Mapping of Literature on 'Six Sigma' by J-Gate Database

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Abstract- *Six Sigma is a quality improvement to measure the process outputs in manufacturing sectors for error reducing system and J-Gate is a premier research platform, helping to find, analyze, and share information in the sciences, social sciences, arts, and humanities. Therefore, the present study discusses the "Six Sigma" as reflected in J-Gate for the period from 2008–2017. This study investigates the highly productive authors, Document Type wise, Country wise, Language wise, Publication year wise, Research area wise, Source Title or Journal wise.*

Keywords *- J-Gate, Six Sigma, Publication Productivity*

I. INTRODUCTION

Six Sigma is a set of techniques and tools for process improvement. It was introduced by engineer Bill Smith while working at Motorola in 1986. Jack Welch made it central to his business strategy at General Electric in 1995.Six Sigma is generally used in manufacturing sectors to minimize the wastage and to assure the quality in such a way the same can be implemented in libraries to develop the process and improve the standard of the library to satisfy the users. Six Sigma helps to improve the standard of the library and helps to improve the skills & ability of the library employees. It insists on continuous improvement and development of the library as well as library staff members. The ultimate goal of the library is to satisfy its users. This can be available by the Six Sigma. It helps library employees to have a better management to evaluate the services to library users. Therefore considering the importance of Six Sigma the study has been undertaken by the authors.

II. CONCEPTUAL ANALYSIS

1. Six Sigma

Harry (2000) explained Six Sigma is "a disciplined method of using extremely rigorous data gathering and statistical analysis to pinpoint sources of errors and ways of eliminating them"

2. J-Gate

J-Gate is an electronic gateway to global e-journal literature. Launched in 2001 by Informatics India Limited, J-Gate provides seamless access to millions of journal articles available online offered by 13,273 Publishers. It presently has a massive database of journal literature, indexed from 47,958 e-journals with links to full text at publisher sites. J-Gate also plans to support online subscription to journals, electronic document delivery, archiving and other related services. a. Table of Contents (TOC) - For 47,958 e-journals. b. Database - A comprehensive searchable database with 53,067,286 articles, with 10,000+ articles added every day.

III. OBJECTIVES OF THE STUDY

1. To Identify Publication Year wise articles published in J-Gate on Six Sigma.
2. To find out highly productive authors on Six Sigma.
3. To Know Geographical distribution of Six Sigma articles by country.
4. To get information writing of Research areas.
5. To know highly preferred journals by the Scientists for writing research papers on Six Sigma.
6. Access availability of Six Sigma articles in J-Gate database.

IV. SCOPE & LIMITATION OF STUDY

This Study is limited to search results on the 'Six Sigma' in J-Gate database during 2008 to 2017.

V. METHODS AND MATERIALS

The growth of publications in the 'Six Sigma' was derived from the J-Gate during the period 2008 to 2017, a total of full text 1999 articles were found for the Title 'Six Sigma'. Necessary data was tabulated into separate sheets in terms of authorship pattern, geographical distribution of contributors, ranking list of Sources.

VI. REVIEW OF RELATED LITERATURE

Kale Vilas A., Deshmukh Rahul K. & Khiste Gajanan P. (2017) discusses the "Consortia" as reflected in

