



Electronic Theses and Dissertations (ETDs): A Scientometric Evaluation of Global Publications Output during 1996-2017

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Abstract

The paper maps ETDs global research on various publications and citation indicators. The total world output on ETDs during 1996-2017 cumulated to 107 papers, registering 59.75% growth per annum, and averaged 4.95 citations per paper during the period. Top 10 most productive countries, dominated with 99.06% publication share. USA accounted for the highest 52.34% publication share and the UK took lead in the relative citation index (1.82). Social Science is one of the most popular areas of research in ETDs research. The study identifies top 20 most productive organizations, authors and top 20 journals and 22 highly cited papers, reporting electronic theses and dissertations research.

Keywords: Bibliometrics, Electronic theses, Electronic dissertations, Scientometrics, ETD, Electronic Theses and Dissertations

1. Introduction

Thesis or dissertation is a new and original contribution to existing knowledge in a given discipline. The writing and presentation of a thesis is an essential academic requirement to obtain a doctorate and the new knowledge generated in this process acts as a foundation for further research and gives researcher recognition in a chosen academic discipline. Theses are intellectual property of an institution, hence owned by the parent institution awarding the degree. Printed theses languish in closed stacks due to poor global visibility and accessibility. Therefore, the research works don't get due evaluation and citation and might leads to unnecessary duplication and repetition of research work. The advent of internet and technology brought a pragmatic shift in the accessibility of information. Electronic theses and dissertations (ETDs) now get deposited on websites, institutional repositories and archived and circulated electronically. The content of theses



written in word or portable document format (PDF) and other formats as HTML, XML and can include hyperlinks, multimedia and other interactive features. ETDs can be stored on magnetic tapes, CD-ROM and microform or made accessible globally online via World Wide Web. Global accessibility of information, use of multimedia technologies in ETDs, electronic preservation, use of multimedia technologies in ETDs, electronic preservation, use of newer technologies like electronic publishing, solving space problem, quick accessibility and retrieval are enhanced features of ETDs. Increased visibility of ETDs leads to enhanced access to information sharing and therefore, increased research output by national and international collaboration among research groups. Major software used in development of ETD repositories are DSpace (developed at MIT), Eprints (developed at University of Southampton in UK).

The Networked Digital Library of Theses and Dissertations (NDLTD) is an international organization promoting the use, creation, dissemination and preservation of ETDs throughout the world. It was established in 1996. Its mission is to encourage institutions of higher education to promote the use of ETDs. Major NDLTD resources include ETD authoring, ETD institutional repository programs, search and browse ETDs worldwide, ETD conferences etc. Its members include hundred of universities around the world. Proquest Dissertation & Theses is a commercial database that provides access to around 4 million ETDs. Shodhganga is a digital repository of Indian ETDs set up by INFLIBNET centre.

2. Literature Review

Studies have been done in the past to examine the nature, role, importance and impact of ETDs. Kushkowsky et al. studied over 9100 citations from 629 masters and doctoral theses. The study established that scientific disciplines cite more journal literature, while social sciences, arts and humanities cite more monographic literature. Doctoral theses are longer than masters theses and number of citations varies by disciplines. Lariviere et al. analysed the scientific impact of theses on knowledge generated and changes in theses citation rates using historical bibliometrical data. They found that published books and papers are cited more than the original thesis. Gian Singh et al. examined research productivity of digital libraries. The data was extracted from LISA Plus for the period 1998-2004. The study indicated that most articles (61 percent) are single authored and author's productivity does not follow Lotka's law. Distribution of articles in journals is in agreement with Bradford's law. No bibliometric study has been carried out on ETDs. The present study is undertaken to assess quantitatively and qualitatively the literature growth in ETDs.

