
BIBLIOMETRIC STUDY OF RATTAN LITERATURE

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Abstract

Rattans are one of the main non-wood forest products that provide livelihood for millions of tribal and rural populations in the world. There are 13 genera of rattans comprising about 568 species. During the last three decades a number of studies have been conducted in different aspects of rattan. These studies have been published in various journals as articles. The study aims at analysing the research output of rattan publications. The analysis covers mainly the growth of literature, degree of collaboration, authorship pattern, subject wise distribution of articles, core journals, language of publications etc.

Keywords

Bibliometrics, Rattan – Bibliometric study

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Introduction

Rattans or canes, the climbing palms of the family *Areaceae* form one of the most useful forest resources, utilized for the manufacture of a wide variety of aesthetic furniture and articles of decoration (Chand Basha & Bhat, 1992) they provide gainful employment to many people in rural and remote areas, particularly among the tribal people. Although economically important, rattan remained as a neglected natural resource till recent times. With the rampant destruction of forests and habitats and unsustainable extraction, its stock at present is highly depleted. The exploitation of wild rattans is increasing with the increase in demand for rattan furniture. Consequently, this resource is over-exploited and has become short in supply. Rattans are one of the important non-wood forest products of many tropical countries. There are 13 genera of rattans comprising about 568 species (Dransfield and Uhl, 1987). The largest number of genera and species of rattans are found in South East Asia. Among the 13 genera, *Calamus* is the largest genus with about 370 species (Tewari, 1992). In India, there are about 61 species of rattans under four genera, *Calamus*, *Daemonorops*, *Korthalsia* and *Plectocomia* (Rao & Vongkalung 1987). Rattans are mainly used for making furniture and handicrafts items. Bending nature, golden yellow colour, light weight and durability make canes dearer to furniture and handicrafts industry. A considerable size of rural population is engaged in making rattan furniture and handicrafts work in many countries like Indonesia, Malaysia, India, China, Myanmar, Thailand and Philippines.

Bibliometrics is a type of research method used in Library and Information sciences. It is an emerging area of research in the LIS field. The quantitative analysis and statistics to describe patterns of publication within a given field of body of literature are utilized. Researchers use bibliometric methods of evaluation to determine the influence of a single author or to describe the relationship between two or more authors or works. Bibliometric studies can be used to study regional patterns of research, the extent of cooperation between research groups and national research profiles. The word 'bibliometric' has been derived from the Latin and Greek words 'biblio' and 'metrics' refer to the application of mathematics to the study of bibliography.

Genus	No. of Species	Distribution
Calamus L.	374	Tropical Africa, India, Srilanka, China, South and East to Fiji, Vanuatu and Eastern Australia
Calospatha Becc.	1	Endemic to Peninsular Malasia
Ceratolobus Bl.	6	Malay Peninsula, Sumatra, Borneo, Java
Daemonorops Bl.	102	India and China to Western most New Guinea
Eremospatha(Mann & Wedl.) Wendl.	10	Humid Tropical Africa
Korthalsia Bl.	27	Indo-China and Burma to New Guinea
Laccosperma (Mann & Wendl.) Drude	5	Humid Tropical Africa
Myrialepis Becc	1	Indo-China, Thailand, Burma, Peninsular Malasia and Sumatra
Oncocalamus (Wendl.) Wendl.	5	Humid Tropical Africa
Plectocomia Mart.	16	Himalayas and South china to Western Malaysia
Plectocomiopsis Becc.	5	Laos, Thailand, Peninsular Malasia, Borneo, Sumatra
Pogonotium J. Dransf.	3	Two species endemic to Borneo, one species in both Peninsular Malaysia and Borneo
Resitspatha J. Dransf	1	Endemic to Borneo

Periodicals are the primary source of information and an important media for communication. They play a major role for communicating the latest research findings and publishing the articles containing the current development in any field of knowledge. They are forceful reflectors of emerging new trends in any discipline. Information is one of the most important resources for a nation and forms the integral base for the economic, cultural and scientific development of the country as a whole and periodicals are the main carries of nascent thought and information.

Objectives

1. To study year-wise distribution of papers
2. To study categories-wise classification of papers
3. To study subject-wise distribution of papers
4. To study the authorship pattern of papers
5. To study the most prolific contribution of papers
6. To find out degree of collaboration Materials & Methods

Data Analysis

Data analysis has been conducted for the articles of journals from CABI Abstract, AGRIS, and Biological Abstract for the period 2001-2011. This paper analyses growth of literature, Authorship pattern, core journals, subject wise classification and language of publications.

Growth of Literature

Table gives the year wise distribution of articles in the journal. The number varies from year to year and there is almost a constant increase in the number of articles from the year 2001 to year 2003. After a slight decrease in 2004, there is an increase in the number of articles from 2005 to 2007. After 2007, there is declining trend. The maximum number of articles in the year 2007 with 147 (12.11%) articles and minimum number of articles 64 (5.27%) in the year 2011

Table 1

Year	No. of Articles	% of Articles	Cumulative Articles	% of Cumulative Articles
2001	103	8.49	103	8.49
2002	115	9.48	218	17.97
2003	127	10.47	345	28.44
2004	110	9.06	455	37.50
2005	129	10.63	584	48.13
2006	135	11.12	719	59.25
2007	147	12.11	866	71.36
2008	120	9.89	986	81.25
2009	84	6.92	1070	88.17
2010	79	6.51	1149	94.68
2011	64	5.27	1213	100

Authorship Pattern

The authorship pattern analysis determined the type of research (Table2). It is found from the table, out of 1213 articles, single authored articles are highest 543(45%). Two authored articles are 266(22%), three authored articles are 205(17%), multiauthored articles are 119(16%)

Productive Author

Table 3 provides clear picture of ranking of authors. In the rank list the contributors who have contributed more than 20 articles are taken into account to avoid a long list. Dransfield, J has contributed 39 articles followed by Renuka, C contributed 33 articles, Bhat, K.M contributed 28 articles, Manokaran, N contributed 24 articles, Sibert, S.F. contributed 20

articles during the period of study. Others contributed less than 20 articles.

