Content Analysis of Information Technology in Biomedicine

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Abstract

Content analysis is a widely used qualitative research technique. Content analysis of articles published in International Journal of Information Technology in Biomedicine from 2012 to 2007 is carried out in all there are 599 articles published in six years. The total number of author contributions of this study is 1442 & the maximum authors are from USA. The highest number of (CLS) Current Literature survey is 22.

1. Introduction

The content analysis is regarded as an important technique of obtaining facts which is used for the purpose of studying political, social, economical & business problems. The research conducted by this method is considered more reliable. The basic goal of content analysis is to take a verbal, on-quantitative document & transform it into quantitative data. The result of content analysis can generally be presented in tables containing frequencies or percentage, in the same manner as survey data. Content analysis was first used by student of journalism to study the content of American newspaper. The use of content analysis in the social sciences-today its method & its sciences –today its method & its problems of interpretation has been affected both by related developments in other fields & by historical demands for certain practical application.

1. Types of Content Analysis

There are two general categories of content analysis: conceptual analysis and relational analysis. Conceptual analysis can be thought of as establishing the existence and frequency of concepts in a text. Relational analysis builds on conceptual analysis by examining the relationships among concepts in a text.

- **Conceptual Analysis**

In conceptual analysis, a concept is chosen for examination and the number of its occurrences within the text recorded. Because terms may be implicit as well as explicit, it is important to clearly define implicit terms before the beginning of the counting process. To limit the subjectivity in the definitions of concepts, specialized dictionaries are used.

- **Relational Analysis**

Relational analysis builds on conceptual analysis by examining the relationships among concepts in a text.

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And as with other sorts of inquiry, initial choices with regard to what is being studied and/or coded for often determine the possibilities of that particular study. For relational analysis, it is important to first decide which concept type(s) will be explored in the analysis

2. Definitional Analysis

2.1 Content

Content means what a document contains. This idea of what contained in a document be it a book, a periodical or a newspaper.

2.2 Analysis

Needs, assessment getting information to solve problems in the corporation going out & seeking opinions on optimal actual feelings, causes & solutions.

2.3 Content Analysis

A systematic analysis of the content rather than the structure of a communication, such as a written work, speech, or film, including the study of thematic and symbolic elements to determine the objective or meaning of the communication.

2.4 Information Technology in Biomedicine

IEEE transactions on information Technology in Bio-medicine (ISSN-1089-7771) are published bio-monthly by the institute of electrical & electronic engineers. It delivers access to quality information on technical & professional issues in Biomedical engineering including the most highly cited journals in the field. The journal of the Information Technology in Bio-medicine published original research papers articles, notes, reviews & also papers on biomedical engineering. It covers bio-engineering, communication, networking & broadcasting, computing & processing, waves & electromagnetic, robotics & control system, signal processing & analysis.

3. Review of Literature

The research methods are divided into three broad categories, quantitative, and qualitative & participatory research method. These research methods have different approach, techniques & tools to conduct a research Collis 2009. Content analysis is the product of computer age. It dates back to 1940 when it became very credible and frequent research method. The researchers started to focus the concepts rather than the words or the relationships between them. (De Sola Pool, 1959)Content analysis is a multipurpose research method developed specifically for investigating any problem in which the content of communication serves as the basis of inference. Holsti(1969). The research technique which is used for the objective, systematic and quantitative description of manifest content of communications is called Content Analysis (Berelson, 1952). It is a type of research tool that focuses on the actual content and internal features of the problem or situation. Content analysis & coding interchangeably to refer to the objectively, systematic & quantitative description of any symbolic behavior. Weber (1990) Content analysis is classifies textual material by reducing it to more relevant manageable bits of data. Gorman & Peter, (2005).

4. Objectives

1. To discover the evolving subjects in journal of the Information Technology in Biomedicine.
2. To find out the authorship pattern.
3. To find out the subject areas of current literature published.
4. To find out the country wise distribution of authors.