3. Objectives

The main objectives of this study are to evaluate the performance of global research on ETDs published during 1996-2017, based on publications output covered in Scopus database. In particular, the study focuses on the following objectives:

- To study the growth of world research output in ETDs research and its citation impact;
- To study the international collaborative share of top 10 most productive countries;
- To study the global research output by broad subject areas and identification of significant keywords;
- To study the publication productivity and citation impact of top 20 most productive organizations and authors;
- To identify leading medium of communication and to study the characteristics of highly cited papers.

4. Methodology

The study retrieved and downloaded the world publication data on ETDs research from the Scopus database (<https://www.scopus.com/>) covering the period 1996-17. The search strategy included using the term “electronic theses “, “electronic theses and dissertations”, “electronic dissertations” in “Article Title” tag and restricting the search output to 1996-17 in “date range tag”. The main search string was further restricted to individual country in “country tag” to retrieve publication output of top 10 most productive countries in ETDs research. The main search string was further restricted to “subject area tag”, “author tag”, “source title Tag” and “affiliation tag” to determine publications output by subject, collaborating countries, author wise, organization wise and journal wise etc. The citation data was collected from the Scopus database (from the date of publication) till 20 September, 2018.

5. Analysis

The annual publications output on ETDs during 1996-17 cumulated to a total of 107 papers, increasing from 1 in 1996 to 11 in 2016 and 3 in 2017 registering 59.75% annual growth rate. The cumulative publication output on ETDs increased from 49 during 1996-2007 to 58 papers during 2008-17, registering 18.4% growth. The citations to global publications on ETDs averaged to 4.95 citations per paper during 1996-17, which decreased from 5.57 to 4.43 from 1996-07 to 2008-17 (Table 1). Of the total publications on ETDs, 74 (69.16%) had appeared as articles, 17 (15.88%) as conference paper, 6 (5.6%) as reviews, 3 (2.8%) as book chapter and note each and the rest as erratum, editorial and letter (1.87 to 0.9%) etc.

Table 1
Annual and Cumulative Growth of Publications

Period	TP	TC	ACPP	Period	TP	TC	ACPP
1996	1	15	15.00				
1997	1	0	0.00	2010	5	8	1.60
1999	5	29	5.80	2011	3	12	4.00
2000	5	2	0.40	2012	2	5	2.50
2001	9	37	4.11	2013	9	47	5.22
2002	2	28	14.00	2014	11	38	3.45
2003	6	23	3.83	2015	2	8	4.00
2004	6	35	5.83	2016	11	8	0.73
2005	5	61	12.20	2017	3	1	0.33
2006	4	23	5.75	World	107	530	4.95
2007	5	20	4.00	1996-2007	49	273	5.57
2008	7	76	10.86	2008-2017	58	257	4.43
2009	5	54	10.80				
TP=Total Publications; TC=Total Citations; ACPP= Average Citations Per Paper							

5.1 Distribution of Citations

Citations to 107 global publications on ETDs during 1996-17 were examined since their publication till September 2018. Of the total 107 publications on ETDs received 530 citations, an average of 4.95 citations per publication. There were no citations to nearly one-fourth (26.17%) of total publications. The remaining three-fourth (73.83%) publications received 1 or more citations: 56.08% (60 publications) received 1 to 10 citations; 14.95% (16 publications) received 11 to 20 citations and 2.8% (3 publications) received 21 to 30 citations during 1996-17 (table 2).

Table 2
Citation Distribution

Citation Range	No. of Papers	No. of Citations	Share of papers	Share of Citations
0	28	0	26.17	0
1-10	60	230	56.08	43.40
11-20	16	234	14.95	44.15
21-30	3	66	2.80	12.45
Total	107	530	100	100

