

ELECTRONIC RESOURCES MANAGEMENT (ERM): A SCIENTOMETRIC STUDY OF GLOBAL PUBLICATIONS DURING 1999-2018

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The present study analyses the global research productivity on “electronic resources” during 1999-18 as covered in Scopus, a multidisciplinary international database. Research productivity is examined using both qualitative and quantitative indicators like year wise research output, growth rate, citation impact, share of international collaborative publications, prolific authors, leading institutions, broad subject areas, medium of communication and high cited papers etc. The data is retrieved using keywords such as “electronic AND library*” OR “e-resource” OR “e-journal” OR “e-book” OR “electronic book” OR “electronic journal” OR “electronic theses and dissertations”. The ERM publications registered 7.84% annual growth and its citation impact averaged to 5.03 citations per paper during 1999-18. The top 10 most productive countries together contributed 84.64% global publication share and 85.1% global citation share of the total global publications during 1999-18. Social Sciences, among subjects, accounted for the highest publication share (88.37%), followed by computer science (26.24%), arts and humanities (6.7%), medicine (5.77%) business, management & accounting (4.37%), etc. during medicine (3.86%). The top 10 most productive organisations and authors contributed 10.84% and 5.03% publication share and 12.04% and 2.5% citation share respectively during 1999-18. Among the 50 highly cited publications (with citation per paper ranging from 31 to 168 citations), the largest number (24) of publications came from U.S., followed by 9 from UK, 3 from Australia, 2 each from Malaysia, Canada, India and 1 each from Brazil, Ghana, Cameroon, Gambia, Nigeria, Slovakia, Taiwan, Tanzania, Trinidad and United Arab Emirates etc. These 50 highly cited publications involved 104 authors and 60 organisations and were published in 32 journals.

Keywords: E-resources, Electronic Resources, Electronic Resource Management, ERM, Global publications, Bibliometrics, Scientometrics

INTRODUCTION

Scientometrics is the quantitative and qualitative analysis of a subject. It is used as an important tool for measuring research productivity of country, organisation, institution, author, journal evaluation, collaboration trends etc. It is used to study the growth of a subject field, measuring impact

of a study through citation analysis, mapping of knowledge. (1) Scientometrics plays a major role in the measurement and evaluation of research performance. Scientometric analysis is used in different areas. It is used as an indicators of productivity i.e. application of Bradford Law, Lotka's and Zipf's law; as an indicators of impact i.e. to study citation patterns, h-index, normalisation methods; as an indicators of journal quality i.e. the journal impact factor, normalisation; for evaluation of research performance at the level of researcher, research group, institution or journal. (2)

Information and communication technology has revolutionized the entire human life including libraries. There has been an unprecedented transition in functioning of libraries with the usage of electronic resources.

Electronic resources may be broadly categorised into two types from their availability point of view: open access sources and subscribed sources. Other categories include full text and bibliographic databases; online and offline sources, and so on. According to Minchew (3) an electronic resource include not only music and video CDS or DVDs, but also includes software, databases, institutional repositories, websites, e-books, e-journals, e-conference proceedings, e-newspapers, e-reports, playways, podcast, vodcasts, etc. As a rule of thumb, e-resources are items that require the use of computer. E-resources have become imperative in libraries due to the spiralling cost of publications, shrinking budget allocations, constraints in acquiring publications, expansion of staffs, space problems and above all information explosion. Availability of plethora of e-resources has dramatically

altered the nature of collection developments, management and dissemination of information services in libraries. Acquisition, organization, dissemination and use of e-resources have altered the magnitude of traditional library system and giving birth to the concept of digital library. (4)

Application of new technologies has a considerable impact on library & information centres. Virtually most of the libraries, particularly in developed world, are now members of networks and different consortia's that greatly facilitate the location of resources of information in electronic form and gaining access to them. Card catalogues and other form of services in the libraries have largely been replaced by online catalogue and online services respectively. The emergence of electronic resources has drastically revamped the status of all library and information centres across the world during the last decade. There has been rapid urge of the user community to get more and more information from electronic resources. With the advancement of information and communication technology applications, internet and WWW, library and information centres have shifted their collections from print to electronic resources. Electronic resources offer tremendous possibilities and advantages over print media which includes ease of use, sharable nature, and availability of internet and universal acceptance of web technology. The enhanced features of online access provide value-addition to these sources in terms of multi-access, speed, functionality, contents, management, and interoperability and storage.

