Journal of Library and Information Studies 10:2 (December 2012) p.1-20

Tracking Scientometric Research in Taiwan Using Bibliometric and Content Analysis

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Abstract

This study used bibliometric analysis and content analysis to explore characteristics and trends of scientometric research authored by researchers in Taiwan based on journal articles and theses. The findings indicated that after the first article on scientometrics was published in 1987, an increasing trend was observed in the number of scientometric-related publications after 2000, indicating that scientometric research received more attention in recent years. The scope of disciplines of researchers was broad, and the number of disciplines continued to increase. This confirms the interdisciplinary nature of scientometric research with relationships that cross over different areas. From the perspective of the authors' disciplines, the largest percentage of the authors were from the fields of library and information science (LIS), followed by business and management, and medical science, but a considerable drop in number was observed in the percentage of LIS. In addition, co-authored articles were dominant. Over half of these articles were classified as inter-institutional collaboration and exhibited a steadily increasing trend. The number of interdisciplinary articles also exhibited an upward trend. Most of the research topics focused on citation analysis and characteristic of literature. The same trends were also found in the top two research methods: general bibliometric analysis and citation analysis. Due to the interdisciplinary nature of scientometric research, the academic backgrounds of the researchers would naturally be diverse. Given this characteristic, this study suggests that the relationship between disciplines of researchers and research topics can be further explored.

Keywords: Scientometrics; Bibliometrics; Taiwan

1. Introduction

Scientometrics, the first leading journal on scientometrics, was launched in 1978. The journal boldly presented scientometrics as an independent field. Since then, scientometric literature has grown considerably. According to the prior studies, most scientometric research has been published by larger countries, such as the United States, Canada, the United Kingdom, France, Germany, Japan, Netherland, China, and India (Mooghali, Alijani, Karami, & Khasseh, 2011; Schubert, 2002). Although scientometric research is a small research field in Taiwan, Taiwan's scientometric research has

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received increasing attention in recent years. Tsay and Liou (2007) reported noticeable increase in the number of publications on informetrics produced in the field of library and information science (LIS) in Taiwan after 2000. Raja, Kumar, and Amsaveni (2012) indicated that Taiwan was the top 12th productive country publishing scientometric papers from 1999 to 2011 based on data of Science Citation Index.

While Tsay and Liou (2007) presented the characteristics of scientometric research in Taiwan from various perspectives such as the number of publications, research topics, and document types, they addressed only literature of LIS produced in Taiwan. In other words, their findings demonstrated only a partial view of scientometric research in Taiwan. In addition, they focused on descriptive analysis. Therefore, the purpose of this study was to examine the characteristics and trends of scientometric research authored by Taiwanese researchers to gain a more complete understanding of the development of scientometric research in Taiwan.

The characteristics of scientometrics have been explored by some researchers. A number of studies confirmed that the field of scientometrics is a "harder" social science based on the value measured by Price Index (Schoepflin & Glanzel, 2001; Schubert & Maczelka, 1993; Wouters & Leydesdorff, 1994). A few studies identified scientometrics as a typical interdisciplinary field based on cited sources and researchers distributed across disciplines. Schubert (2002) analyzed references cited by articles published in *Scientometrics* during 1978-2001 and discovered that the references originated from different disciplines. Meneghini and Packer (2010) indicated that Brazilian scientometric researchers represented five disciplines, including information science, humanities and administration, biological and biomedical sciences, health sciences, and hard sciences. Information science researchers accounted for the largest part with a percentage of 26.6%. Apart from that, the specific disciplines that belong to each of the other four categories were not presented. A few studies addressed research topics in scientometrics. Different classification schemes were developed individually. Schoepflin and Glanzel (2001) classified articles published in *Scientometrics* in 1980, 1989, and 1997 into six topics, and compared the number of articles assigned to each topic in three specific years. Dutt, Garg, and Bali (2003) categorized articles published in *Scientometrics* from 1978 to 2001 into seven areas, and compared the differences in distribution of each areas in three periods. In addition, Patra, Bhattacharya, and Verma (2006) addressed the cited core journals and authorship patterns based on articles on bibliometrics

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published in LIS. Hou, Kretschmer, and Liu (2008) explored scientific collaboration between researchers in the field of scientometrics according to articles published in *Scientometrics* from 1978 to 2004. Uzun (2002) reported on the most prolific institutions publishing articles on scientometircs in ten of the field's leading journals.