5.2. Global Publication Share and Citation Impact of Top 10 Most Productive Countries

The global research output on ETDs originated from 29 countries during 1996-17, of which 27 countries contributed 1-10 papers each, 1 country contributed 11 papers each and 1 country contributed 56 papers each during 1996-17. Table 3 lists the output of top 10 most productive



countries in ETDs research during 1996-17. The publication share of 10 most productive countries in ETDs research was 99.06% of the global output during 1996-17, which decreased from 102.04% during 1996-07 to 96.55% during 2008-17, with highest publication share (52.34%) coming from USA, followed by Canada (10.28%), France, India and United Kingdom (6.54% each), Germany (5.61%), Australia, Malaysia, Netherlands and Nigeria (2.8% each) during 2008-17. The global publication share has increased by 12.07% in France, followed by 5.17% in Australia, 4.54% in India and 1.41% in Malaysia as against decrease by 20.16% in United States, 4.71% in Germany, 3.62% in Canada and 2.99% in UK from 1996-07 to 2008-17. The Citation impact per paper was the highest (9) from UK among the top 10 most productive countries, followed by Netherlands (8), France (6), USA (5.96), Nigeria (5.67), Canada (5.64) during 1996-17. Relative citation index of six countries was above the world average of 1: UK (1.82), Netherlands (1.62), France (1.21), USA (1.2), Nigeria (1.15), Canada (1.14) during 1996-17.

Table 3
Scientometric Profile of Top 10 Countries in research

Country	Total Papers			Share of Papers			TC	CPP	ICP	%ICP	RCI
	1996-2007	2008-2017	1996-2017	1996-2007	2008-2017	1996-2017					
United States	31	25	56	63.26	43.1	52.34	334	5.96	10	17.86	1.2
Canada	6	5	11	12.24	8.62	10.28	62	5.64	5	45.45	1.14
France	0	7	7	0	12.07	6.54	42	6.00	3	42.86	1.21
India	2	5	7	4.08	8.62	6.54	20	2.86	1	14.29	0.58
United Kingdom	4	3	7	8.16	5.17	6.54	63	9.00	3	42.86	1.82
Germany	4	2	6	8.16	3.45	5.61	15	2.50	5	83.33	0.51
Australia	0	3	3	0	5.17	2.8	5	1.67	3	100.00	0.34
Malaysia	1	2	3	2.04	3.45	2.8	4	1.33	0	0.00	0.27
Netherlands	2	1	3	4.08	1.72	2.8	24	8.00	2	66.67	1.62
Nigeria	0	3	3	0	3.45	2.8	17	5.67	1	33.33	1.15
Total of 10 Countries	50	56	106	102.04	96.55	99.06	586	5.53	33	31.13	
World	49	58	107				530	4.95			1
Share of top 10 countries in global output	102.04%	96.55%	99.06%								
TP=Total Publications; TC=Total Citations; CPP= Citations Per Paper; ICP= International Collaborative Papers; RCI= Relative Citation Index											



5.3 International Collaboration

The international collaborative share of top 10 most productive countries in ETDs research varied from 100% to 0% of their national publications output, with an average share of 31.3%. The highest international collaborative share came from Australia (100%), followed by Germany (83.33%), Netherland (66.67%), Canada (45.45%), France and UK (42.86% each) and Nigeria (33.33%) during 1996-17.

5.4 Subject-Wise Distribution of Research Output

The global research output on ETDs during 1996-2017 was distributed across seven subfields (as reflected in Scopus database classification). Among sub-fields, Social sciences (82.24%) registered the highest publication share, followed by Computer science (39.25%), Arts & humanities (5.61%), Engineering & Nursing (4.67% each), Biochemistry, genetics & molecular biology & Mathematics (2.8% each) during 1996-2017. The research activity, as reflected in activity index, witnessed increase in Social sciences (from 91.06 to 107.95), Nursing (from 42.22 to 152) as against decrease in Computer science (from 100.53 to 99.52), Arts & humanities (from 105.56 to 95), Engineering (from 168.89 to 38) and Biochemistry, genetics & molecular biology & Mathematics (from 211.11 to 0 each) from 1996-2007 to 2008-2017 (Table 4).