Networking has facilitated the speed and ease to access of the e- resources. E-resources are hallmarked by their ubiquitous access at users

‘desktop’ and other enhanced features as remote and expeditious access to information, search interfaces, simultaneous multiple usage and linkages to additional information. Resource sharing, document delivery, inter library lending has become tangible with electronic resources. Electronic resources are interactive in nature, convenient to use, easily accessible, support teaching and learning and thus enhance the learning possibilities. Academicians, research scholars and students are immensely benefitted with the usage of electronic resources as they can have access to current and up-to-date information. Information professionals have to apprise the users of importance and uses of e-resources and its impact on academics.

Electronic resource management is indispensable in this digital era for managing huge array of electronic resources like e-journals, e-books, bibliographic and fulltext databases, ETDs etc. ERM envisages various methods and procedures for acquisition, evaluation, administration and maintenance of electronic resources. The ultimate goal of ERM is quick and easy retrieval of information for end user. Digital Library Federation (DLF)⁵ has defined ERM as, “A system that supports management of the information and workflows necessary to efficiently select, evaluate, acquire, maintain, and provide informed access to electronic resources in accordance with their business and license terms”. Acquisition of electronic resources involves several other issues like perpetual access, subscription of individual title or full package. ERM involves various technical requirements like internet speed, proper user interface, authentication mechanisms.

LITERATURE REVIEW

Few studies have been conducted on the scientometric assessment of research output of electronic resources. Chatwal (6) examined the global research output on e-resources for the period 2006-2016, by using data from the Web of Science database. The study focused on yearly publication output, prolific authors, journal pattern, high productive organisations, country wise output and highly cited papers. Dhawan and Gupta (7) analysed 7010 electronic publishing research publications, deriving them from Scopus database during 2005-14. The findings of the study revealed that research in e-publishing is in infancy, with 3.41% CAGR growth and average 1.08 citations per paper. Kolle et al. (8) presented scientometric analysis of global research publications on e-books listed in Scopus during 2001-16. Findings revealed total output of 1582 articles on e-books with an average of 98 articles per year. Most of the articles were single authored. Publishing Research Quarterly and The Electronic Library were the most productive journals and the USA and the UK accounted for 47 percent of the literature. Gupta and Dhawan (9) studied global output of electronic resources in libraries using Scopus database during 1994-2017. Findings revealed that the USA leads with the highest publication share and the electronic books was the most emphasised electronic resource followed by electronic journals, electronic theses and dissertations. Gupta, Dhawan and Kolle (10) investigated global scientific output (1747 documents) on “electronic journals” research using Scopus database during 1990-2017. The study analysed data on various parameters such as annual growth, publication output, citations, journal

pattern, prolific authors, productive countries and high cited papers. Regolini et al. (11) analysed management of commercial electronic research resources using Bradford's law. The study concluded that Bradford's law applied to citation can help in formulating the selection criterion of periodicals. No comprehensive study is available on the management of electronic resources in libraries till date. Hence, the present study is undertaken to bibliometrically assess the global research publications on the ERM.

OBJECTIVES OF THE STUDY

The main objectives of this study are to undertake the quantitative and qualitative analysis of global research in electronic resources in libraries during 1999-18, deriving publication data from Scopus Database. The specific objectives of the study are: (i) To study the global literature on ERM, its annual and cumulative growth and its distribution by type of documents; (ii) To study the contribution, global share and citation impact of top 10 most productive countries; (iii) To study the distribution of global research output by broad subject areas and identification of significant keywords; (iv) To study the publication productivity and citation impact of most productive organizations and authors; and (v) To identify leading medium of communication and to study the characteristics of highly cited papers.

METHODOLOGY

The study retrieved and downloaded the global publication data on ERM from the Scopus database (<http://www.scopus.com>) covering the period 1999-18. A search string was formulated

to identify the publications on electronic resources in libraries containing the keywords such as "electronic AND library*" OR "e-resource" OR "e-journal" OR "e-book" OR "electronic book" OR "electronic journal" OR "electronic theses and dissertations" and duly prefixed with TITLE-ABS-KEY and restricted the search to the period 1999-18 in "date range tag". This search string was further restricted to 10 most productive countries one by one in "country tag" to get data on their publication output. After running the main search string, using analytical provisions in Scopus database, the publication data was further restricted to "subject area tag", "source title tag", and "affiliation tag" to download publications data by subject, collaborating countries, journal wise and organization wise, etc. The citation data was collected from the Scopus database from the date of publication till 20 April 2019.