Examining the above mentioned studies relating to the characteristics of scientometric research, a number of them were found to be limited because they analyzed data only in specific years or a specific discipline, or did not provide trend analysis. To gain a more comprehensive perspective, this study analyzed data across disciplines for a longer period to reveal the characteristics and trends of scientometric research for a single country: Taiwan. In addition, based on the prior studies which helped to reaffirm the characteristics to be analyzed in this study, this study added more indicators for better insight, including the number of publications, disciplines of authors, research topics, types of collaboration, research methods, and an analysis of trends.

The specific questions addressed in this study were as follows:

1) Was there an increase in the amount of literature on scientometrics authored by researchers in Taiwan?
2) What were the disciplines of these Taiwanese researchers involved in scientometric research? Have there been changes in the distribution of disciplines?
3) What types of collaboration did Taiwanese researchers form to publish their work? How has this changed over time?
4) What research topics were of concern to researchers in scientometrics in Taiwan? What trends did their choice of topics revealed?
5) What research methods were used by Taiwanese researchers to conduct scientometric research?

2. Methodology

This study was formulated to understand the characteristics and trend in scientometric studies authored by researchers and graduate students in Taiwan. The bibliometric approach seemed a suitable method to achieve this purpose. However, some of the attributes cannot be identified from bibliographic records. Therefore, the method of content analysis was also used in this study.

2.1 Data collection

The data analyzed in this study, covering the years 1987 through 2011, consisted of two document types: journal articles and theses, which are the main research

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literature for quantitative analysis. The data was first collected individually from three multidisciplinary databases: the bibliographic records of articles in international journals were collected from the Web of Sciences (WoS) database, the bibliographic records of articles published in Taiwan were obtained from the PerioPath, and the bibliographic records of theses submitted by graduate students were collected from National Digital Library of Theses and Dissertation in Taiwan (NDLTDT).

Table 1 lists the search terms used to obtain the bibliographic records of articles and theses from the databases. The search terms were originally developed based on scientometrics–related terms proposed by Hood and Wilson (2001). Additional terms describing the topics on scientometrics and techniques used in scientometric studies were also collected from articles published in *Scientometrics* and some studies (Björneborn & Ingwersen, 2004; Dutt et al., 2003; Peritz & Bar-Ilan, 2002; Schoepflin & Ganzel, 2001) as deemed appropriate by the author's judgment. Synonyms for each preliminary term collected were verified and added to the pool of search terms. Because WoS is an international database that includes data from various countries and various document types, the search strategy added *Taiwan* to the field of address data to retrieve the literature produced by Taiwanese researchers, and research articles were subsequently filtered using *Article* as the document type in the bibliographical records.

2.2 Data processing and analysis

To ensure that all bibliographic records retrieved from the three databases were publications related to scientometrics, a manual examination was conducted by reviewing titles, abstracts, or full text of the publications. A total of 479 bibliographical records that consisted of 316 articles and 163 theses were analyzed in this study; 53 bibliographical

Table 1. Search Terms

Group	Search Terms
Group 1	Bibliometric/Bibliometrics; Informetric/Informetrics; Scientometric/Scientometrics; Webmetrics
Group 2	Bibliographical coupling; Citation; Citation analysis; Co-citation; Co-word
Group 3	Authorship/ co-authorship; Research collaboration; Scientific collaboration; Research cooperation; Scientific cooperation
Group 4	Research evaluation; Research performance; Science policy; Research productivity; Scientific productivity; Research output

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records were excluded as unrelated. The data in each bibliographic record included title, name of author or graduate student, institutional affiliation, the year of publication or the year of graduation, and source journal title (only for articles). Because the author affiliations are not included in PerioPath, they were added to the bibliographic file. In addition, supplemental information was coded based on bibliographic records or full-text of the articles, including types of collaboration, disciplinary attribute of author affiliations, research method, research topic, and disciplines of data analyzed in each empirical study. The detailed rules for analyzing attributes are described as follows:

