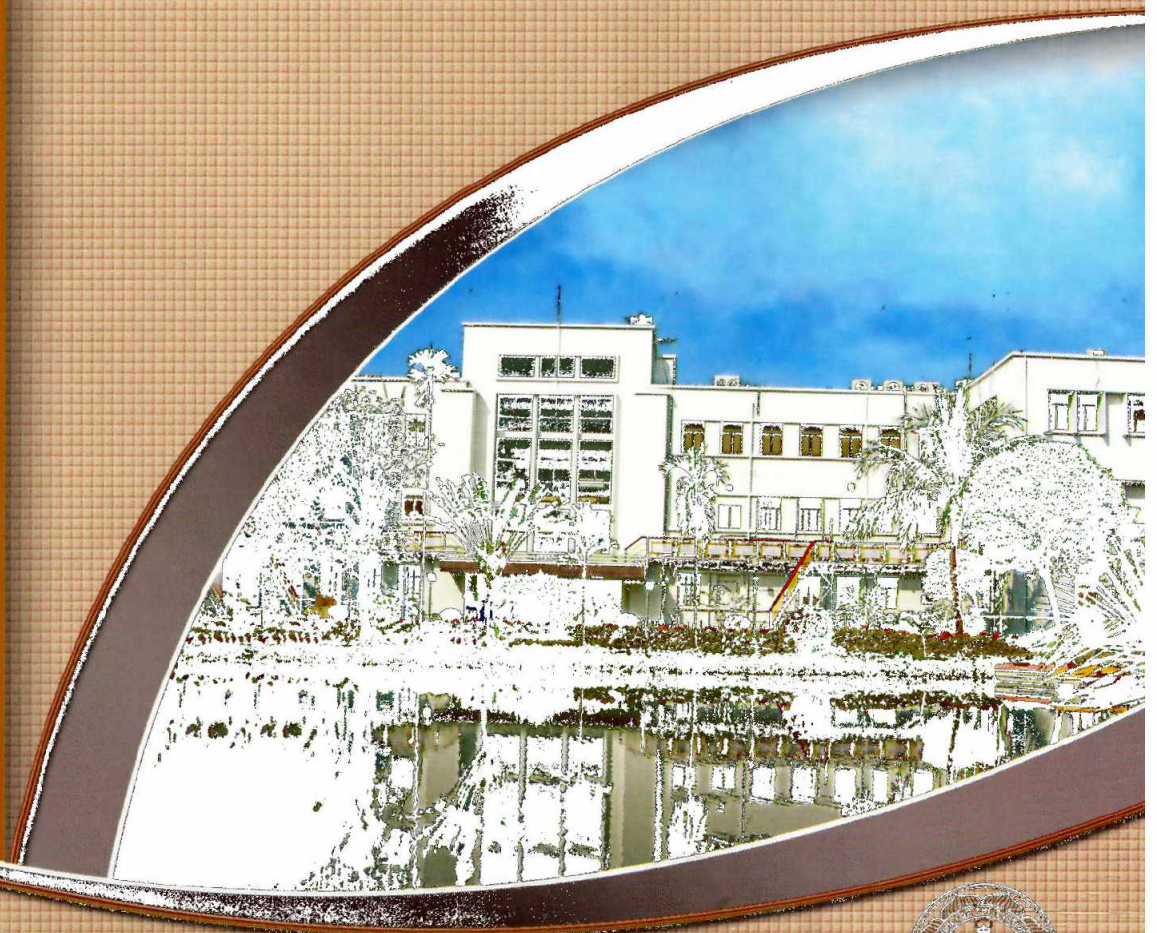# Challenges in Library Management System (CLMS 2012)

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Usage Pattern of Information Resources at CSIR- National Metallurgical Laboratory, Jamshedpur, India

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Abstract : The collection development policy for knowledge Resource Centre can be made by applying various value added analysis. This study primarily focus on the current usage of information resource at National Metallurgical Laboratory through citation analysis of research papers. The output of the study set forth a collection development tool for applying in acquisition policy. The escalating price of library materials and multiple demands of users required a judicious selection policy for subscriptions of library materials keeping in mind of current usage of the library holdings. The Bibliometrics method has been applied to 187 research papers contributed by CSIR- NML scientists during 2010. A total 3825 references used in research papers has been individually scanned, tabulated, analyzed, and interpreted for drawing conclusion on usage of collections. The findings depict that, more than 82 percent references were used from journals and rest 18 percent references occurred in books, proceedings, manuals, monograph, Reports, Patents, Bulletins, Standards, Meetings, and Technical Notes. These references range from 1950-2010. The maximum literature referred covered the period 2001-2010 and a total 1915 citations fall in this range. It was observed that 918 references used were in electronic format, which are mainly added through subscription and CSIR e-journal consortia. It is interesting to note that, a total of 3154 (print + electronic) references scattered over 545 journals, out of which 180 journals are alone emanating from Elsevier, providing 1731 references. Altogether 35 R&D areas were identified, covering 545 journals, ranging from Earth Science to Waste Management and Utilization and Biomaterials to Nanotechnology. However, Metallurgy and Materials Science area has been extensively quoted in 1176 (37.76%) of the total 3154 references, covering 147 journals. This study further traced out the core journals with the help of Bradford curve and suggests top 20 core journals as per the current needs.