Table 4
Subject Wise Breakup of Global Publications Output

Subject	Total Papers			Activity Index		TC	CPP	%TP	H-Index
	1996-07	2008-17	1996-17	1996-07	2008-17				
Social Sciences	38	50	88	91.16	107.95	472	5.36	82.24	13
Computer Science	20	22	42	100.53	99.52	294	7.00	39.25	13
Arts & Humanities	3	3	6	105.56	95	24	4.00	5.61	3
Engineering	4	1	5	168.89	38	18	3.60	4.67	2
Nursing	1	4	5	42.22	152	14	2.80	4.67	2
Biochemistry, Genetics & molecular Biology	3	0	3	211.11	0	1	0.33	2.8	1
Mathematics	3	0	3	211.11	0	6	2.00	2.8	1
Total of the World	49	58	107			530	4.95		
TP=Total Publications; TC=Total Citations; CPP= Citations Per Paper									

5.5 Significant Keywords on Electronic Resources

Twenty Seven (27) significant keywords which were identified in literature on ETDs with a view to understand the trend of research in this field. These keywords are listed in Table 5 in the decreasing order of their frequency of occurrence during 1996-17.

Table 5
Frequency Distribution of Most Significant Keywords

Name of Keyword	Frequency	Name of Keyword	Frequency
Digital Libraries	20	Electronic Dissertations	3
ETDs	13	Information Management	3
Electronic Theses and Dissertations	12	Bibliographic Database	2
Electronic Publishing	10	Communication	2
Theses	10	Digital Storage	2
Institutional Repositories	9	D Space	2
Academic Libraries	6	Electronic Document Delivery	2
Open Access	6	Intellectual Property Rights	2
Scientific Literature	6	Academic Research	1
Internet	5	Adoption of ETD Programmes	1
Metadata	5	Database Management	1
Computer Software	4	Design	1
Electronic Theses	4	Digital Dissertations	1
Information Retrieval	4		

5.6 Profile of Top 20 Global Organisations

A total of 115 organizations published 107 publications in ETDs research with an average of 1.07 publications per organization. Of the 115 organizations, 113 contributed 1-5 papers each, 1 organization 7 papers each and 1 organization 10 papers each. The publication productivity of top 20 most productive organizations in ETDs research across the world varied from 2 to 10 publications. Together they accounted for 64.49% (69) publication share and 76.04% (403) citation share during 1996-17. The scientometric profile of these top 20 organizations is presented in Table 6. On further analysis, it was observed that Six of top 20 organizations registered publications output above the group average of 3.45: Virginia Polytechnic Institute and State University, USA (10), Universite Charle De Guile Lille3, France (7), Mississippi State University, USA, Robert Gordon University, UK, Kent State University, USA (5 each), Duquesne University, USA (4) during 1996-17.



Eleven organizations registered their relative citation index above the world average 1: McGill University, Canada (2.42), Kent State University, USA (2.02), Texas A & M University, USA (1.62), University of Waterloo, Canada (1.52), Robert Gordon University, UK (1.45), University of Nigeria, Nigeria (1.41), Virginia Polytechnic Institut and State University, USA (1.31), Universite Charle De Guile Lille3, France and University of Windsor, USA (1.21 each), CNRC Centre National de la Recherche Scientifique, France and Groupementd'Etudes et de RechercheInterdisciplinaire en Information et Communication, France (1.01 each) during 1996-17.

Twelve organizations contributed international collaborative publications above the group average share of 39.13%: McGill University, Canada, Curtin University, Australia and Victoria University of Wellington, New Zealand (100% each), Duquesne University, USA (75%), West Virginia University, USA (66.67%), Robert Gordon University, UK (60%), University of Windsor, USA, University Of Waterloo, Canada, University Of Nigeria, Nigeria, CNRC Centre National de la Recherche Scientifique, France, Groupementd'Etudes et de RechercheInterdisciplinaire en Information et Communication, France (50% each) and Universite Charles De Gaulle Lille 3, France (42.86%) etc. during 1996-17.