2.2.1 Types of collaboration

Each co-authored article was coded with two types of collaboration based on institutional affiliations. First, all co-authored articles were classified into one of four types of collaboration based on geographical distance, including international collaboration, intra-departmental collaboration, inter-departmental collaboration, and inter-institutional collaboration. The addressed data would be designated as international collaboration when two or more countries were contained in address data. If all authors of one article were from the same country, the article was classified as domestic collaboration, and was subsequently further marked as one of the other three types of collaboration. The data would be classified as intra-departmental collaboration when only one institutional affiliation was listed in a co-authored article. The data is labeled as inter-departmental collaboration when two or more departments/institutes were affiliated with the same university/institution. The inter-institutional collaboration indicates that various universities/institutions were listed in address data. In addition, each co-authored article was identified if it resulted from interdisciplinary collaboration, which was identified according to at least two authors affiliated with departments/institutes in different fields. Among the 210 co-authored journal articles, four were not assigned to a specific type of collaboration because of incomplete data regarding institutional affiliations. Therefore, the remained 206 co-authored articles were compiled in accordance to the types of collaboration.

2.2.2 Disciplines of researchers

The disciplines of the researchers, including authors of articles and graduate students of theses, were categorized according to the institutional affiliation listed in the articles and theses, and the classification for disciplines of departments and institutes in Taiwan universities. Each of all departments and institutes of universities in Taiwan was assigned a specific discipline from the classification scheme devised by the Ministry of

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Education in Taiwan. In addition, the category of science and technology was added to the classification scheme in response to the attribute of institutional affiliation analyzed in this study. In consideration of the fact that some graduate students publish their research in a specific journal after graduation, the discipline of the same authors both in the data sets of journal articles and theses may be counted twice or more. Since each journal article and thesis was considered a different document with different content, the two are not viewed as duplicated record. Both would be the subjects of this study.

Among the 854 researchers which consisted of 691 authors and 163 graduate students, 9 authors did not provide complete affiliation data and 64 authors were foreigners. After excluding 73 researchers from the sample, a total of 781 researchers were further analyzed in this study.

2.2.3 Research methods

Over the past decades, numerous methods were used in scientometric research. For this study, the bibliometric techniques used in empirical studies were identified from the keywords, abstracts, and full text, if required. All methods used were identified and recorded. These methods include general bibliometric analysis, citation analysis, bibliographical coupling, co-citation, co-authorship, social network analysis, co-word analysis, content analysis, text-mining, statistics, and survey and interview. If a study analyzed characteristics of literature based on bibliographical records which include data on citation frequencies, it was assigned to the category of general bibliometirc analysis. However, if a study only used the method of citation analysis, it would be classified to the category of citation analysis. In addition, bibliographical coupling and co-citation were separated from citation analysis.

2.2.4 Research topics

All studies analyzed in this study were categorized into 12 research topics, as follows:

(1) Citation analysis (impact)
(2) Characteristics of literature in specific disciplines or topics
(3) Science and technology indicators
(4) Scientific collaboration
(5) Research productivity
(6) Research evaluation
(7) Technology development
(8) Information systems
(9) Scientometric laws
(10) Interaction between science and technology
(11) Journal ranking
(12) Others.

Except for journal ranking, all of the research topics were based on studies by Peritz and Bar-Ilan (2002) and Dutt, Garg, and Bali (2003). The research topic of each study was

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determined by referring to the information disclosed in the abstracts or full document texts.

3. Results

3.1 Growth trend of literature on scientometrics

Figure 1 indicates that 479 studies related to scientometrics were conducted by Taiwanese researchers during the period of 1987-2011. They consisted of 316 articles (66.0%) and 163 theses (34.0%). As shown in Fig. 1, the total number of studies each year was small before 2000, ranging from 2 to 7, marking the beginning of scientometric research in Taiwan. A considerable increase in output can be observed during the period of 2000-2011, and the number of studies reached a peak in 2011 (82 studies). The upward trend in the number of researchers is consistent with the increasing curve of number of study. Moreover, approximately half of literature appeared within a short period of four years (from 2008 to 2011) (please refer to Fig. 2). The high rate of publications indicates that scientometric research in Taiwan has entered a stage of growth.

3.2 Authorship patterns

Because each thesis is authored by one graduate student, the analysis of authorship patterns focuses on only 316 articles published in Taiwan and in journals indexed by WoS.