ANALYSIS

The annual publications output on ERM during 1999-18 cumulated to a total of 2149 papers, increasing from 43 in 1999 to 156 in 2008 and 101 in 2018 registering 7.84% annual growth rate. The cumulative publication output on ERM increased from 955 during 1999-08 to 1194 papers during 2009-18 registering 25.03% growth. The citations to global publications on ERM averaged to 5.03 citations per paper during 1999-18, which decreased from 6.71 to 3.69 from 1999-08 to 2009-18 (Table 1). Of the total publications on electronic resources in libraries, 1576 (73.34%) had appeared as articles, 189 (8.79%) as conference paper, 179 (8.33%) as reviews, 117 (5.44%) as book chapter, 35 (1.63%) as book and the rest as notes, editorial, short survey and erratum (0.88 to 0.09%).

Table 1: Annual and Cumulative Growth of Publications

Period	TP	TC	CPP	Period	TP	TC	CPP
1999	43	456	10.60	2011	116	687	5.92
2000	64	503	7.86	2012	135	518	3.84
2001	96	606	6.31	2013	182	697	3.83
2002	96	646	6.73	2014	104	345	3.32
2003	74	708	9.57	2015	128	378	2.95
2004	115	671	5.83	2016	110	134	1.22
2005	111	808	7.28	2017	100	71	0.71
2006	88	605	6.88	2018	101	12	0.12
2007	112	760	6.79	World	2149	10816	5.03
2008	156	648	4.15	1999-2008	955	6411	6.71
2009	94	658	7.00	2009-2018	1194	4405	3.69
2010	124	905	7.30				
TP=Total Publications; TC=Total Citations; ACP= Average Citations Per Paper							

Most Productive Countries Publishing on Electronic Resources

The global research output on ERM originated from 92 countries during 1999-18, but its distribution is highly skewed. Publication productivity per country varied from 17 to 1329 papers in 20 years. In all 62 countries contributed 1-5 paper each, 10 countries 6-10 papers each, 10 countries 11-30 papers each, 8 countries 31-1329 papers each during 1999-18. Together these 10 countries contributed 1819 papers and 9204 citations accounting for 84.64% publication share and 85.1% citation share during 1999-18. The highest publication share (61.84%) came from U.S.A, followed by United Kingdom (5.35%), India (5.07%), Canada (3.02%), Nigeria (2.28%), China (2.23%), Australia (1.68%), Spain (1.44%), Taiwan (0.94%), South Africa (0.79%) during 1999-18. The citation impact per paper was the highest (13.58) from Australia among the top 10 most productive countries, followed by United Kingdom (9.72), Taiwan (6.90), Canada (5.58),

Nigeria (5.12), Spain (4.68), United States (4.59), India (3.72), China (3.50), and South Africa (1.47). International Collaborative share of 7 countries was above the group average share of 5.28% of all countries: South Africa (23.53%), Australia (16.67%), United Kingdom (16.52%), Canada (15.38%), Spain (12.90%), China (12.50%) and Nigeria (12.24%) during 1999-2018. Relative citation index of 5 countries was above the world average of 1: Australia (2.70), United Kingdom (1.93), Taiwan (1.37), Canada (1.10) and Nigeria (1.02) during 1999-18.

Subject-Wise Distribution of Papers on Electronic Resources

The global publications on ERM during 1999-18 were classified under seven sub-fields (as reflected in Scopus database classification). The publication share (88.37%) was the highest for Social Sciences, followed by computer Science (26.24%), arts and humanities (6.7%), medicine (5.77%), business, management & accounting (4.37%), engineering