Key words *Usage pattern, Collection Development, Electronic Resources, R&D Libraries, Bradford's Law*

Introduction

The aim and objective of any Information Centre is to provide pinpoint, exhaustive, and nascent information to readers who use information for a variety of purposes. A library, therefore, is always adjudged good or bad on by its usage. This goal makes the collection development evaluation imminent. Considering the importance of such usage, an attempt has been made in this study to evaluate the current usage of literature at CSIR-National Metallurgical Laboratory, Jamshedpur, Jharkhand (Erstwhile Bihar). The worth of a library collection can be judged through various methods like, circulation of documents, user survey, download analysis of literature, Citation/Reference analysis, etc. The present study, however, evaluates the library usage through reference analysis. Today, citation and ranking information are becoming key aspects of knowledge management in R&D Knowledge Resource Centers. It helps to examine the changing user needs and products so as to

understand and manage the information resources besides responding the user needs better.

Effective collection analysis and assessment provides quantitative and qualitative data for evaluating the usefulness and utility of a library's holdings. It assists with determining budget requirements by focusing attention on how well the library's collections in specific areas support the needs of the users and the institution as well. It also points out whether the institution's investment in the collection is being managed responsibly. The aim of such assessment is, therefore, to determine as to how well the collection supports the goals, needs, and mission of the library or parent organization. The collection (both locally held and remotely accessed materials) is assessed in the local context. Evaluation seeks to examine or describe collections either in their own terms or in relation to other collections and checking mechanisms, such as lists. Both evaluation and assessment provide a better understanding of the collection and the user community.

The major problem of research libraries all over the world today is deciding as to which serials should be subscribed to meet the needs of their specialized users without subscribing to any unnecessary journals. The problem has been further aggravated recently by shortages of funds and subsequent cuts in library book budgets. In order to operate effectively, libraries must identify literature of high utility to their clients, and must acquire and organize the literature in such a way to ensure their optimal use.

One of the generally accepted methods of scientific investigation is, indeed, to follow the scientific literature by the simplest means. Various sources are used by scientists to gather information, for example, through regular reading of all available texts, recommendations of colleagues and superiors, and references or citations in other related publications.

Literature Surveyed

The citation analysis technique can be traced by using references found in scholarly works. In the early 1970s, Coale evaluated the Latin American colonial history collection at Chicago's Newberry library using bibliographies of a group of scholarly monographs (Lancaster, 1993). These bibliographies were also checked against the holdings of other libraries for comparison. In addition to scholarly works as the source for compiling checklists as noted in studies by Olaosun (1984), Bland (1980) and Stelk and Lancaster (1990), recommended readings and textbooks were also used. Citations drawn from student's dissertations or term papers was another source of checklist used in numerous studies, the earliest being that of Emerson's analysis of 23 engineering doctoral dissertations at the Columbia University between 1950 and 1954 (Heidenwolf, 1994) to determine the percentage of references held or not held by the other campus libraries in the university. Sylvia (1998) analyses the serial titles cited by the psychology students in their research bibliographies to evaluate the use of a journals collection for the purpose of journal selection or de-selection. In another study using doctoral dissertations, Buzzard and New (1983) investigated library collections used by doctoral students in the humanities, sciences, and social sciences. However, the use of this method is determining the percentage held; collection usage, because of the possible links between physical accessibility and use or citation of an item, is questionable. Moreover, materials consulted for background knowledge may be under represented while the patrons may not necessarily use sources that were cited. Nevertheless, it is a valid method of evaluation as shown by Nisonger's test of the Lopez method conducted at the University of Manitoba (Nisonger, 1980) and his test of two citations checking techniques in which citations were drawn from journal articles. Being inspired by earlier studies, an attempt has been made to determine the usage pattern of the information resource of CSIR-NML by way of case study.

Purpose of the study

The purpose of the study was to analyze the usage of resources of knowledge resource centre by R&D personnel at National Metallurgical Laboratory, Jamshedpur by citation analysis of research papers contributed by CSIR-NML during 2010 and to suggest the core journals in the field of Metallurgy and Materials Sciences through citation analysis applying Bradford curve.

