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Citation Analysis of Authorship and Articles Characterization in ***Technology and Development: A Journal of Scientific and Technological Research***

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Introduction

The productivity of authors is determined to a large extent by the number of their contribution in journals and other information resources. The purpose of this study is to carry out citation analysis of author and the articles characterization of the Technology and Development Journal. The Technology and Development: A Journal of Scientific and Technological Research is an interdisciplinary journal aimed at promoting research works in science and technology in the areas of agriculture, engineering, environmental science, natural sciences, scientific and technical communication, technology education and other related areas relevant to technological development. The journal is published by Federal University of Technology Yola and intended to be issued twice annually i.e. in (June and December) with a median edition in May, 1991. However, from the investigation by the researchers, it showed that the journal has turned to be an annual publication.

Objectives of the study

This study seeks to determine:

1.The number of articles published in each volume of the journal;

2.How many references are cited in terms of journal articles, books and others;

3. The level of author collaboration;

4.Authors institutional affiliation;

5.The subject coverage of the articles published;

6.The geographical spread of authors.

Research Questions

1. How many articles are published in each volume of the journal?

2. How many references are cited in terms of journals articles, books and others?

3. What is the level of authors' collaboration?

4. What are the authors' institutional affiliations?

5. What is the subject coverage in the each volume?

6. What is the geographical spread of the authors?

Literature Review

Citation analysis involves examining an item's referring documents (citation). It is used in searching for materials and analyzing their merit (LISWIKI, 2009). Sam and Tackie (2007) defined citation analysis as a wide ranging area of bibliometrics that studies the citation to and from documents. Such studies may focus on the documents themselves or on such matters as their authors, the journals articles. According to Aina (1993) a study of the characteristics of the literature of any subject field is considered particularly important given the fact that it leads to the understanding of the discipline. Aliyu and Isah (2006) conducted a study on characteristics of authors in Educational Forum: A journal of the Faculty of Education University of Maiduguri. They reported that 143 authors contributed 133 articles in the five volumes covered in the study. The most published department was education. The most productive author has seven articles from Health Education Department and majority of the contributors are from University of Maiduguri. In a similar study by Abubakar and Garba (2007) on analysis of articles in the Information Technologist Journal, revealed that a total of 44 articles were published in the three issues (2004-2006) covered in the study, majority of the published articles were empirical research, majority of the articles were on Nigerian scene (34) while the 2006 issue had the highest number of articles of 20 out of the total number (44). Furthermore, a study by Tiew; Abrizah and Kiran (2002) on Malaysia Journal of Library and Information Science 1996-2000: A bibliometric study showed that a total of 76 articles were published in the five volumes of the journal. The most prolific author contributed 12 articles, 36 (45%) of the authors are geographically affiliated to Malaysia; the most productive institution and faculty is Faculty of Computer Science and Information Technology, University of Malaysia, while single authored articles were36 (47.4%). Hawkins(2001) carried a study on bibliometrics of electronic journals in information science revealed that most of the articles in theses journals originate from United States, and are authored by single person. Academic institutions contribute heavily to the information science e-journals literature.

Methodology

The research design for this study is bibliometrics and data for this study were obtained from the articles published in Technology and Development Journal of volumes (1-5) 1991 to 1995. Data were analyzed using descriptive statistics, tables, frequency and percentages.

Data analysis

TABLE 1: Number of Articles per issue

S/N	Volume No.	No. of Articles	Year	Percentage
1	1	23	1991	23.96
2	2	19	1992	19.79
3	3	20	1993	20.83
4	4	15	1994	15.63
5	5	19	1995	19.79
	Total	96		100

Table 1: shows that a total of Ninety-six (96) articles were published in the five volumes of the journal, volume 1 has the highest number of articles of 23 (23.96%) while volume 4 had the least of 15 (15.63%) articles.