5. To find out the volume wise authorship pattern of contributions.

5. Result & Discussion

Table No.1: Distribution of Articles According Subject Area

Sr no.	Subject Area		No. of articles						Total	%
			2012	2011	2010	2009	2008	2007		
01.	Bioengineering		29	21	20	24	28	19	141	23.53
02	Computing & Processing		22	21	23	17	13	15	111	18.54
03.	Waves & electromagnetic		19	12	10	14	16	9	80	13.35
04.	Networking & broadcasting		16	15	16	12	7	5	71	11.86
05.	Photonics & electro-optics		10	6	13	12	8	10	59	9.84
06.	Communication		9	7	12	6	5	5	44	7.34
07.	Signal Processing & analysis		6	7	8	5	2	4	32	5.34
08.	Robotics & Control system		6	6	4	3	2	6	27	4.52
09.	Engineered materials		5	3	7	4	5	2	26	4.34
10.	Power, energy & industry application		3	1	-	2	-	2	8	1.34
	Total								**599**	**100**

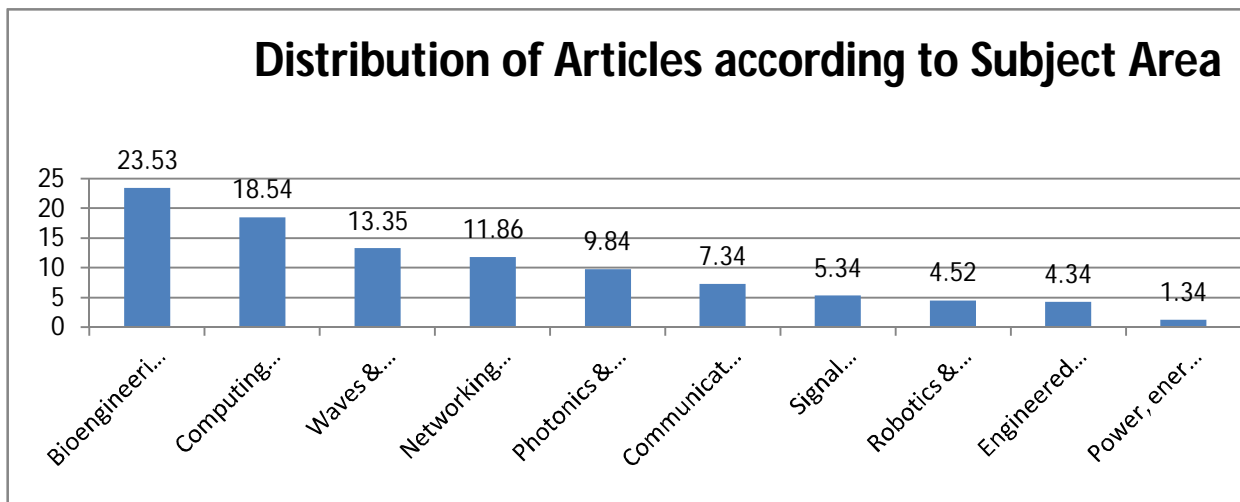**Figure No.1 Distribution of Articles According to Subject Area**

Table no.1 & fig no.1 covers distribution of papers according to subject areas out of 599 articles, there are only 10 subject areas. The highest number of the article i.e. 141 (23.53%) covers Bioengineering, which is followed by computing & processing i.e. 111 (18.54%).The lowest number of articles i.e. 8 (1.34%) of power, energy & industry application.

Table no.2: Authorship pattern of contributions

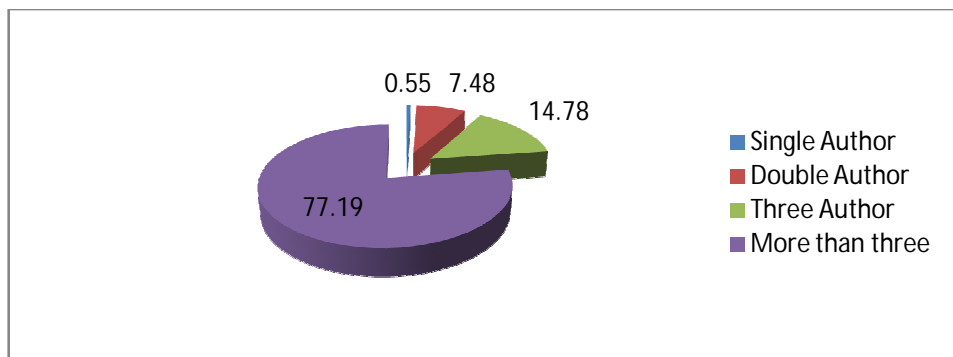| Sr no.	No. of Author	No. of contribution	%
01.	Single Author	8	0.55
02.	Double Author	108	7.48
03.	Three Author	213	14.78
04.	More than Three	1113	77.19
	Total	1442	100

Figure no.2 Authorship pattern of contributions

Table no.2 & fig.no.2 shows that out of 1442 contributions 8 (0.55%) have been contributed by single author, 108(7.48%) by two authors, 213 (14.78%) by three author & 1113 (77.19%) has been contributed by more than three authors.