The h-index of six organizations was above the group average 2.1 of all 20 organizations: Virginia Polytechnic Institute and State University, USA and Universite Charles De Gaulle Lille 3, France (4 each), Mississippi State University, USA, Robert Gordon University, UK, Kent State University, USA and Mc Gill University, Canada (3 each) during 1996-17.

Table 6
Scientometric Profile of Top 20 Most Productive Organisations

Sr. No.	Name of Organisation	TP	TC	CPP	HI	ICP	ICP%	RCI
1	Virginia Polytechnic Institute and State University, USA	10	65	6.50	4	1	10.00	1.31
2	Universite Charles De Gaulle Lille 3, France	7	42	6.00	4	3	42.86	1.21
3	Mississippi State University, USA	5	11	2.20	3	0	0.00	0.44
4	Robert Gordon University, UK	5	36	7.20	3	3	60.00	1.45
5	Kent State University, USA	5	50	10.00	3	1	20.00	2.02
6	Duquesne University, USA	4	13	3.25	2	3	75.00	0.66
7	Mc Gill University, Canada	3	36	12.00	3	3	100.00	2.42
8	California Polytechnic State University, USA	3	14	4.67	2	1	33.33	0.94
9	Texas A & M University, USA	3	24	8.00	2	0	0.00	1.62



10	West Virginia University, USA	3	9	3.00	2	2	66.67	0.6
11	Curtin University, Australia	3	5	1.67	1	3	100.00	0.34
12	Victoria University of Wellington, New Zealand	2	9	4.50	1	2	100.00	0.91
13	Universiti Teknologi Mara, Malaysia	2	3	1.50	1	0	0.00	0.3
14	Auburn University, USA	2	7	3.50	2	0	0.00	0.71
15	University of Windsor, USA	2	12	6.00	2	1	50.00	1.21
16	University Of Waterloo, Canada	2	15	7.50	2	1	50.00	1.52
17	University Of Nigeria, Nigeria	2	14	7.00	1	1	50.00	1.41
18	University of Michigan, Ann Arbor, USA	2	0	0.00	0	0	0.00	0
19	CNRC Centre National de la Recherche Scientifique, France	2	19	9.50	2	1	50.00	1.01
20	Groupement d'Etudes et de Recherche Interdisciplinaire en Information et Communication, France	2	19	9.50	2	1	50.00	1.01
	Total of 20 Organizations	69	403	5.84	2.1	27	39.13	
	Global Total	107	530	4.95				1
	Share of 20 organizations in Global Total	64.49	76.04					
TP=Total Publications; TC=Total Citations; CPP= Citations Per Paper; HI= H-Index; RCI= Relative Citation Index								

5.7 Profile of Top 20 Most Productive Authors

In all, 160 authors contributed to 107 global publications on ETDs, of which 159 published 1-5 papers each and 1 author contributed 6 papers each during 1996-17. The research productivity of top 20 authors in ETDs varied from 2 to 6 publications. Together they contributed 57.01% (61) global publication share and 51.89% (275) citation share of total research output during 1996-17. The scientometric profile of top 20 authors is presented in Table 7.

Five of top 20 authors registered publications above the group average of 3.05: G.McMillan (6 publications), S.Copeland, S.Hall and J.Schopfel (5 papers each) and H.Prest (4 publications) etc. during 1996-17.

Eight authors registered the relative citation index above the world average 1: C.Jewel (1.52), G.McMillan (1.48), S.Copeland (1.45), I.J.Ejema (1.41), K.Lee (1.35), E.A.Fox (1.28), J.Schopfel (1.21), H.Prest (1.11), etc. during 1996-17.