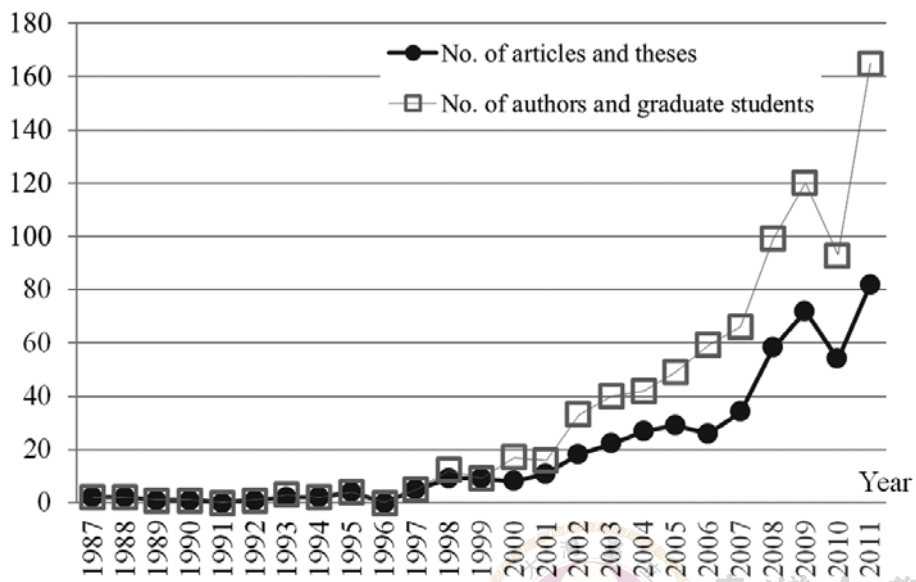


Figure 1. Numbers of Taiwan Scientometric Studies and Researchers by Year

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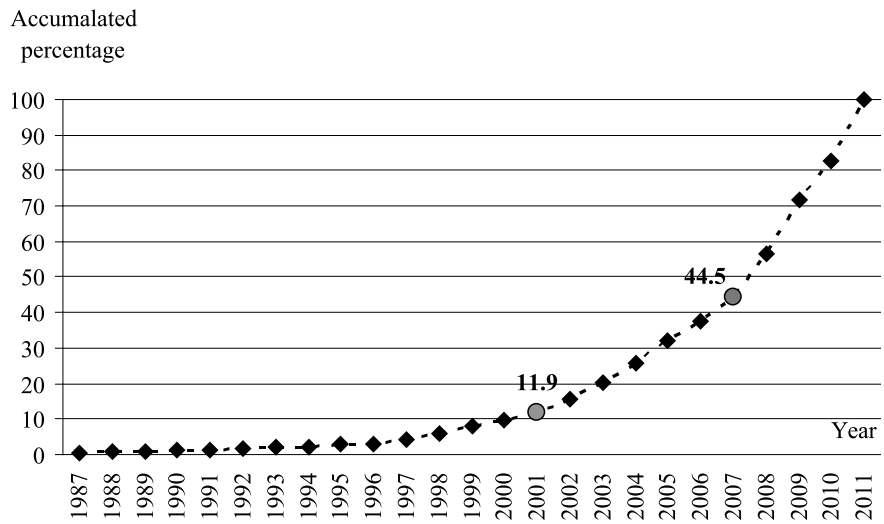


Figure 2. Accumulated Percentage of Literature by Year

Figure 3 shows the percentages of articles with varying numbers of authors. The number of authors per article ranged from 1 to 6. The average number of authors per article was 2.1. Single-author articles accounted for the highest percentage (33.5%), followed by two-author articles (32.6%). The data are consistent with the results of previous studies, based on articles published in *Scientometrics*. However, the percentage of single-author articles was considerably lower than that of previous studies. Dutt et al. (2003) reported that 53.4% of articles published in *Scientometrics* from 1978 to 2001 were single-author articles. Hou et al. (2008) also identified 54.6% of articles were written by one author based on articles in *Scientometric* during 1978 to 2004. Regarding the percentage of articles written by three authors was 24.1%, and of those written by four, five, and six authors was 6.6%, 1.6%, and 1.6%, respectively. In addition, Fig. 4 exhibits the proportion of single-author articles as a declining trend. The number of articles written by three or more authors has increased considerably since 2000. In 2007, 2010, and 2011, articles written by three authors accounted for the highest percentages (33.9-40.0%).