Table 2: Scientometric Profile of Top 10 Countries

Country	Total Papers			Share of Papers			TC	CPP	ICP	%ICP	RCI
	1999-2008	2009-2018	1999-2018	1999-2008	2009-2018	1999-2018					
United States	652	677	1329	68.27	56.7	61.84	6103	4.59	37	2.78	0.91
United Kingdom	79	36	115	8.27	3.02	5.35	1118	9.72	19	16.52	1.93
India	15	94	109	1.57	7.87	5.07	406	3.72	4	3.67	0.74
Canada	27	38	65	2.83	3.18	3.02	361	5.55	10	15.38	1.10
Nigeria	6	43	49	0.63	3.6	2.28	251	5.12	6	12.24	1.02
China	13	35	48	1.36	2.93	2.23	168	3.50	6	12.50	0.70
Australia	8	28	36	0.84	2.35	1.68	489	13.58	6	16.67	2.70
Spain	14	17	31	1.47	1.42	1.44	145	4.68	4	12.90	0.93
Taiwan	4	16	20	0.42	1.34	0.94	138	6.90	0	0.00	1.37
South Africa	2	15	17	0.21	1.26	0.79	25	1.47	4	23.53	0.29
Total of 10 Countries	820	999	1819				9204	5.06	96	5.28	1.01
World	955	1194	2149				10816	5.03			1.00
Share of top 10 countries in global output	85.86	83.67	84.64				85.1				
TP=Total Publications; TC=Total Citations; CPP= Citations Per Paper; ICP= International Collaborative Papers; RCI= Relative Citation Index											

(3.44%) and health professions (1.16%) during 1999-18. The research activity, as reflected in activity index, witnessed increase in computer science and arts & humanities in contrast to decrease in social sciences, medicine, business, management & accounting, health professions and engineering from 1999-08 to 2009-18. Amongst

various subjects, medicine received the highest citation impact per paper (10.71) followed by health professions (8.04), engineering (7.59), computer science (5.73), social sciences (4.76), business, management & accounting (2.90), and arts & humanities (1.84) during 1999-18 (Table 3)

Table 3: Subject-Wise Breakup of Global Publications Output

Subject	Total Papers			Activity Index		TC	CPP	%TP
	1999-08	2009-18	1999-18	1999-08	2009-18			
Social Sciences	853	1046	1899	101.07	99.14	9035	4.76	88.37
Computer Science	227	337	564	90.56	107.54	3233	5.73	26.24
Arts & Humanities	15	129	144	23.44	161.23	265	1.84	6.7
Medicine	60	64	124	108.87	92.89	1328	10.71	5.77
Business, Management & Accounting	64	30	94	153.19	57.44	273	2.90	4.37
Engineering	43	31	74	130.74	75.4	562	7.59	3.44
Health Professions	15	10	25	135	71.99	201	8.04	1.16
Total of the World	955	1194	2149			10816	5.03	100
TP=Total Publications; TC=Total Citations; CPP= Citations Per Paper								

Significant Keywords on Electronic Resources

Twenty-seven (27) significant keywords were identified in literature on ERM with a view to understand the trend of research in this field. These keywords are listed in Table 4 in the decreasing order of their frequency of occurrence during 1999-18.

Table 4: Frequency Distribution of most Significant Keywords

Name of Keyword	Frequency	Name of Keyword	Frequency
Electronic Resources	603	Information Management	31
Digital libraries	235	Electronic Information Resources	19
Academic libraries	184	Information Systems	19
Electronic Journals	102	ERM	18
Collection Development	81	Search engines	18
Information Retrieval	75	Information Resources	17
E-Resources	70	Information Seeking	17
Electronic Resource Management	68	Document Delivery	16
Information Services	69	Online Resources	14
Electronic Publishing	56	User Computer Interface	14
Cataloguing	52	Institutional Repositories	13
Electronic Media	44		
Metadata	44		
E-books	41		
E-Journals	35		
Collection Management	33		

Scientometric Profile of 10 Most Productive Organisations on Electronic Resources

The publication output of top 10 most productive organisations on ERM varied from 16

to 39 publications per organisation and the together accounted for 10.84% global publication share and 12.04% global citation share during 1999-18. The scientometric profile of these top 10 organisations is presented in Table 5. On further analysis, it was observed:

- Only three organisations registered publications output above the average productivity 23.3 of the above organisations: North Carolina State University, USA (39), Texas A & M University, USA (30) and Pennsylvania State University, USA (26) during 1999-18;
- Four organisations registered citation impact above the group average of 5.59 citations per publication: University of Illinois at Urbana Champaign, USA (9.00), University of Oklahoma, USA (7.39), The University of North Carolina at Chapel Hill (6.87) and Pennsylvania State University, USA (5.65) during 1999-18;
- The H-index of six organisations was above the group average (6.4) of all 10 organisations: North Carolina State University, USA and Pennsylvania State University, USA (8each), Texas A & M University, USA, Ohio State University, USA, University of Oklahoma, USA and University of Illinois at Urbana Champaign, USA(7 each)during 1999-18;
- Seven organisations registered the relative citation index above the world average (1) of all organisations: University of Illinois at Urbana Champaign, USA (1.79), University of Oklahoma, USA (1.47), The University of North Carolina at Chapel Hill (1.37), Texas A & M University, Pennsylvania State University, USA and University of Tennessee, USA(1.1each) and Ohio State University, USA (1.05) during 1999-18.