Thirteen authors contributed international collaborative publications above the group average share of 44.26% of all authors: J.T. Dalton, H.Asner, D.Nolfi, C.Macduff, D.Blackwood (100% each), L.M.Goodfellow, K.Lee (66.67% each), S.Copeland, J.Schopfel (60% each), H.Asner, M.Duskova, I.J.Ezema, C.Jewell (50% each) etc during 1996-17.

The h-index of thirteen authors was above the group average 1.9 of all 20 authors: G.McMillan (4), S.Copeland, S.Hall, J.Schopfel, H.Prest (3 each), E.A. Fox, L.M.Goodfellow, K.Lee, M.Coates, J.T.Dalton, S.Dobratz, L.Hoover and C.Jewell (2 each) etc. during 1996-17.

Table 7
Scientometric Profile of Most Productive Authors

Sr. No.	Author	Affiliation	TP	TC	CPP	ICP	ICP %	HI	RCI
1	G.McMillan	Virginia Tech's University Libraries, USA	6	44	7.33	1	16.67	4	1.48
2	S.Copeland	Robert Gordon University, UK	5	36	7.20	3	60.00	3	1.45
3	S.Hall	Mississippi State University, USA	5	11	2.20	0	0	3	0.44
4	J.Schopfel	Groupement d'Etudes et de Recherche Interdisciplinaire en Information et Communication, France	5	30	6.00	3	60.00	3	1.21
5	H.Prest	Institute of Scientific & Technical Information CNRS, France	4	22	5.50	1	25.00	3	1.11
6	D.Blackwood	Curtin University, Australia	3	5	1.67	3	100.00	1	0.34
7	E.A.Fox	Virginia Polytechnic Institute and State University, USA	3	19	6.33	0	0	2	1.28
8	L.M.Goodfellow	Duquesne University, USA	3	12	4.00	2	66.67	2	0.81
9	K.Lee	Kent State University, USA	3	20	6.67	2	66.67	2	1.35
10	C.Macduff	RIPEN Project, USA	3	5	1.67	3	100.00	1	0.34
11	D.Nolfi	Duquesne University, USA	3	5	1.67	3	100.00	1	0.34
12	H.Asner	Ben-Gurion University of the Negev, Israel	2	2	1.00	1	50.00	1	0.2
13	M.Coates	Auburn University, USA	2	7	3.50	0	0	2	0.71
14	J.T Dalton	University of Windsor, Canada	2	12	6.00	2	100.00	2	0.86
15	S.Dobratz	Humboldt-Universität zu Berlin, Germany	2	8	4.00	0	0	2	0.81
16	M.Duskova	Slovak Centre of Scientific and	2	1	0.50	1	50.00	1	0.1



		Technical Information, Slovakia							
17	J.Erickson	University of Michigan, USA	2	0	0	0	0	0	0
18	I.J.Ezema	University of Nigeria, Nigeria	2	14	7.00	1	50.00	1	1.41
19	L.Hoover	Mississippi State University, USA	2	7	3.50	0	0	2	0.29
20	C.Jewell	University of Waterloo, Canada	2	15	7.50	1	50.00	2	1.52
	Total of 20 Authors		61	275	4.51	27	44.26	1.9	0.91
	Total of World		107	530	4.95				1
	Share of 20 authors in global output		57.01	51.89					

TP=Total Publications; TC=Total Citations; CPP= Average Citations Per Paper; HI= H-Index; RCI= Relative Citation Index

5.8 Medium of Research Communication

Of the global research output in ETDs, 84.11% (90) appeared in journals, 9.35% (10) in conference proceedings, 2.8% (3) in books, 1.87% (2) each as trade publications and book series.

The 107 journal publications appeared in 62 journals, of which 1 publication each appeared in 40 journals, 2 publications each in 10 journals, 3 publications each in 7 journals, 4 publications each in 2 journals, 5-7 publications each in 1 journal. Top 20 most productive journals published 2 to 7 papers each, accounted for 51.40% share of total papers in journal medium during 1996-17. The top most productive journals include: D Lib magazine (7 papers), Library Hi-Tech (6 papers), Library Hi-Tech News (5 papers), Journal of Academic Librarianship, Program (4 each), College and Research Libraries, Grey Journal, International Information & Library Review, International Nursing Review, Library Collections Acquisitions and Technical Services, Portal (3 each) etc. during 1996-17 (Table 8).

