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Technology Adoption, Appropriation and Acceptance Research Trends in Library and Information Science Literature

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ABSTRACT
The ICT developments, software applications and digital information scenario have made progress in Technology adoption research in various aspects of Library and Information Science disciplines. It is apparent that technology has taken over all the areas of our lives. There is diverse nature of research literature on technology adoption, appropriation and acceptance research (3TA research), since the adoption of technology in academic, public and special libraries. This is an important phenomenon to study the LIS research productivity and impact research trends to assess the growth of literature at different aggregate levels. The present study focused on to assess the publications of and citations to the 3TA research at country, institutions, and researchers levels from 1985 to 2105 using a bibliometric approach based on Web of Science Core Collection. The findings of the study are important to the LIS knowledge in providing a comprehensive and up to-date view of the research trends of this phenomenon.

Keywords: technology adoption, technology appropriation, technology acceptance, publications, citations, research trends, library and information science

INTRODUCTION

Technology adoption process consists of the awareness, development through series of steps that end in appropriate and effective usage (http://www.bridges-to-technology.com). There has been observed drastic changes in organizational infrastructure, and providing services to users in the every occupation. Davis et al. (1989) introduced Technology Adoption Model (TAM) which hasattracted the researchers' focus on its application in different contexts and disciplines at organizational and group levels (Venkatesh, Davis, & Morris, 2007). Later on, many other models and theories have emerged, and it became a hot cake of the scholars to study the awareness, adoption, use and non-use of technology adoption/acceptance/appropriation in various contexts and aggregate levels.

The library world has no exception and rapidly transforming from traditional to digital infrastructure, digital collection and providing e-services to meet the users' needs. The

recent proliferation of LIS literature and interest of library professionals and academics use adoption, appropriation and acceptance of new ICT technologies in the library setting for providing user focused services has made the technology adoption/acceptance/appropriation an important topic of research to study. Eventually, the interest of concerned professionals and academics resulted in the growth of literature on the different aspects of this topic in various contexts.

The bibliometric approach is the best that allows to study and to investigate the growth of literature regarding research productivity and impact at different aggregate levels. Many studies have been conducted on technology adoption in different perspectives and disciplines using bibliometric approach.

The work of (Williams et al., 2009) was based on the objective of providing a systematic review of the technology adoption and diffusion literature, Hsiao et al. (2015) looked at the theoretical advancement of the technology acceptance research and identified the emerging themes in this context whereas Sriwannawit & Sandström, (2015) conducted an extensive bibliometric and clustering analysis review on technology diffusion research. This review indicated that technology adoption research is indeed an interdisciplinary research area (Hsiao et al., 2015).

Various studies have been conducted on some designated research areas. Daim & Suntharasaj (2009) conducted a bibliometric analysis based on retail environment and the diffusion of new technology.

There are two studies which are conducted on TAM application within the English literature by Chuanlei & Chen (2010) and another by Hsiao & Yang (2011) on the development of TAM model. They conclued that TAM is still a popular theory to study. The case of emerging journals and emerging topics in Health Information Technology research was considered by Behkami & Daim (2012) while Shiau & Dwivedi (2013) conducted a study on the exploration of the core and emerging knowledge of electronic commerce research based on six electronic commerce journals. Most of the studies used ISI databases, title, topic, and journal publications records. The LIS discipline is not investigated to such research trends in publications and impact and remained a topic of interest. The keywords Technology Adoption, Technology Acceptance and TechnologyAppropriation (www.thesaurus.com) hence the abbreviation 3TA, are to be used for this study.

METHODOLOGY

Earlier bibliometrics studies on technology adoption focused their work on adoption (Chen & Ma, 2014; Chuanlei & Chen, 2010; Williams et al., 2009), acceptance (Hsiao et al., 2015; Hsiao & Yang, 2011), appropriation (Quinones & Teasley, 2010) and diffusion (Daim & Suntharasaj, 2009; Sriwannawit & Sandström, 2015). The current bibliometric study addresses the literature research trends of technology adoption for 30 years from 1985 to 2015. This period has been chosen because there has been a great expansion of technology adoption studies in this period. This study, however, seeks to include all publications that contain the keywords technology adoption, technology acceptance and technology appropriation (Theasurus.com) literature over the thirty years period

started from its first publication in 1985 based on LIS literature. We used topic search and basic search features of Web of Science of ISI Web of Knowledge to retrieve data. A total of 2304 publications (journal articles) were collected from WoS in Oct 2015 based on basic search features. Microsoft Excel and VOS Viewer were used to conduct the analysis.