Web of Science for the period from 1989–2016. This study investigates the highly productive authors, Document Type wise, Country wise, Language wise, Publication year wise, Research area wise, Source Title or Journal wise. Khiste G.P. (2017) discusses the "Consortia" as reflected in Scopus for the period from 1989-2016. Khiste G.P. (2018) discusses the "Total Quality Management" as reflected in J-Gate for the period from 2003– 2017. Khiste G.P., Deshmukh R.K.& Kale V.A. (2017) discusses the "Bibliometric" as reflected in J-Gate for the period from 2005 to 2016. Khiste Gajanan P & Awate Avinash P (2018) analyzed Mapping of the Literature on "Knowledge Management" By Using Science Direct during 2008-2017. Khiste G.P., Maske D.B.& Deshmukh R.K. (2018) discusses the "Knowledge Management" as reflected in Scopus for the period from 2007– 2016. The result indicates that there were total 7996 documents on Knowledge Management during 2007 to 2016. At the international front, India's contribution to Knowledge Management is 298 documents during 2007 to 2016 which is rank on tenth. Khiste G.P.& Paithankar R.R.(2017) explained "Bibliometric" as reflected in SCOPUS for the period from 2008–2016. Khiste G.P.& Paithankar R.R.(2017) discusses the "Bibliometric" as 405 reflected in Web of Science for the period from 1989– 2016. Khiste G.P.& Paithankar R.R.(2017) discusses the "Bibliometric" as reflected in Science Direct for the period from 2005 to 2016. Maske Dnyaneshwar B, Deshmukh Rahul K & Khiste Gajanan P.(2018) analysed the items on "Information Literacy" as reflected in J-Gate for the period from 2007 to 2016. Veer Chaitanya , Veer D. K. & Khiste Gajanan P.(2018) discusses the "Big Data" as reflected in Scopus for the period from 2012–2016 and investigates the highly productive authors, document types and h-index. The result indicates that there were total 9191 documents with 54129 citations on Big Data during 2012 to 2016. Veer D.K. & Khiste G.P.(2017) explained about the published documents and its citation from Agricultural Universities in Maharashtra during the period from 2004 to 2016 by Indian Citation Index (ICI) database. Veer D.K. & Khiste Gajanan P. (2017) discusses the "Digital Library" as reflected in Scopus for the period from 1995–2016. Veer D.K. & Khiste Gajanan P. (2018) discusses the Information Literacy as reflected in Web of Science for the period from 1989– 2016. Veer D.K., Khiste Gajanan P. & Deshmukh Rahul (2018) explained the term Information Literacy as reflected in SCOPUS during the period during 2007 to 2016. Veer D. K., Khiste Gajanan P.& Veer Chaitanya (2018) discussed productivity of "Cloud Computing" documents during 2009–2016 - A Study with Special Reference to SCOPUS.

VII. PRODUCTIVE AUTHORS

The author has analysed the data related to productive authors and it is presented in the Table No. 1.

Table 1. Top 5 Authors which wrote highest articles on the 'Six Sigma'

Sr. No.	Author Name	No. of articles	Rank
1	Jiju Antony	56	1
2	Dinesh Khanduja	20	2
3	Deborah Hopen	19	3
4	James J Rooney	19	3
5	R Radhakrishnan	18	4
6	S R Devadasan	14	5

Table No.1 depicts highly productive authors. It is observed that Jiju Antony rank first who has contributed a maximum number of 56 articles, followed Dinesh Khanduja with 20 articles & on 5th rank the S R Devadasan with 14 articles published.

VIII. GEOGRAPHICAL DISTRIBUTION

The data related to Six Sigma articles has been analysed by top ten countries and presented it in the Table No. 2.

Table 2. Six Sigma: Country wise Analysis

Sr. No.	Country	Articles	Rank
1	United States of America	540	1
2	United Kingdom	518	2
3	India	293	3
4	Switzerland	287	4
5	Netherlands	89	5
6	Germany	65	6
7	Pakistan	20	7
8	Canada	18	8
9	Singapore	17	9
10	Turkey	16	10

Table No.2 depicts the geographical distribution of authors. Among 1999 articles, United States of America tops the list with 540 articles, followed by United Kingdom with 518 articles to its credit and Turkey published 16 articles with rank tenth positions.

IX.   CHRONOLOGICAL ANALYSIS

The author has analysed the data related to Six Sigma based publications chronologically during 2008 to 2017 presented in the Table No. 3.

Table 3. Year wise Articles published in J-Gate on Six Sigma

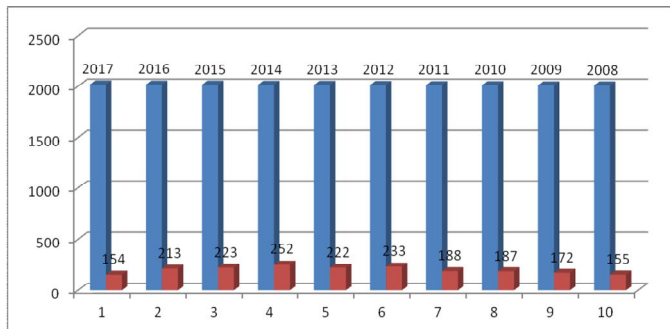| Sr. No.	Publication Year	Articles	Percentage
1	2017	154	7.7
2	2016	213	10.66
3	2015	223	11.16
4	2014	252	12.61
5	2013	222	11.11
6	2012	233	11.66
7	2011	188	9.4
8	2010	187	9.35
9	2009	172	8.6
10	2008	155	7.75
	Total=	1999	100

Figure 1. Graph No.1Year wise Articles published in J-Gate on Six Sigma.