Table no.3: Volume wise distribution of Current literature Survey

Sr no.	Month	No. Of CLS							
		2012	2011	2010	2009	2008	2007	Total	%
01..	January	3	2	3	1	2	-	11	12.79
02.	March	2	3	4	-	1	2	12	13.95
03.	May	3	1	5	6	4	3	22	25.58
04	July	4	4	3	2	1	5	19	22.09
05.	September	2	2	1	-	2	2	9	10.47
06.	November	1	3	2	5	1	1	13	15.12
	Total							86	100%

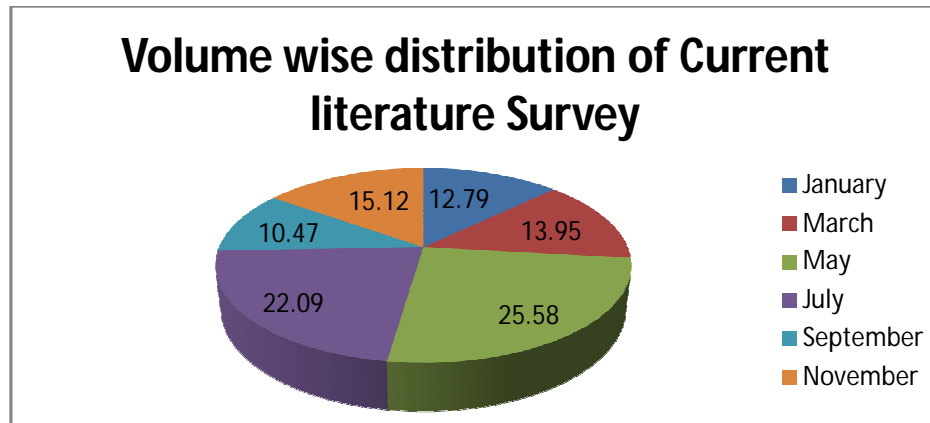**Figure no.3 Volume wise distribution of Current literature Survey**

Table no.3 & fig no.3 depicts the percentage of CLS is 86.The highest number of CLS is 22 (25.58%) in May. & lowest number of CLS is 9 (10.47%) in September.

Table no.4: Country Wise Distribution of Authors

Sr no.	Place	No. of Authors	Percentage
01.	**USA**	**380**	**26.35**
	Orlando	71	18.68
	Boston	48	12.63
	Norman	42	11.05
	Los Angles	37	9.73
	Albuquerque	29	7.63
	Spokane	27	7.10
	Pittsburgh	25	6.57
	Cambridge	22	5.78
	San Fransico	21	5.72
	Berkeley	5	1.31
	Buffalo	6	1.57
	New York	13	3.42
	Dayton	11	2.78
	Chicago	9	2.36
	Houston	8	2.10
	St.Louis	6	1.57
02.	**Greece**	**230**	**15.95**
	Athens	65	28.26
	Thessaloniki	46	20
	Patras	27	11.75
	Ioannia	22	9.56
	Lamia	37	16.09
	Heraklion	33	14.34
03	**Spain**	**124**	**8.59**
	Madrid	68	54.83
	Valencia	42	33.83
	Zaragoza	14	11.29
04.	**China**	**121**	**8.39**