To be able to show an example of the contribution of KRC to Paper publications, the following specific questions were addressed:

1. How extensively are the references of research papers published in 2010 are available in the collection of the Knowledge Resource Centre?
2. How old references being used in research papers?
3. Which Metallurgy and Materials Science journals are most frequently cited?
4. What is the "core journal" percentage for a Metallurgy and Materials Science?
5. What is the narrow subject area of journals used in NML research papers?
6. What are the highly used publishers of journals?

Limitations of the study

Keeping the time constraints, the present study has the following limitations. First, the sample used in this study is quite limited as only 187 research papers appended with 3825 citations were included in data. However, many previous studies were based on citation analysis of dissertations, individual journals, publications from government body to trace out the usage of library holdings and suggested core journal in specific subject area, but the present study focus on the usage and collection development of research library catering to the needs of Metallurgy & Materials Sciences.

Research method and data

A total of **187** Research papers published in various formats like, SCI, Non- SCI, National proceedings, Internatioal proceedings and book chapters were identified by institutional affiliation.Fig.1 depicts the status of R&D publications, a maximum of 120 papers appeared in SCI was downloaded from Web of Science with complete reference data   and the remaining 54 papers were scanned form Non-SCI journals, proceedings and book chapters.

Thus, the total number of references cited in the **187** research papers was 3,825. The average number of references per paper was 20. The availability of references was coded under the following four categories:

1. available in electronic form;
2. available in print form;
3. available in the open network; and
4. Not available.

The bibliographic references in each article in the sample were first examined by classifying each citation into one of the following nine source categories by format of publications: books/monographs (includes chapters in a book, monograph series, sourcebook), journals (i.e. scholarly and academic serials in the form of print or online, articles "in press" with journal title cited), periodicals (i.e. magazines, newspapers, working papers, Newsletters), conferences proceedings (proceedings, seminars meetings, workshops, forums),

unpublished (i.e. unpublished manuscripts, thesis/dissertation, documents, reports/ documents, unpublished test and short communications), reference sources (i.e. government documents, dictionaries, handbooks, encyclopedias) reports (i.e. published reports by institutions or corporations), web documents (documents retrieved from the internet via the worldwide web with Uniform Resource Locator (URL) provided, and others (i.e. articles in journals but without journal title cited or any other format without main source mentioned). "Conference proceedings" was designated for compilations of papers presented at conferences or symposia that were not published as a regular issue of a journal.

Results/discussion

The individual research papers scanned and references of all 187 papers contributed by NML scientists and technical personnel are analyzed and found that, more than 70% titles were within the library collection. It was observed that the consortia based journals were used optimally during 2000-2010.However,other electronic resources like web of science, metal abstract and newly added commercial digital library emanating from American Society for Testing of Materials have also made their presence in references of the respective research papers.

Research Papers Published in 2010

During 2010, NML has contributed 187 research papers, appeared in various formats. About 70% papers were communicated in journals, in which SCI covered 64.17%, where as Non-SCI recorded 5.34%. A total of 55 papers (29.41%) were published in different Proceedings (10 in National and 45 International) and only two papers appeared as book chapters. Figure -1 highlights the overall status of papers that has been considered as sample to determine the latest usage pattern of information resources at NML knowledge resource centre. The reference /citation appended with 187 papers were further analyses and interpreted under various parameters.
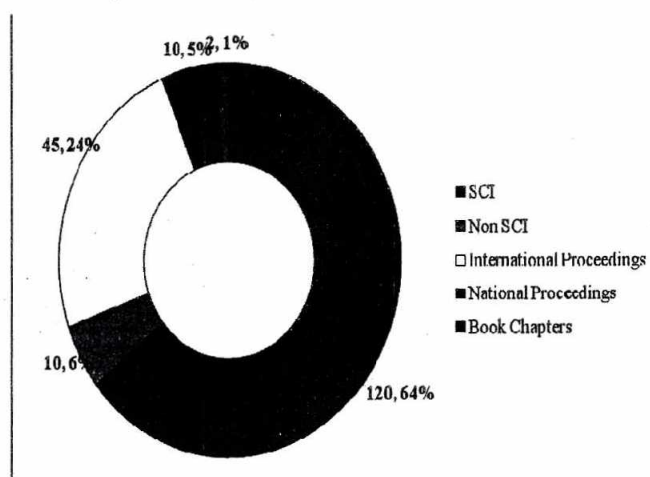
Figure 1. Status of NML Research Papers Published in 2010

Format of Reference

A total of 3825 references extracted through research papers are further classified according to the format and presented in table-1 for required analysis and interpretation. It is interesting to note that, 3154 (82.45%) references were used from journals, available in print and on-line. While the print version comprises 58.45%, the electronic version recorded 24% only. It was further observed that, a wide variety of formats has been consulted and referred

in research papers such as book 318 (8.31%) - most of them are reference books, proceedings 176 (4.60%), reports 62 (1.62%) including project reports. The remaining formats like patents, standards, thesis, bulletins, monographs, manuals, meetings, and technical notes collectively could constitute only 3% of the total.