Subject wise Classification

Table 4 shows clear picture of subject classification of rattan research output. The rattan articles are divided into different classification such as Botany, Distribution & Resource Diversity, Reproductive Biology, Natural Regeneration, Silviculture, Injuries and Preservation. Based on classification Silviculture has scored first position with 405 (33.38%) records. Botany occupies second position with 275 (22.67%) records. Trade and Industry has been placed in third position with 145 (11.95%) records. The last place is occupied by Harvesting and Grading with 32 (2.63%) records.

Table 2

Year	Single	Joint	Three	Multi	Total
2001	55	27	7	14	103
2002	47	29	18	21	115
2003	65	23	27	12	127
2004	42	18	17	33	110
2005	66	32	18	19	135
2006	58	23	27	21	129
2007	72	44	13	18	147
2008	55	14	33	18	120
2009	36	18	12	18	84
2010	25	20	18	16	79
2011	22	18	15	9	64
Total	543	266	205	199	1213

Table 3

S. No.	Rank	Contributor	No. of Contribution
1	1	Dransfield, J	39
2	2	Renuka, C	33
3	3	Bhat, K.M	28
4	4	Manokaran, N	24
5	5	Sibert, S.F.	20

Language of Publication

It is also important to note the language of publication. English is official language in many countries and many conference proceedings are published in English language only. As usual English

is the predominant language of Publications (Fig.2). Out of 1213 records retrieved up to 2011, English occupies the first position with 1116 (92%) records. Indonesian language occupies second position with 49 records (4%). Chinese language occupying third position with 36 (3%) records. Also 12 (1%) records are found in other languages

Table 4

Sl. no	Subject	No. of Articles	%	Cumulative Articles	% of Cumulative Articles
1.	Botany	275	22.67	275	22.67
2.	Distribution & Resource Diversity	57	4.69	332	27.36
3.	Reproductive Biology	40	3.29	372	30.65
4.	Natural Regeneration	52	4.28	424	34.93
5.	Silviculture	405	33.38	829	68.31
6.	Injuries and Protection	39	3.21	868	71.52
7.	Properties	68	5.61	936	77.13
8.	Harvesting and Grading	32	2.63	968	79.76
9.	Processing	44	3.62	1012	83.38
10	Preservation	56	4.61	1068	87.99
11	Trade & Industry	145	11.95	1213	100

Core Journals

The journals publishing maximum number of articles in any subject are considered as core journals. Out of 1213 articles published in different journals following 10 journals (Table 5) are considered as core journals. Journal of Bamboo and Rattan scored first position with 32 (2.93%) articles, following Journal of Tropical Forest Science with 31(2.86) articles, Kew Bulletin with 28 (2.58%) articles etc.

Degree of collaboration

To determine degree of collaboration in quantitative terms, the formula given by K. Subramanyam (1983) to be 0.60

was used. The degree of collaboration among authors is the ratio of the number of multi-authored papers published to the total number of papers published in a discipline during certain period of time. The formula is as following

$$C = \frac{Nm}{Nm + Ns}$$

Where C= Degree of collaboration
Nm=Number of multi authored papers
Ns=Number of Single authored papers

The degree of collaboration calculated and it varies from 0.46 to 0.66. The mean value is found

Table 5

Name of the Journal	No. of Publications	% of Publications	Publisher
Journal of Bamboo & Rattan	32	2.93	Kerala Forest Research Institute, Peechi, Thrissur, Kerala
J. Tropical Forest Science	31	2.86	Ministry of Natural Resources and Environment, Malaysia
Kew Bulletin	28	2.58	Royal Botanical Garden, Kew
Indian Forester	22	2.03	Forest Research Institute, Dehra Dun
Malaysian Forester	27	2.49	Forest Department, Malaysia
Forest Research	26	2.39	Chinese Forestry Research, Malaysia
Canopy International	21	1.93	Ecosystem Research and & Development Bureau, Philippines
Unasylva	19	1.75	FAO, Rome
Principes	15	1.38	International Palm Society
Gardens Bulletin	14	1.29	National Parks Board, Singapore

Degree of Collaboration

Table 6

Year	No. of co-author Publications	Degree of Collaboration
2001	48	0.46
2002	68	0.59
2003	62	0.49
2004	68	0.48
2005	66	0.50
2006	71	0.55
2007	75	0.51
2008	65	0.54
2009	48	0.57
2010	54	0.68
2011	42	0.66

Results and Discussion

The study reveals growth of literature increasing as well as decreasing. Maximum number of articles in the year 2007 with 147(12.11%) articles. Most of the articles are following single authorship 543(45%). Most productive author is Dransfield, J with 39

articles. Based on subject classification Silviculture has scored first position with 405 (33.38%) records. Journal of Bamboo and Rattan is the core journal with 32 (2.93%) articles. English is the predominant language used for article publications.

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