	Shanghai	33	27.27
	Macau	32	26.45
	Beijing	27	22.31
	Hong Kong	24	19.83
	Tianjin	5	4.14
05.	**UK**	**84**	**5.82**
	London	37	44.04
	Liverpool	31	36.91
	Manchester	16	19.05
06	**Australia**	**72**	**4.99**
	Melbourne	26	36.11
	Sydney	22	30.56
	Toowoomba	16	22.22
	Canberra	8	11.11
07.	**Italy**	**68**	**4.71**
	Trento	21	30.88
	Florence	16	23.53
	Palermo	13	19.12
	Milan	10	14.70
	Bologna	8	11.77
08.	**Japan**	**65**	**4.54**
	Hiroshima	25	38.46
	Ishikari	19	29.24
	Toyota	21	32.30
09.	**Korea**	**60**	**4.16**
	Daejeon	29	48.33
	Seoul	17	28.33
	Seongnam	14	23.34
10.	**France**	**43**	**2.98**
	Lyon	23	53.48
	Rennes	20	46.52
11.	**Canada**	**41**	**2.84**
	Varennes	29	100
12.	**Taiwan**	**32**	**2.21**
	Taichung	21	65.63
	Taipel	11	34.37
13.	**Germany**	**24**	**1.66**
	Aachen	9	37.5
	Hannover	7	29.16
	Munich	3	12.5
	Bochum	5	20.84
14.	**Cyprus**	**23**	**1.59**
	Nicosia	14	60.86
	Paphos	9	39.14
15.	**Brazil**	**20**	**1.38**
	Sau Paulo	14	70.00
	Campinas	6	30.00
16.	**India**	**18**	**1.24**

	Bengaluru	7	38.89
	Kolkatta	6	27.77
	New Delhi	5	33.34
17.	**Iran**	**15**	**1.04**
	Ahvaz	9	60.00
	Yazd	6	40.00
18.	**Finland**	**14**	**0.98**
	Kajjani	11	78.57
	Turku	3	21.43
19.	**Poland**	**8**	**0.58**
	Lublin	8	100
	Total	**1442**	**100%**

Country wise distribution of authors

Country	Value
Poland	0.58
Finland	0.98
Iran	1.04
India	1.24
Brazil	1.38
Cprus	1.59
Germany	1.66
Taiwan	2.21
Canada	2.84
France	2.98
Korea	4.16
Japan	4.54
Italy	4.71
Australia	4.99
UK	5.82
China	8.39
spain	8.59
Greece	15.95
USA	26.35
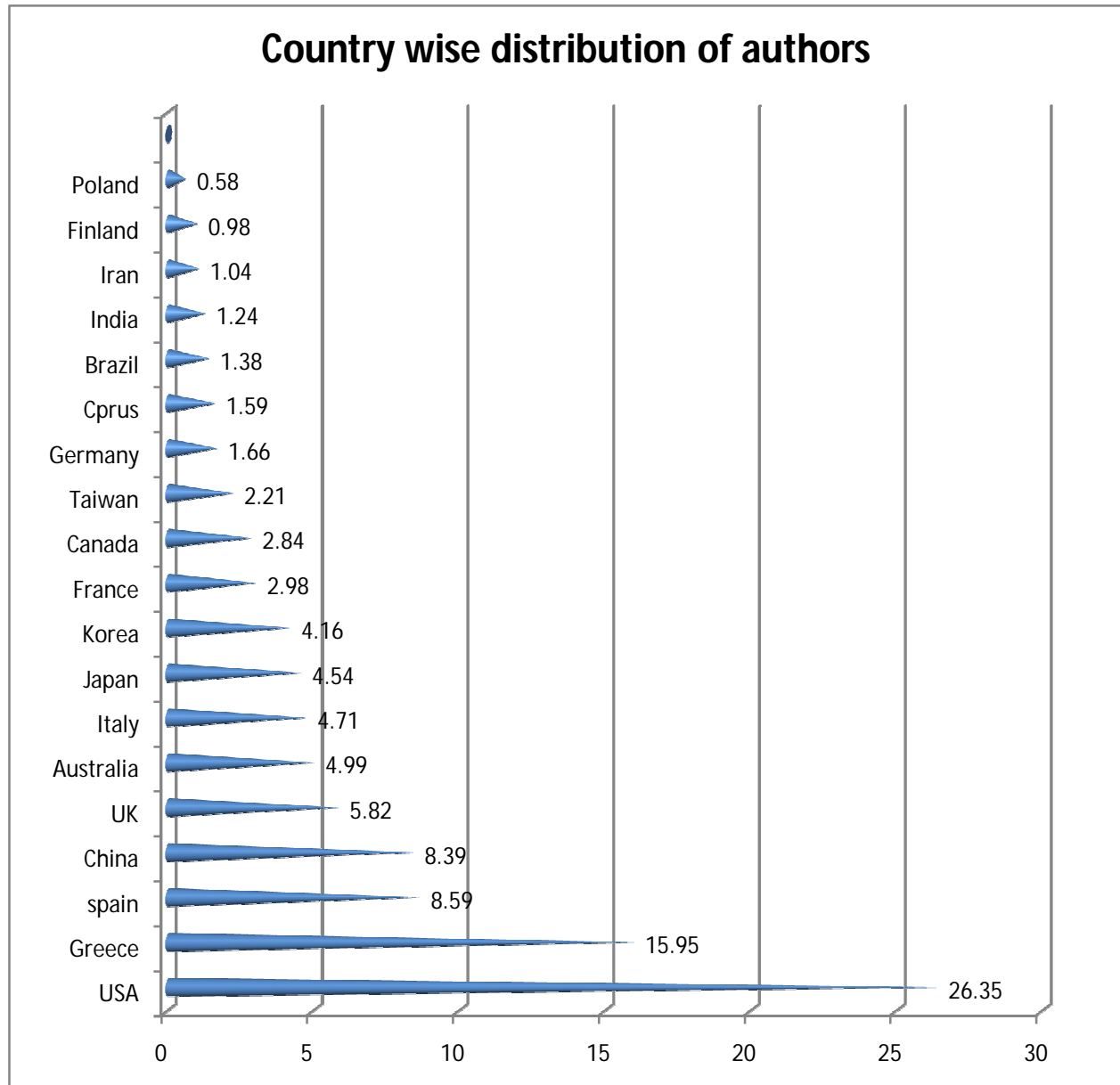
Figure No.4 Country Wise Distribution of Authors