TABLE 2: Numbers of Cited References

S/N	Volume	Journals	Books	Others	Total

1	1	159	79	103	341
2	2	174	66	45	285
3	3	177	49	56	282
4	4	132	54	63	249
5	5	129	76	59	264
	Total	771	324	326	1421

Table 2: shows that a total of 1421 cited references from all sources of information in the five volumes of the Technology and Development Journal. Journals citation amount to 771 (54.26%), books 324 (22.80%) while others 326 (22.94%).

TABLE 3: Level of Authorship collaboration

S/N0.	Level of Authorship collaboration	Vol.1	Vol.2	Vol.3	Vol.4	Vol.5	Total	Percentage
1	Single	14	6	8	10	7	45	47.37
2	Two authors	5	12	9	4	10	40	42.11
3	Three authors	1	1	1	1	1	5	5.26
4	Four authors	2	-	2	-	1	5	5.26
	Total						95	100

Table 3: shows the distribution of authors levels of collaboration of the articles from the five volumes of Technology and Development Journal. The table revealed that single authored articles with the highest number of 45(47.37%), two authors ranked second with 40 (42.11%) while 5 (5.26%) for three and four authored articles.

TABLE 4 Authors Institutional Affiliations

S/N	Institutions	Vol. 1	Vol. 2	Vol. 3	Vol. 4	Vol. 5	Total	Percentage
1	Universities	28	31	36	20	33	148	92.50
2	Research Institutes	3	-	-	-	-	3	1.88
3	Polytechnics	1	-	1	-	-	2	1.25
4	Colleges of Education	-	-	-	1	-	1	0.62
5	Others	3	2	-	-	1	6	3.75
&nsbp;	Total	35	33	37	21	34	160	100

Table 4: Shows authors institutional affiliation which indicate that 148 (92.50%) of the total contributors are from universities, with least contributors from colleges of education of 1 (0.62%) from all the five volumes of the Technology and Development Journal. The high number from universities presupposes the fact that research publication is emphasized as perquisite for academic promotion or growth in universities.

TABLE 5: Subjects Coverage of Articles

S/N	Subjects	Vol. 1	Vol. 2	Vol. 3	Vol. 4	Vol. 5	Total	Percentage
1.	Agriculture	2	10	6	2	7	27	27.84
2.	Engineering	2	1	2	1	-	6	6.19
3.	Environmental Sciences	2	-	-	1	2	5	5.16
4.	Natural Sciences	10	8	12	9	7	46	47.42
5.	Technology Education	4	-	1	1	1	7	7.22
6.	Others	3	-	-	1	2	6	6.19
	Total	23	19	21	15	19	97	100

Table 5: shows subjects coverage of articles in the five volumes of the journal. Natural sciences is ranked highest with 46 (47.42%) of the total of 97 articles, followed by agriculture with 27 (27.84%) while the least is the environmental sciences with 5 (5.16%) articles.

TABLE 6: Geographical Locations of Authors

S/N	PLACES	VOL. 1	VOL. 2	VOL. 3	VOL. 4	VOL. 5	TOTAL	Percentage
1.	ABAKALIKA	1	-	-	-	-	1	0.63
2.	ABRAKA	-	1	-	-	-	1	0.63
3.	ADO-EKITI	1	-	-	-	-	1	0.63
4.	AKURE	1	-	-	2	2	5	3.17
5.	AWKA	1	-	1	-	-	2	1.27
6.	BAUCHI	-	3	-	3	-	6	3.80
7.	BENIN CITY	-	1	-	2	-	3	1.90
8.	CALABAR	1	2	-	-	1	4	2.53
9.	EKPOMA	1	-	-	-	-	1	0.63
10.	ENUGU	1	-	1	-	-	2	1.27
11.	GHANA	-	1	-	-	-	1	0.63