Table-1 Format of Reference

Format of Documents	Number of References	Cumulative	%
Journals (Print)	2236	2336	58.45
Journals (Electronic)	918	3154	24.00
Books	318	3472	8.31
Proceedings	176	3648	4.60
Reports	62	3710	1.62
Patents	36	3746	0.94
Standards	30	3776	0.78
Thesis	21	3797	0.54
Bulletins	14	3811	0.36
Monograph	6	3817	0.15
Manual	4	3821	0.10
Meetings	2	3823	0.05
Technical Notes	2	3825	0.05

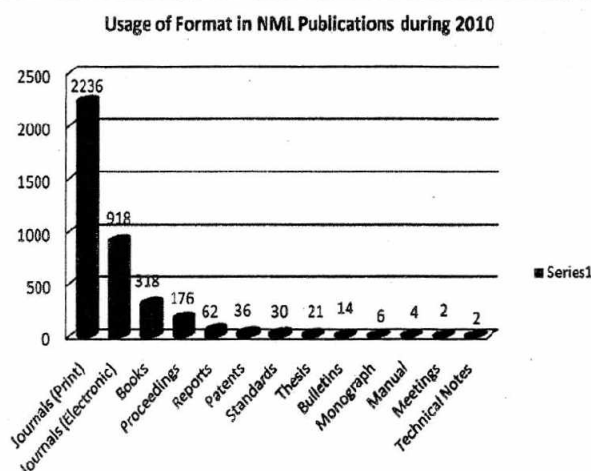Usage of Format in NML Publications during 2010

Figure 2. Format of Reference

Time span of Reference

The usage of collection according to time span reflects the value of old documents of different periods. A total of 3825 references appended with 187 research papers were classified in seven standards time slot of ten years as per the format used in research articles. The resultant data were further charted for analysis and interpretation. The findings reflect that, a maximum of 1915 references fall in the period of 2001-2010, which indicates that the latest literature has been frequently in demand by the scientists and technical personnel of the laboratory. During this periods, knowledge resource centre were linked with CSIR E-journal consortia, hence 918 journals of electronic version has been referred in their respective research papers.

Age of references

In order to develop the library collections, it is important to examine the publication dates of the references. If older literature has not been used, transferring to a repository library, for example, is worth considering. The research papers in our data cited relatively are from current sources (table-2). More than half (50 per cent) of all citations were from works published between 2001-2010, and (30 per cent) were published in 1991-2000. Nineteen per cent of the sources were published during 1990 to 1950.According to this study; NML research papers cited more than 80 percent articles from last two decades only. However, old literature covering the period from 1950 to 60 also currently being in use by R&D fraternity but not as current one. The NML research papers have an extensive background for which old documents were also referred in research findings.

Table 2. Time Span of References

| Format	Time Span of References								Cumulative	%
	2001-10	1991-00	1981-90	1971-80	1961-70	1951-60	>1950	Total		
Journals	1701	933	308	133	32	35	12	3154	3154	82.45
Books	94	110	59	36	13	3	3	318	3472	8.31
Proceedings	62	72	22	12	1	1	6	176	3648	4.60
Reports	17	21	11	7	2	2	1	61	3709	1.59
Patents	9	12	6	7	1	1	-	36	3745	0.94
Standards	16	5	7	2	-	-	-	30	3775	0.78
Thesis	9	9	2	1	-	-	-	21	3796	0.55
Bulletins	2	3	1	1	1	6	-	14	3810	0.36
Monograph	1	2	2				1	6	3816	0.15
Manual	2	2	1	-	-	-	-	5	3821	0.13
Meetings	-	1	1	-	-	-	-	2	3823	0.05
Technical Notes	2	-	-	-	-	-	-	2	3825	0.05
Total	**1915**	**1170**	**420**	**199**	**50**	**48**	**23**	**3825**	**44394**	**99.96**
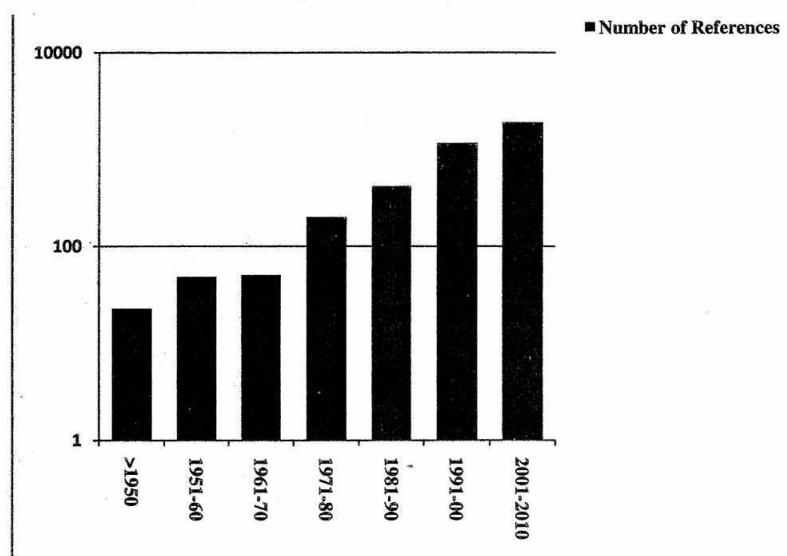
Figure 3 Ages of References