Table no.4 & fig no.4 shows that 1442 authors have contributed their articles for the International journal of Information Technology in Biomedicine in 2012-2007.maxium number of articles are contributed by USA authors i.e.380(26.35%) where as minimum no. of articles are contributed by Poland authors i.e.8 (0.58%). It proves that this journal gives preference to foreign authors.

Table No.5 Volume Wise Authorship Pattern of Contributions

Sr no.	Vol.no.	Contributions Of the one author	Contribution of two author	Contribution of three author	Contribution of > 3	Total	%
01	16	2	28	75	368	473	32.81
02	15	-	30	27	191	248	17.19
03	14	1	22	36	141	200	13.87
04	13	3	8	36	137	184	12.76
05	12	1	8	12	158	179	12.42
06	11	1	12	27	118	158	10.95
	Total	08	108	213	1113	1442	100%

Figure No.5 Volume Wise Authorship Pattern Of Contributions
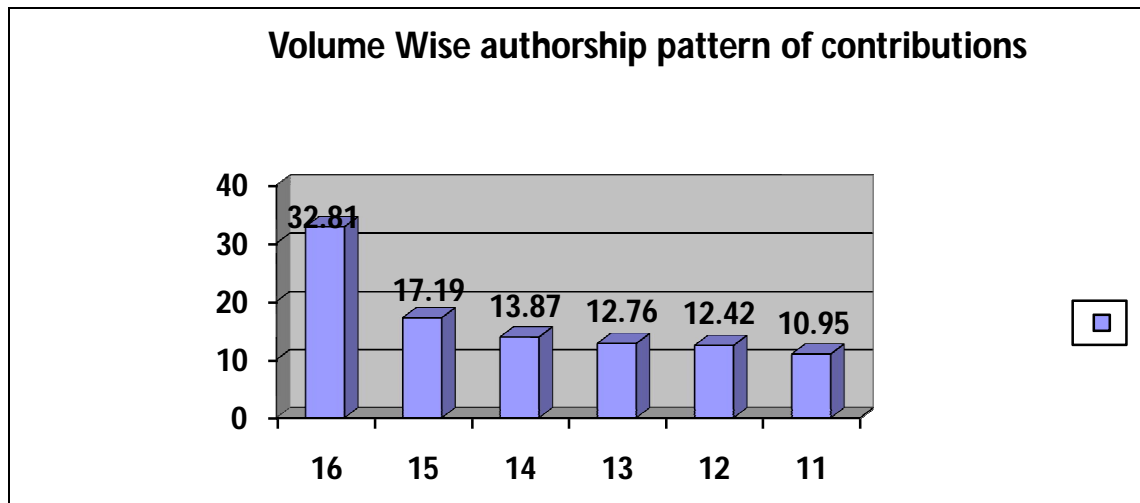
Table no.5 & fig no.5 indicates that volume wise authorship pattern of contributions .Vol. no.16 contributions 473 (32.81%), Vol no.15 contributions 248 (17.19%),vol no.14 contributions 200 (13.87%),vol. no.13 contributions 184 (12.76%) & Vol. no.12 contributions 179 (12.42%) and Vol.no.11 contributions 158 (10.95%).