OBJECTIVE

The main objective of this study is to investigate the technology adoption research performance of Library and Information Science Literature at various aggregate levels. The main research questions addressed are:

1. What are the publications and citations trends of 3 TA LIS research?
2. Which countries have been producing a significant number of 3TALIS publications?
3. Which institutions have been producing a significant number of 3TA LIS publications?
4. Which journals have been producing a significant number of 3TA LIS publications?
5. Who are the most prolific LIS researchers and to explore the authorship patterns in 3TA LIS research?
6. What are the most cited publications in 3 TA LIS research?

ANALYSIS AND FINDINGS

Growth of Scientific Productivity and Citation analysis of 3 TA LIS research

There is continuous increase in the scientific productivity of 3 TA research over the thirty years period, starting from only one publication in 1985 to 195 publications in 2015 (Table 1). The period between 1986 and 1988 observed no publication in this area. However, the research trend shows a gradual increase in a number of publications since 1989 in 3TA LIS research. After 2002, we can see a sharp increase in the publication trend in this area of research. These results indicate that though 3TA research gradually increased since 1989, it was the year 2003 when LIS researchers developed more interest in this area of research, and they started contributing a large number of publications. The most productive year was 2014 in which 251 papers (10.89%) were published.

On the other hand, there is much variation in getting citation trends. Papers published in 2003 received the highest number of citations (9152) followed by the papers published in 1989 and 2005 with 5600 and 5442 citations respectively. After that, decreasing trends is observed in getting a citation. Regarding citations per publication, two papers published in 1989 were highly cited at the rate of 2800 citations per publication. One of these two papers has become the base publication for researchers as it received 5596 citations out of 5600 citations.

Table 1: Growth of Scientific Productivity and Citation analysis of 3 TA LIS research (1985-2015)

Years	Documents	%	Number of Times Cited	Citations /publication	Times Cited %
1985	1	0.04%	55	55.00	0.08%
1989	2	0.09%	5600	2800.00	7.83%
1990	5	0.22%	298	59.60	0.42%
1991	9	0.39%	197	21.89	0.28%
1992	13	0.56%	834	64.15	1.17%
1993	11	0.48%	474	43.09	0.66%
1994	20	0.87%	643	32.15	0.90%
1995	31	1.35%	4833	155.90	6.75%
1996	20	0.87%	352	17.60	0.49%
1997	26	1.13%	2896	111.38	4.05%
1998	31	1.35%	1323	42.68	1.85%
1999	32	1.39%	3535	110.47	4.94%
2000	45	1.95%	2355	52.33	3.29%
2001	33	1.43%	3863	117.06	5.40%
2002	35	1.52%	3740	106.86	5.23%
2003	59	2.56%	9152	155.12	12.79%
2004	61	2.65%	3953	64.80	5.52%
2005	93	4.04%	5442	58.52	7.60%
2006	110	4.77%	4265	38.77	5.96%
2007	121	5.25%	4196	34.68	5.86%
2008	117	5.08%	3480	29.74	4.86%
2009	164	7.12%	3262	19.89	4.56%
2010	166	7.20%	2461	14.83	3.44%
2011	224	9.72%	1937	8.65	2.71%
2012	198	8.59%	1202	6.07	1.68%
2013	230	9.98%	792	3.44	1.11%
2014	251	10.9%	389	1.55	0.54%
2015*	196	8.51%	30	0.15	0.04%
Total	2304	100.0%	71559		100.00%
*Up to Oct 2015 only					

Top 20 Countries Contribution in 3TA LIS Research

The country level analysis reveals that United States of America is clearly leading the 3TA research in terms of publications and total citations received. Table 2 depicts the

top 20 countries, which contributed to 3TA LIS research along with citations received. In terms of publications, UK (216) and Peoples Republic of China (189) are following the USA (967). The first three countries received highest citations are USA (6673), Canada (1917) and China (712). The only Muslim country that secured a position in top 20 countries in 3TA research is Malaysia. These results indicate that though the USA is leading the 3TA research, China has secured the third position, which illustrates that China is strongly competing for the developed countries in this area of research.