Table 8
Distribution of Journal Papers by Serial Productivity

S. No.	Name of Journal	No. of Papers	S. No.	Name of Journal	No. of Papers
1	D Lib magazine	7	11	Portal	3
2	Library Hi-Tech	6	12	Science and Technology Libraries	3
3	Library Hi-Tech News	5	13	Bulletin of the American Society for Information Science and Technology	2



4	Journal of Academic Librarianship	4	14	Cataloging and Classification Quarterly	2
5	Program	4	15	Electronic Library	2
6	College and Research Libraries	3	16	Journal of Library Metadata	2
7	Grey Journal	3	17	Lecture Notes in Computer Science	2
8	International Information and Library Review	3	18	Liber Quarterly	2
9	International Nursing Review	3	19	Library Resources and Technical Services	2
10	Library Collections Acquisition and Technical Services	3	20	Technical Services Quarterly	2

5.9 Highly Cited Papers on ETDs during 1996-2017

Of the 107 global publications on ETDs, only 22 were highly cited papers with 10 to 24 citations per paper. Together these papers received 330 citations, with an average of 15 citations per paper. The distribution of 22 highly cited papers by country of publication is highly skewed: 14 from United States, 3 from UK, 2 each from Canada and India and 1 each from Netherlands, Nigeria and South Korea. These 22 highly cited publications involved 46 authors and 24 organizations. Of the 22 highly cited papers, 20 were articles and 2 conference papers. These 22 highly cited papers had appeared in 16 journals; 4 were published in Library Hi-Tech, 2 each in Cataloging and Classification Quarterly, Library Collections, Acquisitions and Technical Services, Program and 1 each in College and Research Libraries, Computers and Composition, DLib Magazine, Electronic Library, Library Resources and Technical Services, New Review of Information Networking, Portal, proceedings of ASIS Annual Meeting, Proceedings of the Hawaii International conference on System Sciences and Scientometrics during 1996-2017.

6. Summary and Conclusion

Research publications data on ETDs sourced from the Scopus database was analysed in this study to provide a qualitative and quantitative description of its global research output covering 21 years period (1996-2017). The study showed that annual cumulative global output of ETDs registered 59.75% growth. Its global citation impact averaged to 4.95 citations per paper during 1996-17, which decreased from 5.57 during 1996-2007 to 4.43 during 2008-2017. The top 10 most productive countries in ETDs research together accounted for a high of 99.06% global share



during 1996-2017. USA (56 publications) published highest publications on ETDs. Publication productivity of other top 9 countries remained between 2.8% to 10.28% of global publications share. Social Sciences accounted for the highest subject share (82.24%) followed by Computer Science (39.25%) and others. The top 20 most productive research organizations and authors on ETDs research collectively contributed 64.49% and 57.01% global publication share and 76.04% and 51.89% global citation share respectively during 1996-17. The journals medium accounted for 84.11% global share in ETDs research with top 20 most productive journals accounting for 51.40% of the total publications output in journals during 1996-17. Of the total ETDs research output, only 22 publications registered high citations.

The study concludes that ETDs research is in nascent stage. ETDs is an emerging field. The corpus of literature in the field is small. The probable cause might be recent emergence of ETDs. The impact of ETDs on accelerating research growth at global level is significant and cannot be overlooked. Research gets increased visibility, and thus increased impact through increased citations with ETDs. The research in ETDs needs impetus at national and international levels. Strategies should be formed for open access ETD repositories with interoperability, standard e-publishing and supporting multilingual aspects etc. Librarians, Information Scientists and Computer professionals should synergise and work towards promoting ETDs.

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