Application of Bradford Curve

Among the several statistical expressions, Bradford's Law of Scattering is perhaps the most popular and the best known of the entire bibliographic concept, which aims to describe the effective working of sciences by mathematical means. The law describes a quantitative relation between journals. Table 3 depicts analysis of journals based on figure 4 that illustrates the Bradford-Zipf plot- the cumulative number of papers for each journal
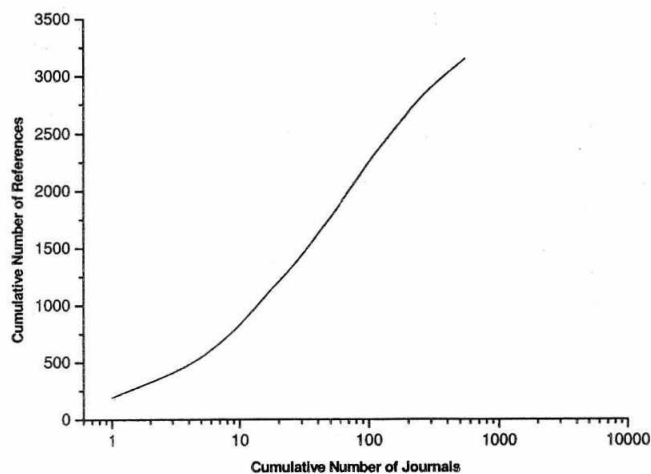

Figure 4. Bradford- Zipf plot

Table 4. Top 20 Journals Referred in NML Papers

Rank	Title(s)	Publishers	Citations	Percentage	Cumulative
1	Mat Sci Eng "A"-Struct	Elsevier	192	6.08	192
2	Hydrometallurgy	Elsevier	135	4.28	327
3	J Mater Sci	Springer	78	2.47	405
4	Corros Sci	Elsevier	67	2.12	472
5	Wear	Elsevier	65	2.12	539
6	Metall Mater Trans "A"	Springer	58	2.06	604
7	Scripta Mater	Elsevier	53	2.06	669
8	Miner Eng	Elsevier	52	1.83	727
9	Surf Coat Tech	Elsevier	50	1.68	780
10	Biomaterials	Elsevier	52	1.68	832
11	J Hazard Mater	Elsevier	50	1.58	882
12	Intl J Fatigue	Elsevier	46	1.45	928
13	Metall Mater Trans "B"	Springer	46	1.45	974
14	Int J Plasticity	Elsevier	41	1.29	1015
15	J Colloid Interf Sci	Elsevier	39	1.23	1054
16	ISIJ I NT	Society-ISIJ	37	1.17	1091
17	Water Res	Elsevier	37	1.17	1128
18	Int J Miner Process	Elsevier	35	1.10	1163
19	Electrochim Acta	Elsevier	27	0.85	1190
20	Phys Rev "B"	Society-APS	27	0.85	1217