Conclusion

Content analysis helps the researcher to analyze the content of documents. It is observed in the present study that, the number of articles of source information Technology in Biomedicine has 599 articles in six years. The authorship pattern of articles shows that more than three authors contributed maximum than the others i.e.1113(77.19%) & single authored articles are lowest in number i.e 8 (0.55%).It was seen that the maximum numbers of authors are from USA.

References

Berlson .B(1952) Content analysis in Communication research, New York: Free Press.

Collis Ji. & Hussey,Roger (2009),Business research :a practical guide for undergraduate & postgraduate students;3rd ed.Basingstoke:Palgrave Macmillan 358.

De sola poll& Ithid (1959),Trends in Content Analysis:Urbad:University of Illinois Press.

Gorman,G. E. (2005),Quantitave research for the information professional.Faceet publishing.Londo,44.

Holsti,O(1969), Content analysis for the social science & humanities reading MA Addison wisely,14

Jadhav Vandana & Khaparde V. S. Citation Analysis of Ph D theses on Physics submitted to Dr Babasaheb Ambedkar Marathwada University, Collnet Journal of Scientometrics and Information Management. Vol. 5(1) June 2011, ISSN: 0973-7766.

Jadhav Vandana & Khaparde V. S . Citation Analysis of University News Journal, 8th International CALIBER - 2011, Goa University, Goa, March 02-04, 2011 © INFLIBNET

Khaparde V. S. (2011). E-journals in library and information science: A Bibliometric study. International journal of Humanities and Social Sciences. Vol. 1(11) Special Issue August 2011 Center for promoting Ideas, USA.

Khaparde V. S. (2011). Use of Internet by Research Scholars of Social Science Departments of Dr.Babasaheb Ambedkar Marathwada University, Aurangabad. International Journal of Humanities and Social Sciences. Vol. 1(10) August 2011, Center for promoting Ideas, USA.

Khaparde V. S. Pattern of information use by researchers in library and Information Science. International Journal of Humanities and Social Sciences. Vol. 1(12) September 2011 Center for promoting Ideas, USA.

Khaparde V. S. Use of Information by Library Science Professionals: A Bibliometric Study. British Journal of Humanities and Social Sciences. Vol. 1(2) October, 2011, London, United Kingdom, 78-90 ISSN 2048-1268.

Khaparde V. S. Bibliometric study of Electronic Journal of Academic and special Librarianship. British Journal of Humanities and Social Sciences. Vol. 1(2) October, 2011, London, United Kingdom, 33-43 ISSN 2048-1268.

Khaparde V. S. Information Usage of Biological Science Researchers of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. International Library Movement, Vol.33 (2) June, 2011, Holy Temple Library, Ambala, 64-71. ISSN 0970-0048.

Khaparde V. S. Digital Libraries in Knowledge Management and Status of Librarians In International Journal of Software Engineering and Technology, Vol. 3(3), March 2011, 124-128. ISSN: 0974- 973X (P) Online 0974- 9624.

Khaparde V. S. Knowledge Management and Library and Information Science Professionals. International Journal of Artificial Intelligent Systems and Machine Learning, March 2011.

Pratapure S.K.(2009);Content Analysis of journal of The Indian Chemical Society;Project report submitted to Dr. Babasaheb Ambedkar Marathwada University,Aurangabad.

Weber R.(1990);Content Analysis, thousand oaks,cal-sage,2nd editon,117-123.