Table 2: Top 20 Countries Contribution in 3TA LIS Research

No.	Country	Publications (n = 2304)	Total Citations	Citations / Publication
1	USA	967	6673	45.90
2	UK	216	260	13.08
3	Peoples R China	189	712	22.78
4	Canada	167	1917	71.83
5	Taiwan	164	615	23.04
6	South Korea	118	419	21.65
7	Australia	115	232	17.38
8	Singapore	69	296	29.80
9	Spain	62	32	8.18
10	Netherlands	57	163	34.26
11	Germany	43	92	12.26
12	Finland	39	64	14.23
13	Israel	28	58	11.93
14	Brazil	23	6	2.13
15	France	23	34	7.57
16	Malaysia	23	29	6.83
17	New Zealand	23	139	34.43
18	India	22	38	13.27
19	Italy	21	12	5.33
20	Denmark	20	60	16.00

Top 20 Institutions Contribution in 3TA LIS Research

Table 3 shows top 20 institutions, which contributed the highest number of publications to 3TA research along with citations received by their publications. The institution level analysis illustrates that Georgia State University from the USA has contributed highest number of publications (55) in 3TA research and received 799 citations. Regarding publications, City University of Hong Kong (50) and National University of Singapore (48) are following the Georgia State University. Although the University of Maryland has contributed only 25 papers to 3TA research, its publications have received the highest

number of total citations (1053). The University of Minnesota (918) and Univ Arkansas(906) are next two ranked with highest received citation.

Table 3: Top 20 Institutions Contribution in 3TA LIS Research

No.	Institution	Publications (n = 2304)	Total Local Citations	Citations / Publication
1	Georgia State Univ	55	799	97.64
2	City Univ Hong Kong	50	224	35.74
3	Natl Univ Singapore	48	273	38.92
4	Univ British Columbia	43	490	69.53
5	Univ Arkansas	37	906	124.73
6	Brunel Univ	34	44	11.85
7	Univ Wisconsin	32	198	39.84
8	Michigan State Univ	27	155	37.30
9	Univ Arizona	27	225	42.07
10	Korea Adv Inst Sci & Technol	26	153	37.65
11	Univ Minnesota	26	918	201.12
12	Indiana Univ	25	140	25.88
13	Univ Maryland	25	1053	235.00
14	Univ N Carolina	25	31	17.32
15	Univ New S Wales	25	65	25.48
16	Harvard Univ	23	25	32.22
17	Hong Kong Univ Sci & Technol	23	262	53.17
18	Univ S Florida	23	379	87.57
19	Hong Kong Polytech Univ	22	94	21.45
20	Washington State Univ	22	77	20.45

Top 20 Journals Contribution in 3TA LIS Research

The journal level analysis (Table 4) indicates that *Information & Management* published by Elsevier Science BV from Netherlands has published highest number of papers (263, 11.41%) on 3TA research followed by *European Journal of Information Systems* and *International Journal of Information Management*, which published 158 (6.86%) and 142 (6.16%) papers respectively. Table 4 illustrates the top 20 journals contributing in 3TA research with citations and citations per publication. The citation analysis indicates that papers published in *MIS Quarterly* attracted the highest number of citations (24,417) followed by the papers published in with 11,795 (16.48%) and 10,900 (15.23%) citations in Information & Management and *Information Systems Research*.