Table -3 Identification of Core Journals

Number of Citations	Number of Journals	Cumulative Journals	Percentage of Cumulative Journals	Total Number of Citation to Journal of Equal Rank	Cumulative Citations	Cumulative Citations Percentage
192	1	1	0.18	192	192	6.08
135	1	2	0.36	135	327	10.36
78	1	3	0.55	78	405	12.84
67	2	5	0.91	134	539	17.08
65	2	7	1.28	130	669	21.21
58	1	8	1.46	58	727	23.05
53	1	9	1.65	53	780	24.73
52	1	10	1.83	52	832	26.37
50	1	11	2.01	50	882	27.96
46	2	13	2.38	92	974	30.88
41	1	14	2.56	41	1015	31.18
39	1	15	2.75	39	1054	33.41
37	1	16	2.93	37	1091	31.59
35	1	17	3.11	35	1126	35.70
27	2	19	3.48	54	1180	37.41
26	2	21	3.85	52	1232	39.06
25	2	23	4.22	50	1282	40.64
23	4	27	4.95	92	1374	43.56
22	1	28	5.13	22	1396	44.26
21	2	30	5.50	42	1438	45.59
20	2	32	5.87	40	1478	46.86
19	4	36	6.60	76	1554	49.27
18	3	39	7.15	54	1608	50.98
17	2	41	7.52	34	1642	52.06
16	1	42	7.70	16	1658	52.56
15	1	43	7.88	15	1673	53.04
14	5	48	8.80	70	1743	55.26
13	4	52	9.54	52	1795	56.91
12	8	60	11.00	96	1891	59.95
11	6	66	12.11	66	1957	62.08
10	10	76	13.94	100	2057	65.21
9	6	82	15.04	54	2111	66.93
8	14	96	17.61	112	2223	70.48
7	9	105	19.26	63	2286	72.47
6	9	114	20.91	54	2340	74.19
5	24	138	25.32	120	2460	77.99
4	35	173	31.74	140	2600	82.43
3	53	226	41.46	159	2759	87.47
2	76	302	55.41	152	2911	92.29
1	243	**CJ** 545	100.00	243	**CC** 3154	100.00

CJ=545 Total number of journals referred in NML papers

٣١٥٤References used /Total number of citations= CC

٥,٧٨= ٣١٥٤/٥٤٥) =CJ)/ (CC= (Average citation per journal

against the logarithm of its rank for journals cited NML publications. The figure clearly demonstrarates approximately the S- shape as the typical Bradford- Zipf plot, though the initial rise is somewhat faster than the typical one. The approximately linear portion appears often, the journal rank of about 16. The top 16 may be considered as the core journals that have been cited in NML research papers.

Identification of core journals

Journals are supposed to be the fastest and nascent source of research findings. Most of the R&D organizations laid emphasis on journals collection. In our findings, more than 82% references cited from high qualities of journals are listed in JCR list. Out of 545 titles, more than 60% titles were used from library holdings, 30% titles are taken from inter library loan through J-Gate, inter library loan, CSIR e-journal consortia, exchange of in-house publications and the remaining 20% are cited from open sources and personal sources. It is interesting to observe that, 38.58 references met from 20 titles and are available in library holdings.

R&D Areas of Journals

Since Metallurgy and Materials Science is a cluster of various subjects' areas, it is essential for collection developers to know the usage pattern according to narrow subject. To some extent, it also helps in identification of trends and mapping of metallurgy and materials sciences. The findings show that, 82% of the total references were from journals, which fall in 35 subjects as highlighted in table- 5 for further analysis and interpretation.

Analysis and Interpretation

R&D area of 545 journals has been determined by UDC scheme under 35 categories, which were further narrowed down into 11 broad categories as shown in table 5 and figure 5 respectively. According to the findings of this study, the maximum 147 (26.97%) journals fall in the area of Metallurgy & Materials Science, which used a total of 1176 (37%) citations, where as Chemical Technology area covered 74 journals (13.74%) includes 351 (11.12%) citations. Biomaterial subject cover 41 (7.52%) journals carried 172 (5.45%) citations. The areas of journals reflect the core subject area. Such findings would certainly be helpful in
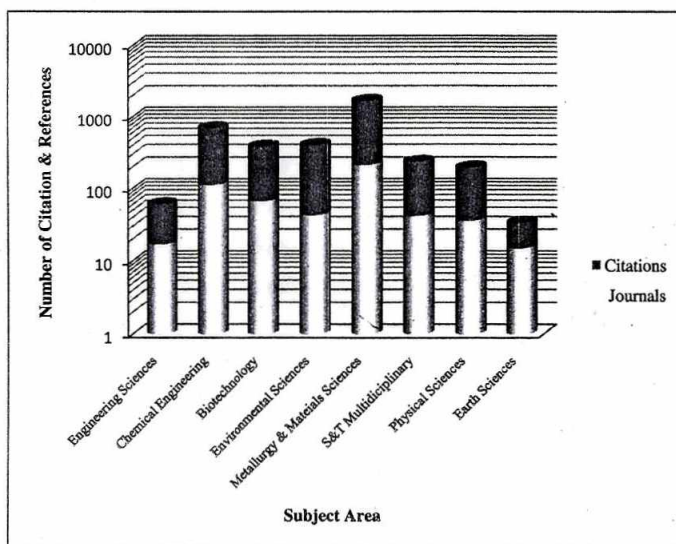