3.3 Disciplines of researchers

As listed in Table 2, scientometric researchers in Taiwan represent 32 disciplines, demonstrating that scientometrics is an

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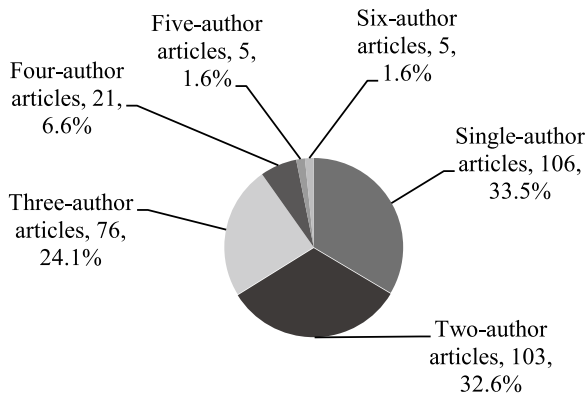


Figure 3. Distribution of Articles by the Number of Authors

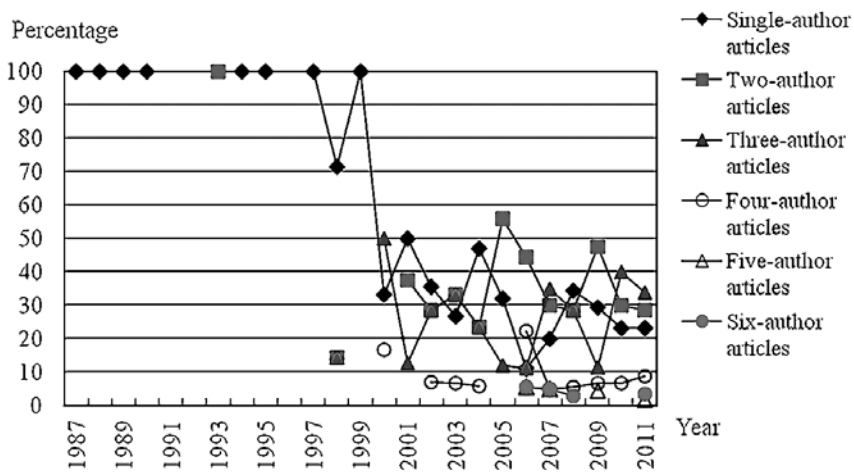


Figure 4. Percentages of Articles Authored by Different Number of Authors by Year

interdisciplinary field. The majority of researchers were affiliated with institutes related to library and information science (LIS), with a rate of 35.7%, followed by business and management (19.2%), medical science (8.8%), information management (5.2%), and education (4.6%). The percentages of other disciplines ranged from 0.1% to 3.6%, which were considerably lower than those of the top three disciplines. When grouping 32 disciplines into three domains, that is, natural sciences, social sciences, and humanities,

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Table 2. Distribution of Authors and Graduate Students by Disciplines

No.	Domain	Discipline	No. of documents	Percentage
1	S	LIS	279	35.7
2	S	Business and management	150	19.2
3	N	Medical science	69	8.8
4	S	Information management	41	5.2
5	S	Education	36	4.6
6	N	Science and technology	28	3.6
7	S	Bibliometrics	26	3.3
8	S	Economics	22	2.8
9	N	Chemical engineering	18	2.3
10	N	Mechanical engineering	17	2.2
11	S	Physical education	16	2.0
12	S	Political science	11	1.4
13	S	Communication	7	0.9
14	S	Tourism and hospitality management	7	0.9
15	S	Health care organization administration	7	0.9
16	N	Computer science	6	0.8
17	S	Psychology	5	0.6
18	N	Agriculture	5	0.6
19	S	Industrial engineering	4	0.5
20	S	Sociology	4	0.5
21	S	Transportation management	3	0.4
22	S	Building and planning	3	0.4
23	S	Sports & leisure management	3	0.4
24	H	Chinese literature	2	0.3
25	N	Construction management	2	0.3
26	N	Physics	2	0.3
27	N	Biotechnology	2	0.3
28	N	Electrical engineering	2	0.3
29	H	Visual communication design	1	0.1
30	S	Law	1	0.1
31	H	Arts	1	0.1
32	H	Religion	1	0.1
Total			781	100.0

Note. H is humanities and arts; S is social sciences; N is natural sciences.

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the results demonstrated that 80.0% of researchers represented social sciences, which was considerably higher than that of natural sciences researchers (19.3%) and that of humanities researchers (0.7%). The social sciences researchers were therefore dominant in scientometric-related studies.