12.	GLASGOW, UK	2	-	-	-	-	2	1.27
13.	IBADAN	-	-	-	-	2	2	1.27
14.	ILORIN	1	-	-	-	-	1	0.63
15.	JOS	4	6	11	1	7	29	18.35
16.	KADUNA	-	-	-	-	1	1	0.63
17.	KATSINA-ALA	-	-	-	1	-	1	0.63
18.	LAGOS	1	-	-	-	-	1	0.63
19.	LINCOLN, USA	-	-	1	-	-	1	0.63
20.	LONDON, UK	-	2	-	-	-	2	1.27
21.	MAIDUGURI	1	4	12	-	-	17	10.76
22.	MAKURDI	1	-	-	3	1	5	3.17
23.	MINNA	1	1	2	-	1	5	3.17
24.	MUBI	1	-	1	-	-	2	1.27
25.	NSUKKA	1	-	-	1	-	2	1.27
26.	OKIGWE	1	-	-	-	-	1	0.63
27.	OWERRI	-	1	-	-	-	1	0.63
28.	PAPAU, N.G	-	-	-	-	1	1	0.63
29.	PORTHARCOURT	1	-	-	-	-	1	0.63
30.	VOM	3	-	-	-	-	3	1.90
31.	WALES, UK	-	-	1	-	-	1	0.63
32.	YOLA	9	10	8	7	16	50	31.65
33.	ZARIA	-	-	-	-	2	2	1.27
	TOTAL	34	32	38	20	34	158	100

Table 6: shows the distribution of authors by geographical area. The table revealed a total of 158 geographical areas both within and outside Nigeria. The number of geographical area (158) is higher than the number of articles 97, due to the fact that some articles reflects more than one geographical area particularly co-authored articles. From the table Yola has the highest score of 50 (31.17%), Jos 29(18.35%), Maiduguri 17 (10.76%), while articles from Glasgow, UK, Wales, UK and Ghana had 2 (1.27%), 1(0.63%) and 1(0.63%) respectively in the analysis of the five

volumes of the Technology and Development Journal.

Discussion

The initial intention of the publishers to publish the journal twice annually could not be achieved, that is why it has only five issues (volumes 1-5) in five years with its medium edition that appears in May, 1991.

The number of articles published in the five volumes totaling 96, revealed that the medium edition of May, 1991 has the highest number of 23 articles and least of 15 articles from 1994 issue. The number of cited references revealed journals as the most cited source of 771 citation, this indicate the relevance of journals as a source for current information and one of the essential source of information researchers need for enriching their work.

The level of authorship collaboration indicates that the Technology and Development Journal encourages collaboration of work as 52.63% of the articles are collaborated work of two or more authors, 45 (47.37%) are single authored articles, 40 (42.11%) are two authored articles and 5(5.26%) are three and four authored articles respectively. This kind of collaboration can bring about cross- fertilization of knowledge and ideas by authors.

The findings also showed authors' institutional affiliations with universities have the highest output of 148 of the total number of 160 authors. This is not far fetch from the fact that the journal is emanating from a university and most researchers will prefer to publish in such journals as one of the highest institutions for research in the academia.

The subject coverage of the five volumes of the Technology and Development Journal revealed that the most covered subjects area are the natural sciences with 46 (47.42%), agriculture 27(27.84) and the least is the environmental sciences 5(5.16%). The geographical locations of authors showed that the Technology and Development Journal had received wider contributions from within and outside Nigeria, however the finding showed that majority of the authors are from Yola 50 (31.65%) and 29(18.35%) from Jos, both within Nigeria.

Conclusion

The study had conducted citation analysis of authors and articles characterization of the Technology and Development Journal. It found out that a total of 96 articles were published in the five volumes (1-5) of 1991-1995, with the contributions of 95 authors. It also revealed a total of 1421 references cited in the five volumes from journals, books and others sources. Furthermore, authors from universities are the major contributors in the journal and the most covered subject area is the natural sciences. Finally, the geographical location of the authors indicated that most of them are from within Nigeria with few abroad. Finally the researchers recommend that the management of the journal should try to maintain the initial idea of publishing the journal twice a year. Furthermore, there is need to give the journal a wider spread so as to have international scope for larger contributors.

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