Figure 5. Subject wise Usage of Journals & Citations

Table-5 R&D Area -wise Distribution of Journals Cited in 2010

Subject Area	UDC Code	Number of Journals	Cumulative Journals	%	Number of References	%	Cumulative Reference
Applied Physics	53.06	36	36	6.60	161	5.10	161
Biomaterials	57.620	41	77	7.52	172	5.45	333
Buildings Materials	691	1	78	0.18	8	0.25	341
Ceramics	666	10	88	1.83	38	1.20	379
Chemical Technology	660	74	162	13.57	351	11.12	730
Civil Engineering	624	1	163	0.18	2	0.06	732
Communication Technology	621.391	2	165	0.36	2	0.06	734
Computer Science	004	3	168	0.55	3	0.09	737
Control & Instrumentation	681.5	1	169	0.18	1	0.06	738
Earth Science	550	15	184	2.75	19	0.60	757
Electronics	621.38	5	189	0.91	10	0.31	767
Energy	620.9	4	193	0.73	10	0.31	777
Environmental Science	504	23	216	4.22	77	2.44	854
Ferrous Metallurgy	669.1	12	228	2.20	31	0.98	885
Food Science & Technology	664	2	230	0.36	2	0.06	887
Foundry	621.74	1	231	0.18	3	0.09	890
Manufacturing Engineering	67	1	232	0.18	3	0.09	893
Materials Science & Technology	620.1	147	379	26.97	1176	37.60	2079
Mathematics	510	1	380	0.18	2	0.06	2081
Mechanical Engineering	621	15	395	2.75	31	1.07	2119
Microbiology	579	20	415	3.66	34	1.07	2149
Mineral Processing	622.7	25	440	4.58	149	4.72	2298
Nanotechnology	620.3	12	452	2.20	37	1.17	2335
Non Ferrous Metals	669.2/.8	5	457	0.91	7	0.22	2342
Numerical Analysis	519.6	1	455	0.81	1	0.03	2343
Polymer Science	678.6/.7	6	464	1.10	9	0.28	2354
Powder Metallurgy	621.762	1	465	0.18	24	0.76	2376
S&T-Multidisciplinary	6	16	481	2.93	99	3.13	2475
Science (Multidisciplinary)	5	11	492	2.01	53	1.68	2528
Soil Sciences	631.4	3	495	0.55	3	0.09	2531
Solvent Extraction	66.061	2	497	0.36	142	4.50	2673
Surface Engineering	621.794	31	528	5.68	326	10.65	3009
Toxicology	615	1	529	0.18	2	0.06	3011
Waste Management & Utilization	628.4/54	12	541	2.20	96	3.04	3107
Water	628.1	4	545	0.73	47	1.49	3154

Subject areas of Journals are arranged, according to alphabetical order followed by UDC code.

decision making for acquisition of journals according to the current needs of the users of NML Knowledge Resource Centre.

Publisher wise distributions of citations

Publisher plays a key role in development of library collection. There are no geographic barriers in marketing of information resources & ICT work as catalysts to increase fast retrieval of on-line resources. The publications from Elsevier, Springer on-line journals were highly used in references, which correspond to 180 Journals (33.02%) and 49 Journals (8.99%) respectively. Open resource journals constitute (28 Journals) only 5.13% of the total and as such not highly significant. Table -6 and figure 6 and 6.1 can be referred to for further understanding of the facts.

NML knowledge resource centre has recently added ASTM standards and digital library in their collection. It is an unique source of data, information, and knowledge that include standards, special technical publications, monographs, and journals. This study reflects that all most all form of learning resources appeared in references of research papers, which altogether constitute 35 citations.

Table 6. Publisher wise Distribution of Journals

Rank	Publisher	Numbers of Journals	Cumulative	%	Citation	Cumulative	%
1	Elsevier	180	180	33.02	1739	1739	55.13
2	Springer	49	229	8.99	502	2241	15.91
3	Open Source	28	257	5.13	46	2287	1.45
4	Wiley	26	283	4.77	122	2409	3.86
5	ACS	19	302	3.48	164	2573	5.19
6	T&F	14	316	2.56	27	2600	0.85
7	Maney	11	327	2.01	73	2673	2.31
8	ASME	9	336	1.65	53	2726	1.68
9	RCS	9	345	1.65	45	2771	1.42
10	ISIJ	5	350	0.91	10	2781	0.31
11	APS	4	354	0.73	28	2809	0.88
12	IOP	3	357	0.55	26	2835	0.82
13	NPG	3	360	0.55	17	2852	0.53
14	Sage	3	363	0.55	4	2856	0.12
15	AIP	2	365	0.36	24	2880	0.76
16	ASTM	2	367	0.36	8	2888	0.25
17	CUP	2	369	0.36	2	2890	0.06
18	IEEE	2	371	0.36	6	2896	0.19
19	SAIMM	2	373	0.36	5	2901	0.15
20	AWS	1	374	0.18	10	2911	0.31
	Others*	171	545	31.37	243	3154	77.04