Considering that most researchers were concentrated in the top five disciplines, further analysis were conducted to observe the trends shown in these researchers. Figure 5 illustrates a considerable decrease in the percentage of LIS. However, the researchers affiliated with institutions related to LIS remained dominant. The percentage of business and management demonstrated a slightly increasing trend and became close to the percentage of LIS. The percentage of medical science also revealed an upward trend during 2003-2007; however, it decreased in 2008 and continued to remain at a low percentage. Both the percentage of education and that of information management were stable, and no obvious changes were observed.

When analyzing the annual number of disciplines of researchers, a noticeable increase in the number of disciplines of authors was observed after 2000 (please see Figure 6). This indicates numerous researchers in Taiwan from various disciplines were involved in scientometric research.

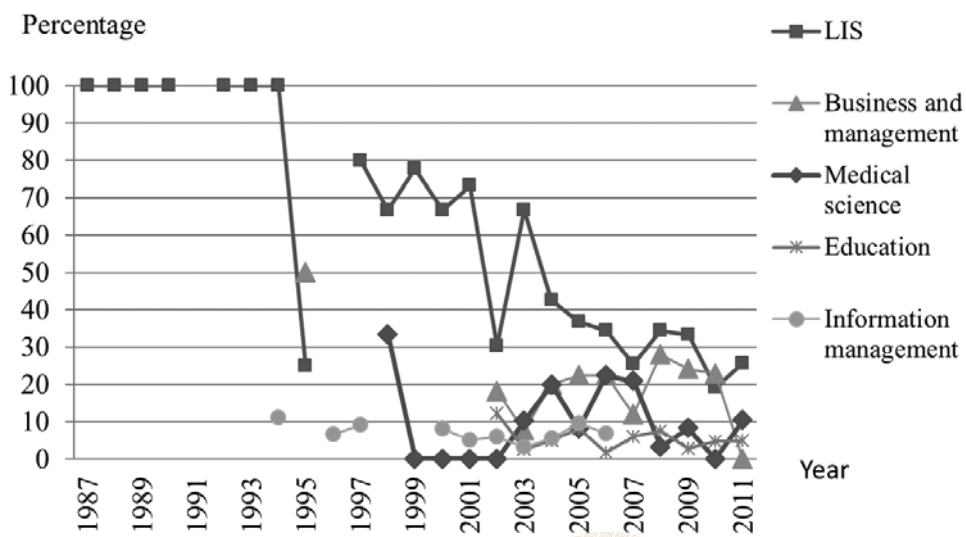


Figure 5. Changes in Percentages of the Top Five Disciplines by Year

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3.4 Types of collaboration

Because most articles (66.5%) were co-authored, co-authored articles were further examined to determine the type of collaboration in order to better understand the interaction between researchers. Two criteria were used to identify the type of collaboration, as follows: geographical distance between co-authors, and co-authors in various disciplines. The distribution of co-authored articles by type of collaboration based on geographical distance between co-authors indicated that the articles resulted from inter-institutional collaboration were dominant, with a percentage of 44.7%, followed by intra-departmental collaboration (28.6%), inter-departmental collaboration (13.6%), and international collaboration (13.1%). The percentage of the intra-departmental collaboration was very close to that of the inter-institutional collaboration. Classifying co-authored articles in regard to co-authors in various disciplines indicated that 46.1% were interdisciplinary articles (See Table 3).

This analysis focused on the period from 2000-2011 as the small number of papers published before 2000 led to difficulties in observing a trend in types of collaboration. Figure 7 indicates an increase in the percentage of interdisciplinary collaboration with the exception of a considerable decrease in 2009. In addition, the inter-institutional collaboration was dominant in most years. The decreasing

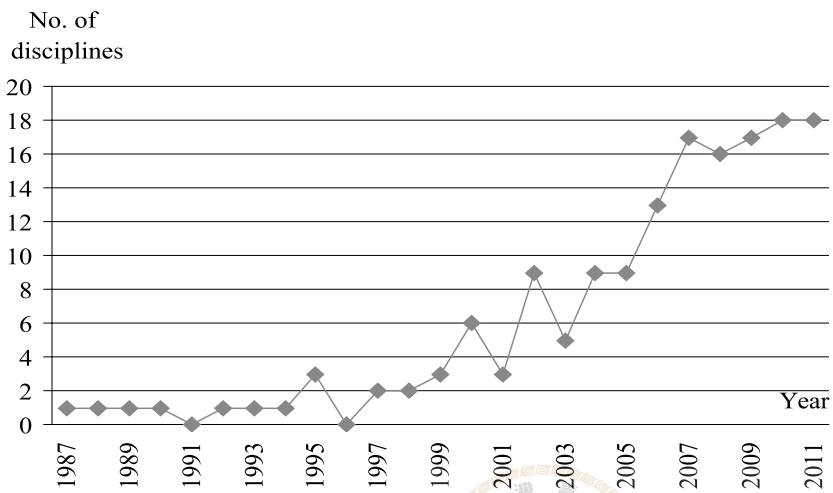


Figure 6. Numbers of Disciplines by Year

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Table 3. Distribution of Types of Collaboration