Table 4: Top 20 Journals Contribution in 3TA LIS Research

No.	Journal Title	Publisher	Papers Published (n = 2304)	Papers Published %	Citations (n=71559)	Citation %	Citations /publication
1	Information & Management	Elsevier Science BV	263	11.41%	11,795	16.48%	44.85
2	European Journal of Information Systems	Palgrave Macmillan Ltd	158	6.86%	3,327	4.65%	21.06
3	International Journal of Information Management	Elsevier Sci Ltd	142	6.16%	1,900	2.66%	13.38
4	MIS Quarterly	Soc Inform Manage-MIS Res Cent	134	5.82%	24,417	34.12%	182.22
5	Journal of the American Medical Informatics Association	Oxford Univ Press	124	5.38%	2,397	3.35%	19.33
6	Journal of Management Information Systems	Routledge Journals, Taylor & Francis Ltd	112	4.86%	5,359	7.49%	47.85
7	Information Systems Research	Informs	109	4.73%	10,900	15.23%	100.00
8	Government Information Quarterly	Elsevier Inc	75	3.26%	988	1.38%	13.17
9	Journal of Information Technology	Palgrave Macmillan Ltd	72	3.13%	792	1.11%	11.00
10	Telecommunications Policy	Elsevier Sci Ltd	70	3.04%	732	1.02%	10.46
11	Online Information Review	Emerald Group Publishing Limited	65	2.82%	613	0.86%	9.43
12	Information Systems Journal	Wiley-Blackwell	60	2.60%	1,358	1.90%	22.63
13	Journal of the American Society for Information Science and Technology	Wiley-Blackwell	56	2.43%	674	0.94%	12.04

14	Journal of the Association for Information Systems	Assoc Information Systems	54	2.34%	821	1.15%	15.20
15	Journal of Global Information Management	IGI Publ	53	2.30%	370	0.52%	6.98
16	Journal of Strategic Information Systems	Elsevier Science BV	51	2.21%	1,234	1.72%	24.20
17	Electronic Library	Emerald Group Publishing Limited	47	2.04%	174	0.24%	3.70
18	Telematics and Informatics	Elsevier Science BV	47	2.04%	135	0.19%	2.87
19	Data Base for Advances in Information Systems	Assoc Computing Machinery	39	1.69%	705	0.99%	18.08
20	Information Technology & People	Emerald Group Publishing Limited	39	1.69%	60	0.08%	1.54

Top 20 Most Cited Publications in 3TA LIS Research

The citation analysis (Table 5) revealed that the paper titled *Perceived usefulness, perceived ease of use, and user acceptance of information technology* by F. D. Davis, published in MIS Quarterly in 1989, was the most cited publications in 3TA research, which attracted 5596 citations. Thus, the paper has become the base publication for all researchers of 3TA research. *MIS Quarterly* also published the second best cited paper under the title *User acceptance of information technology: Toward a unified view* authored by V. Venkatesh, M. G. Morris, G. B. Davis, and F. D. Davis, which attracted 3177 citations. Table 5 lists the most cited publications in 3TA research. The findings of the study indicate that majority of the most cited papers (14 out of 20) were published in *MIS Quarterly.*

Table 5: Most Cited Publications in 3TA Research

No.	Authors	Article Title	Journal Title	Times Cited
1	Davis, FD	Perceived usefulness, perceived ease of use, and user acceptance of information technology	MIS Quarterly	5596
2	Venkatesh, V; Morris, MG; Davis, GB; Davis, FD	User acceptance of information technology: Toward a unified view	MIS Quarterly	3177
3	Taylor, S; Todd, PA	Understanding information technology usage - A test of competing models	Information Systems Research	1493
4	DeLone, WH; McLean, ER	The DeLone and McLean model of information systems success: a ten-year update	Journal of Management Information Systems	1430
5	Chin, WW; Marcolin, BL; Newsted, PR	A partial least squares latent variable modelling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study	Information Systems Research	1014
6	Compeau, DR; Higgins, CA	Computer Self-Efficacy - Development of a Measure and Initial Test	MIS Quarterly	1011
7	Bhattacherjee, A	Understanding information systems continuance: An expectation-confirmation model	MIS Quarterly	871
8	Karahanna, E; Straub, DW; Chervany, NL	Information technology adoption across time: A cross-sectional comparison of pre-adoption and post-adoption beliefs	MIS Quarterly	756
9	Agarwal, R; Karahanna, E	Time flies when you're having fun: Cognitive absorption and beliefs about information technology usage	MIS Quarterly	741
10	Moon, JW; Kim, YG	Extending the TAM for a World-Wide-Web context	Information & Management	700
11	Adams, DA; Nelson, RR; Todd, PA	Perceived usefulness, ease of use, and usage of information technology - A replication	MIS Quarterly	700
12	Koufaris, M	Applying the technology acceptance model and flow theory to online consumer behavior	Information Systems Research	594
13	Taylor, S; Todd, P	Assessing IT usage: The role of prior experience	MIS Quarterly	535

