201
	Cramer's V	.371	.201
	Contingency Coefficient	.465	.201
N of Valid Cases		40	

From the obtained contingency coefficient of .465, it can be inferred that the association between dependent and independent variable is not significant as the value.465 is closer to 0 than to

1. Also from the lambda asymmetric value of .20 authors conclude that there is a moderate level of association between the two variables. This lambda value tells us that there is 20% reduction in predicting the most productive country when we know the highly cited articles.

## Directional Measures

			Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Nominal by Nominal	Lambda	Symmetric	.038	.036	1.013	.311
		Most productive Institute/University Dependent	.200	.179	1.013	.311
		Highly cited articles Dependent	.000	.000	. <sup>c</sup>	. <sup>c</sup>
Goodman and Kruskal tau		Most productive Institute/University Dependent	.196	.075		.054 <sup>d</sup>
		Highly cited articles Dependent	.035	.026		.700 <sup>d</sup>

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Cannot be computed because the asymptotic standard error equals zero.

d. Based on chi-square approximation

## 7. Findings

This study is the first attempt to judge or assess the contributions to this journal by individual or institutional contributors from 2005-14. It also assesses the impact of

individual article and Individual authors in the literature. The findings suggest that there is significant relationship between the number of citations and the most productive author while there is no significant relationship between the number of citations and the most productive country as well as there is no

significant relationship between the number of citations and the most productive university/Institute. The journal that published the largest number of research articles by an author/country/university has great impact in the field of study.

## 8. Limitations and Future studies

Several limitations of this study need to be kept in mind. First the current study did not include articles published before 2005. Second the citations counts were taken from the Google scholar and thus duplicity cannot be ignored. Future studies could be conducted for the study in other areas like (1) Develop a conceptual classification from the literature rather than imposing the pre-existing taxonomy of classification, (2) Match the category list of researchers (Academics or non academics), (3) Identify some new variables over which bibliometric study could be done, (4) Use some more reliable source for getting the citations and do the comparative study of citations taken from different source like web of science,

Google scholar and Scopus and apply some statistical tools for analysing the bibliometric study.

## 9. Conclusions

The main purpose of the present work is to examine the articles, authors and Institutions that have had the most impact on the development of knowledge in the field of research through this journal. This survey only gives a static picture of a dynamic field. Supply chain management an international journal is a top ranking journal in the field of Supply chain management. The geographical coverage of journal is high with 37 countries coverage and it is expected that in future it will expand its horizon. It is a popular journal of Indian researchers, which constitutes 2% publications of Indian authors. The India is in 14<sup>th</sup> rank in the publication in this journal out of 37 countries.

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