Table No.3 & Graph No.1 shows that year-wise distribution of Articles. The highest number of articles was published in the year 2014 i.e., 252 (12.61%) and the next one with 233 (11.66%) articles was published in the year 2012 & lowest number of article 154 (7.7%) was published in the year 2017.

X.   RESEARCH AREA WISE ANALYSIS

The author has analyzed the compiled data of top -10 different types of Research Areas and presented it in the Table No. 4.

Table 4. Analysis of Six Sigma Articles by Top -10 Research area wise

Sr. no.	Research area	Articles	Rank
1	Business Management	626	1
2	Quality Management	335	2
3	Quality Engineering	175	3
4	Mechanical Engineering	172	4
5	Strategic Management & Business Policy	146	5
6	Industrial Engineering	140	6
7	Economics	134	7
8	Information Science And Systems	129	8
9	Electrical Engineering	121	9
10	Organizational Change And Development	117	10

Table No. 4 presents the Research Area wise categorization of the articles retrieved. Research Area wise analysis indicates that maximum number of contributions was in the area of Business Management i.e. 626 and on 10th rank in the area of Organizational Change and Development published 117 articles.

XI.   HIGHEST RANKING JOURNALS

The Highest Ranking Journals in which documents the highest number of articles has been published on the term "Six Sigma". The related information is being presented in the Table No.5.

Table 5. Highest ranking Journals

Sr. No.	Highest Ranking Journals	Articles	Rank
1	International Journal of Six Sigma and Competitive Advantage	91	1
2	International Journal of Lean Six Sigma	85	2
3	International Journal of Productivity And Quality Management	44	3
4	International Journal of Quality And Reliability Management	43	4
5	Total Quality Management and Business Excellence	43	4
6	ASQ Six Sigma Forum Magazine	41	5

Table No. 5 indicates that highest ranking Journals in which articles was published; International Journal of Six Sigma and Competitive Advantage ranks first with 91 articles

to its credit, followed by International Journal of Lean Six Sigma ranking on sec¬ond with 85 articles. ASQ Six Sigma Forum Magazine is on fifth rank with 41 articles.

XII. PUBLICATION ACCESS TYPE

Publication access type means type of category of articles whether articles are available Full Text or Non-Full Text through J-Gate Database is defined in Table No.6

Table 6. Six Sigma Articles Access Type

Sr. No.	Access Type	Articles	Percentage
1	Full Text Access	950	47.52
2	Non-Full Text	1049	52.48
	Total =	**1999**	**100**

Table No.6 shows that among total 1999 articles 950 (47.52%) articles are full text and 1049 (52.48%) articles are Non-Full text.

XIII. MAJOR FINDINGS & CONCLUSION

Jiju Antony rank first who has contributed a maximum number of 56 articles, followed Dinesh Khanduja with 20 articles & on 5th rank the S R Devadasan with 14 articles published.

Among 1999 articles, United States of America tops the list with 540 articles and Turkey published 16 articles with rank tenth positions.

The highest number of articles was published in the year 2014 i.e., 252 (12.61%) and lowest number of article 154 (7.7%) was published in the year 2017.

Research Area wise analysis indicates that maximum number of contributions was in the area of Business Management i.e. 626 and on 10th rank in the area of Organizational Change and Development published 117 articles.

Among total 1999 articles 950 (47.52%) articles are full text and 1049 (52.48%) articles are Non-Full text.

The data suggest that there was a significant research activity in the field of Six Sigma during the study period. The present study indicates that there is an increase in the documents year by year. Therefore it is healthy pattern of progress in Six Sigma field.

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