14	Kankanhalli, A; Tan, BCY; Wei, KK	Contributing knowledge to electronic knowledge repositories: An empirical investigation	MIS Quarterly	534
15	Gefen, D; Straub, DW	Gender differences in the perception and use of E-mail: An extension to the technology acceptance model	MIS Quarterly	516
16	Agarwal, R; Prasad, J	A conceptual and operational definition of personal innovativeness in the domain of information technology	Information Systems Research	497
17	Iacovou, CL; Benbasat, I; Dexter, AS	Electronic data interchange and small organizations: Adoption and impact of technology	MIS Quarterly	495
18	Compeau, D; Higgins, CA; Huff, S	Social cognitive theory and individual reactions to computing technology: A longitudinal study	MIS Quarterly	489
19	Petter, S; Straub, D; Rai, A	Specifying formative constructs in information systems research	MIS Quarterly	471
20	van der Heijden, H	User acceptance of hedonic information systems	MIS Quarterly	458

Collaboration Pattern in 3TA LIS Research

The collaboration pattern analysis (Table 6) illustrates whether researchers preferred to work alone or as a team. Analysis for this study revealed that researchers in the field of 3TA research preferred to work as a team because single authors wrote only 429 (18.62%) papers in this research area. Table 6 depicts the authors' collaboration pattern in 3TA research. Two authors jointly wrote the highest number of papers (806, 34.98%). The results highlight that though researchers like to work as a team in the field of 3TA research, these teams are small, comprising of two to four authors, because the larger teams, comprising of five or more authors, contributed less than five percent of the total papers.

Table 6: Collaboration Pattern in 3TA Research

Number of authors	Documents (n = 2304)	Percentage
Single	429	18.62%
Two	806	34.98%
Three	685	29.73%
Four	263	11.41%
Five	65	2.82%
More than five	56	1.35%

Across Disciplines Analysis of 3TA LIS Research

All papers for this study were selected from Library and Information Science (LIS) discipline. However, assigning of more than one subjects to papers made it possible to study the cross disciplinary relationship of the papers. Table 7 shows the subject categories of the papers analysed for this study. Analysis of subject categories other than LIS revealed that majority of the papers (1292, 56.08%) were related to Computer Science followed by papers related to Business & Economics (845, 36.68%) and Medical Informatics (124, 5.38%).

Table 7: 3TA LIS Research Across Disciplines

Subject Categories	Documents (n = 2304)	Percentage*
Information Science & Library Science	2304	100.00%
Computer Science	1292	56.08%
Business & Economics	845	36.68%
Medical Informatics	124	5.38%
Communication	93	4.04%
Telecommunications	70	3.04%
Health Care Sciences & Services	62	2.69%
Social Sciences - Other Topics	35	1.52%
Geography	6	0.26%
Education & Educational Research	5	0.22%
Physical Geography	4	0.17%
History	3	0.13%
Philosophy	2	0.09%
Arts & Humanities - Other Topics	1	0.04%
Government & Law	1	0.04%

* Accumulative percentage greater than 100% as many research papers have been assigned more than one subject categories.

Most Prolific Authors in 3TA LIS Research

Authorship analysis helps us in highlighting the authors who have contributed the most in any field of research. Table 9 presents the list of most prolific contributors in 3TA research, who contributed 10 or more papers, with a number of papers contributed. The results of the analysis indicate that there is a group of 21 authors, who have published 10 or more papers in the field of 3TA research. In our study, I. Benbasat

emerged as the most prolific contributor in 3TA research with 30 documents. V. Venkatesh occupies the second place with 28 documents and RJ. Kauffman positions at third.