Types of collaboration	No. of documents	Percentage
Geographical Distance	206	100.0
Inter-institutional collaboration	92	44.7
Intra-departmental collaboration	59	28.6
Inter-departmental collaboration	28	13.6
International collaboration	27	13.1
Disciplines	206	100.0
Interdisciplinary collaboration	95	46.1
Non-interdisciplinary collaboration	111	53.9

trend was identified in the inter-departmental collaboration. A considerable fluctuation was observed in the percentage of the intra-departmental collaboration.

3.5 Research topics

Figure 8 shows the distribution of research topics based on 479 documents. Most of them focused on citation analysis (35.3%), followed closely by characteristics of literature on specific disciplines or topics (31.1%). The top two topics are basic and traditional subjects in scientometrics. The other ten research topics accounted for approximately 33% of literature in total. Except for research evaluation (9.0%), the percentages of the other nine topics were low with range from 0.6% to 5.0%. This indicates that most research topics have been relatively unexplored.

The trend in the percentage of each of research topic is illustrated in Figure 9. These research topics can be grouped into three tiers according to their range of percentages. The two topics of citation analysis and characteristics of literature with percentage over 20% fell in the first tier. The percentage of research evaluation ranged from 10% to 20% and was located in the middle tier. The other topics with percentage below 10% were grouped to the lower tier. In addition, the number of research topics increased over the years. More research topics were discussed in recent years; however, most of them accounted for low percentages. Although the topic of citation analysis was dominant, a downward trend was observed in its percentage. The characteristics of literature ranked first in 2004, 2005, and 2007.

3.6 Research methods

Among the 479 documents, 39 were not empirical studies, and the other 440 included

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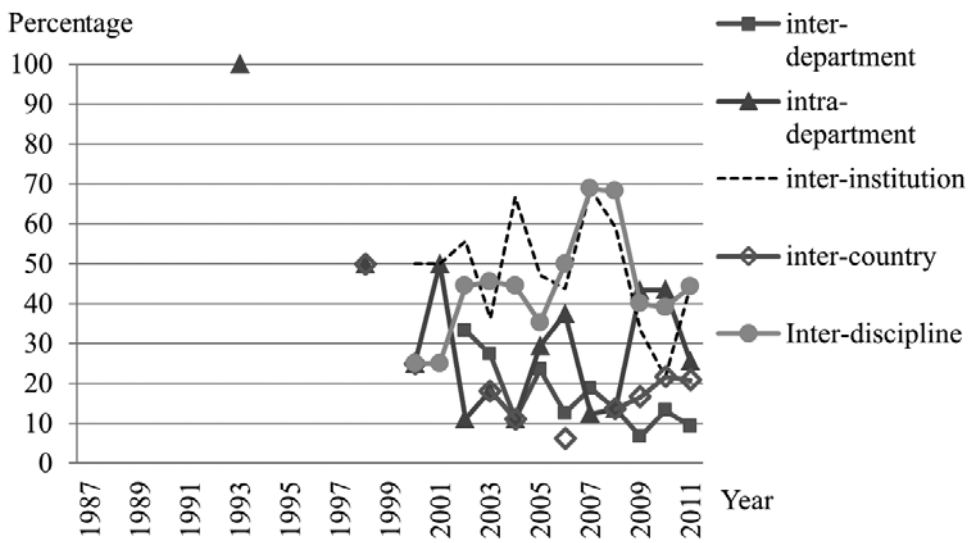