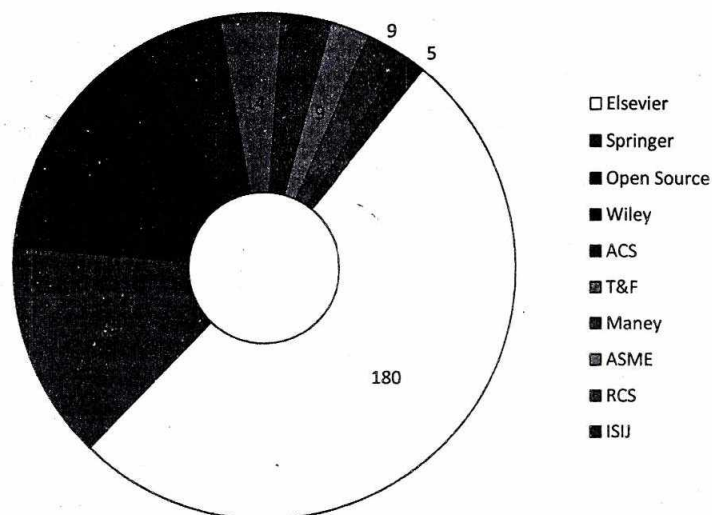*Others includes Society, Institutions, Organizations' in house publications

Figure 6. Highlight Publisher wise Distribution of Journals

ACS- American Chemical Society,T&F Taylor & Francis,ASME-American Society for Mechanical Engineers,RSC-Royal Society of Chemistry,ISIJ-The Iron & Steel Institute of Japan
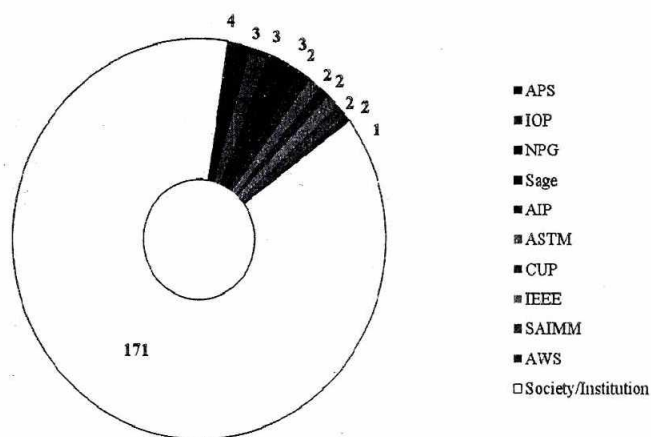

Figure 6.1 Highlight Publisher wise Distribution of Journals

APS-American Physical Society, NPJ- Nature Publishing Group, AIP- American Institute of Physics,, ASTM- American Society for Testing of Materials, CUP- Cambridge University Press, IEEE- Institute of Electrical and Electronics Engineers, SAIMN- South African institute of Mining and Metallurgy AWS- American Welding Society,

Conclusions

Research & Development organizations are the core and optimal consumers as well as generators of research papers. In this study, the authors made their sincere efforts to unmask a concrete example of how this works in practice, and to find out the occurrence of library collections in the references of research papers. The authors scrutinized the papers contributed by NML in 2010 for collecting reference data. The total number of references cited in the 187 research papers was 3,825. The average number of references per paper was

20. More than half (50 per cent) of all citations were from works published during 2001-2010, followed by 30 per cent citations were published between 1991-2000. Nineteen per cent of the sources were published during 1990 to 1950. According to this study, NML research papers cited more than 80 percent articles from last two decades only. However, old literature comprises from 1950 to1960 also currently being in use by R&D fraternity, but not as current one. The NML research papers have an extensive background for which a considerable number of old documents have also been referred in their research findings. Since the existing practice of R&D organizations require latest information pertaining to basic research, applied research and industrial research, more than 82% of the total resources have been consumed from primary source (58% print + 24% electronic).It is, therefore, interesting to note that 35 subject areas have been identified for 545 journals. It aptly shows the current mapping of metallurgy and materials science tailored to the present needs. The Bradford-Zipf curve further applied for 545 journals and finally identified 16 core journals for adaptation in acquisition policy of the parent resource centre. Library collections are built on results from previous research. They provide new researchers with a good foundation for creating new knowledge and to expand their research. Therefore, by looking at works cited in current research papers, one can acquire a fair picture of the sources what kind and how old they are that new research in these fields is based on.

Such information is highly significant particularly when libraries develop their collections. In addition to the acquisition of new literature, development of the collection, this also includes the elimination of, obsolete and rarely used literature. Simultaneously, the collection in use must also be restored in repository library where the material is still available for various purposes such as historical research.

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