Table 9 Most Prolific Contributors in 3TA Research

Author	Documents (n = 2304)	Co-authorship links
Benbasat, I	30	52
Venkatesh, V	28	50
Kauffman, Rj	15	22
Lyytinen, K	15	24
Wei, Kk	14	36
Lee, Mko	13	35
Agarwal, R	12	23
Aharony, N	12	1
Bhattacherjee, A	12	13
Brown, Sa	12	36
Chau, Pyk	12	16
Rai, A	12	21
Turel, O	12	19
Cheung, Cmk	10	22
Dwivedi, Yk	10	22
Gefen, D	10	14
Grover, V	10	15
Hu, Pjh	10	29
Lee, S	10	16
Straub, Dw	10	12
Teo, Tsh	10	14

CONCLUSION

The LIS researchers developed an interest in 3TA research in 2003 and about three-quarters of the total 3TA LIS research output appeared in the last decade. Papers published in 2003 received the highest number of citations (9152) followed by the papers published in 1989 and 2005 with 5600 and 5442 citations respectively. Findings depict that American universities are not only prominent in terms of the number of publications and citations to 3TA LIS research; they have also received the highest number of citations at the highest rate of citations per publication. However, universities of China and Singapore are not far behind regarding the research productivity. The USA institutions contributed most in terms of publications and citations therfore United States of America is far ahead of other countries in terms of publications and total citations received while Malaysia is only Muslim country secured a position in top 20 countries. Journals published by the USA, UK and Netherlands contributed the majority of the papers in 3TA research, as journals published in other countries are not seen among top 20 journals. While journals published from USA and Netherlands attracted the highest number of citations and citations per publication. Results also depict that English is the predominant language of 3TA LIS research publications. *MIS Quarterly* is seemed the best option for researchers to publish their

papers in the field of 3TA research, though they have other options too. I. Benbasat, V. Venkatesh and RJ. Kauffman is positioned as three most prolific authors. The results suggest that researchers in the fields of Information Science & Library Science, Computer Science, and Business & Economics are more interested in 3TA LIS research. Whereas, researchers in the fields of Government & Law, Arts & Humanities, Philosophy, and History are hardly interested in this area of research.

REFERENCE

Behkami, N. a., & Daim, T. U. 2012. Research Forecasting for Health Information Technology (HIT), using technology intelligence. *Technological Forecasting and Social Change*, *79*(3), 498–508. http://doi.org/10.1016/j.techfore.2011.08.015

Chen, H., & Ma, T. 2014. Technology adoption with limited foresight and uncertain technological learning. *European Journal of Operational Research*, *239*(1), 266–275. http://doi.org/10.1016/j.ejor.2014.03.031

Chuanlei, W., & Chen, C. 2010. The bibliometrics-based analysis on TAM with english literature. In *2010 International Conference on Management and Service Science, MASS 2010* (pp. 1–5). http://doi.org/10.1109/ICMSS.2010.5577389

Daim, T., & Suntharasaj, P. 2009. Technology diffusion: forecasting with bibliometric analysis and Bass model. *Foresight*, *11*(3), 45–55. http://doi.org/10.1108/14636680910963936

Hsiao, C. H., Tang, K.-Y., & Liu, J. S. 2015. Citation-based analysis of literature: a case study of technology acceptance research. *Scientometrics*, *105*(2), 1091–1110. http://doi.org/10.1007/s11192-015-1749-5

Hsiao, C. H., & Yang, C. 2011. The intellectual development of the technology acceptance model: A co-citation analysis. *International Journal of Information Management*, *31*, 128–136. http://doi.org/10.1016/j.ijinfomgt.2010.07.003

Quinones, P., & Teasley, S. 2010. Beyond Intent : Technology Adoption and Appropriation by University Staff. *iConference , 2010*, 3.

Shiau, W.-L., & Dwivedi, Y. K. 2013. Citation and co-citation analysis to identify core and emerging knowledge in electronic commerce research. *Scientometrics*, *94*, 1317–1337. http://doi.org/10.1007/s11192-012-0807-5

Sriwannawit, P., & Sandström, U. 2015. Large-scale bibliometric review of diffusion research. *Scientometrics*, *102*(2), 1615–1645. http://doi.org/10.1007/s11192-014-1448-7

Venkatesh, V., Davis, F. D., & Morris, M. G. 2007. Dead Or Alive? The Development, Trajectory And Future Of Technology Adoption Research. *Journal of the Association for Information Systems*, *8*(4), 267–286. http://doi.org/10.1016/j.wneu.2011.04.002

Williams, M. D., Dwivedi, Y. K., Lal, B., & Schwarz, A. 2009. Contemporary trends and issues in IT adoption and diffusion research. *Journal of Information Technology*, *24*(1), 1–10. http://doi.org/10.1057/jit.2008.30