Table 5: Scientometric Profile of Top 10 Most Productive Organisations

Sl. No.	Name of Organisation	TP	TC	CPP	HI	RCI
1	North Carolina State University, USA	39	155	3.97	8	0.79
2	Texas A & M University, USA	30	167	5.57	7	1.1
3	Pennsylvania State University , USA	26	147	5.65	8	1.1
4	The University of North Carolina at Chapel Hill, USA	23	158	6.87	5	1.37
5	Ohio State University, USA	22	116	5.27	7	1.05
6	University at Buffalo, State University of New York, USA	22	97	4.41	4	0.88
7	University of Houston, USA	19	78	4.11	5	0.82
8	University of Illinois at Urbana Champaign, USA	18	162	9.00	7	1.79
9	University of Oklahoma, USA	18	133	7.39	7	1.47
10	University of Tennessee, Knoxville, USA	16	89	5.56	6	1.1
	Total of 10 Organizations	233	1302	5.59	6.4	1.11
	Global Total	2149	10816	5.03		1
	Share of 10 organizations in Global Total	10.84				
TP=Total Publications; TC=Total Citations; CPP= Citations Per Paper; HI= H-Index; RCI= Relative Citation Index						

Scientometric Profile of 10 Most Productive Authors on Electronic Resources

In all, 160 authors contributed to 2149 global publications on ERM during 1999-18. Of the total authors, 135 authors contributed 3-5 papers each, 19 authors contributed 6-10 papers each and 4 authors contributed 11-19 papers each during 1999-2018. The top 10 most productive authors published 7 to 11 publications each and together they contributed 5.03% publication share and 2.5% citation share to the global output on ERM during 1999-18. The scientometric profile of top 10 authors is presented in Table 6.

- Four authors published above the group average 10.8: S.Davis (19 papers), K.Blythe and M.Collins (13 papers each) and K.Wilson (11 papers) during 1999-18;
- Six authors registered citation impact above the group average of 1.58 citations per publication during 1999-18: M.Collins

(6.85), E.Hartnett (6.14), K.Wilson (3.09), O.Pesch (3.00), L.England (1.89) and S.Davis (1.58) during 1999-18;

- H-index of five authors was above the group average 2.7 of all authors: M.Collins (6), S.Davis, O.Pesch and E.Hartnett, (4 each) and K.Wilson (3) during 1999-18; and
- Two authors registered the relative citation index above the world average 1 of all authors: M.Collins (1.36) and E.Hartnett (1.22) during the period.

Medium of Research Communication

Of the global output on ERM during 1999-18, the journal publications appeared in 160 journals, of which 94 journal contributed 1-5 papers each, 27 journal 6-10 papers each, 22 journal 11-20 papers each, 15 journal 21-40 papers each, 7 journal 43-262 papers each during 1999-18. The top 20 most productive journals

Table 6: Scientometric Profile of Most Productive Authors

Sl. No.	Author	Affiliation	TP	TC	CPP	HI	RCI
1	S.Davis	University at Buffalo, State University of New York USA	19	30	1.58	4	0.31
2	K.Blythe	The University of North Carolina at Chapel Hill, USA	13	0	0.00	0	0
3	M.Collins	North Carolina State University, USA	13	89	6.85	6	1.36
4	K.Wilson	North Carolina State University, USA	11	34	3.09	3	0.61
5	O.Pesch	EBSCO Information Services, USA	10	30	3.00	4	0.6
6	E. Connor	Daniel Library Charleston, USA	9	13	1.44	1	0.29
7	L.England	University of Maryland, Adelphi, USA	9	17	1.89	2	0.38
8	A.J.Rathemacher	University of Rhode Island, Kingston, USA	9	2	0.22	1	0.04
9	G.Stachokas	Auburn University, USA	8	12	1.50	2	0.3
10	E.Hartnett	Texas A & M University, USA	7	43	6.14	4	1.22
	Total of 10 Authors		108	270	1.58	2.7	0.31
	Total of World		2149	10816	5.03		1
	Share of 10 authors in global output		5.03	2.5			
TP=Total Publications; TC=Total Citations; CPP= Average Citations Per Paper; HI= H-Index; RCI= Relative Citation Index							

publishing 20 and more publications per journal are shown in Table 7. The most productive journal is Serials Librarian (with 262papers), followed by Serials Review (151 papers), Journal of

Electronic Resources Librarianship (66papers), Journal of Electronic resources in Medical Libraries (63 papers), Collection Management (59 papers), etc. during 1999-18.

Table 7: Distribution of Journal Papers by Serial Productivity

Sl. No.	Name of Journal	No. of Papers	S. No.	Name of Journal	No. of Papers
1	Serials Librarian	262	11	Collection Building	30
2	Serials Review	151	12	Cataloguing Classification Quarterly	28
3	Journal of Electronic Resources Librarianship	66	13	Library Collection Acquisition and Technical Services	28
4	Journal of Electronic Resources in Medical Libraries	63	14	International Information and Library Review	28
5	Collection Management	59	15	Reference Librarian	27
6	Electronic Library	53	16	Library Management	25
7	Technical Services Quarterly	43	17	College & Research Libraries	25
8	Journal of Library Administration	39	18	Library Hi-Tech News	23
9	Library Philosophy and Practice	38	19	Inter-lending and Document Supply	22
10	Library Hi-Tech	32			

Highly Cited Papers on Electronic Resources

Of the 2149 publications on ERM, only 50 publications (2.33%) received 31 to 168 citations per paper since their publication during 1998-17. These publications are assumed as high cited papers. Together these high cited papers received 2574 citations, with an average of citations per paper. The distribution of 50 highly cited papers by country of publication is highly skewed: 24 from United States, 9 from UK, 3 from Australia, 2 each from Malaysia, Canada, India and 1 each from Brazil, Ghana, Cameroon, Gambia, Nigeria, Slovakia, Taiwan, Tanzania, Trinidad and United Arab Emirates etc. These 50 highly cited publications involved 104 authors and 60 organizations. Of the 50 highly cited papers, 38 were articles and 12 review papers. These 50 highly cited papers had appeared in 32 journals, 7 were published in College and Research Libraries, 4 in Journal of the American Society for Information Science & Technology, 3 in Information Research, 2 each in Electronic Library, Information Processing & Management, Journal of Academic Librarianship, Library Trends, , Journal of Information Science, Journal of The Medical Libraries Association and Library Management and 1 paper each in Biocybernetics and Biomedical engineering, Campus Wide Information Systems, Cataloguing & Classification Quarterly, Health Information & Libraries Journal, International Journal of Circumpolar Health, Reference Journal of Librarianship & Information Science, Journal of Medical Internet Research, Journal of the American Society For Information Science, Journal of Web Librarianship, Journal of Librarianship & Information Science Research, Library Collection Acquisition and Technical

Services, Libri, Malaysian Journal of Library & Information Science, New Library World, Program, Reference Services Review, Science & Technology Libraries and Serials Review.

SUMMARY AND CONCLUSION

The ERM is an emerging field with a with a slow annual growth rate of 7.84%. The cumulative publication output on ERM registered 25.03% growth from 1999-08 to 2009-18. Ninety-two (92) countries participated in ERM research; however bulk of global output (84.64%) in this field comes from just top 10 countries only. United States leads the ranking with 61.84% global publication share, followed distantly by United Kingdom with 5.35% share. The top 10 global organisations and authors account for 10.84% and 5.03% global publication share respectively. The global citation impact of ERM research averaged to 5.03 citations per paper and highly cited papers account for 2.33% share. Research on ERM is in infancy. Research should be given an impetus and promoted globally. Researchers and scientists should collaborate at international level. National and International funding agencies should promote research and work vigorously to build a strong base.

The authors conclude that E-resources are becoming important information resource in today's electronic environment, as they are more up-to-date and can be accessed anywhere, crossing all geographical boundaries. Through various search techniques, electronic resources provide extensive links to explore additional resources or related content. The development of ICT devices, the rapid rise of electronic databases and modern e-books technologies have all together changed the entire scenario of informatics. The user attitude to information is gradually shifting

from printed documents to electronic resources and thus, it has become an important area of research for library & informational professionals in India.

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