Figure 7. Trends in Percentage of Papers by Type of Collaboration

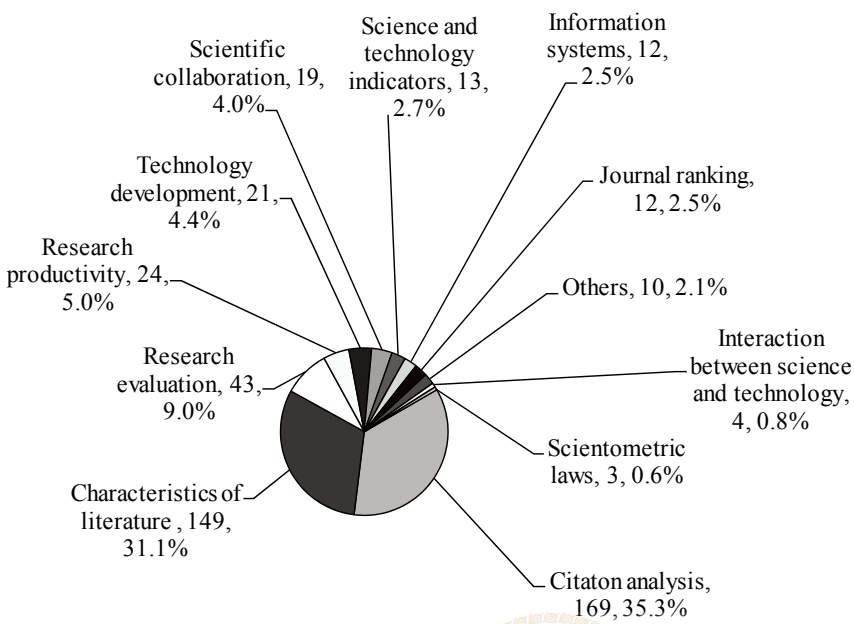


Figure 8. Distribution of Research Topics

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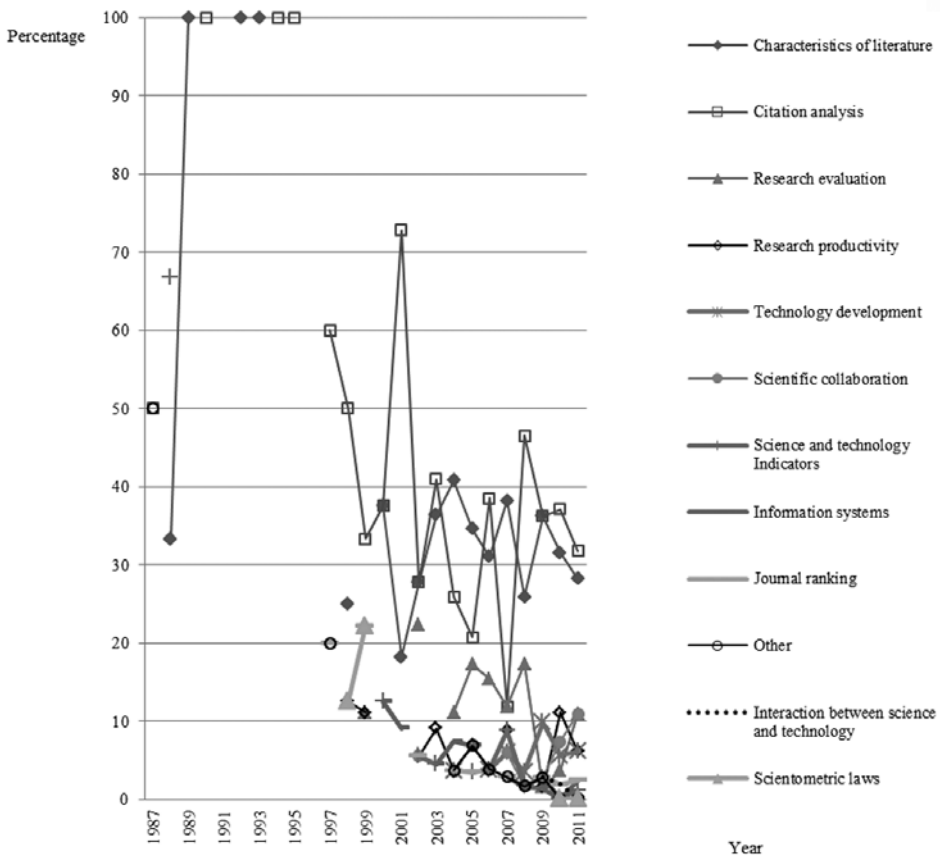


Figure 9. Trend in Percentage of Papers by Research Topic

the use of one or more of the eleven research methods. As shown in Table 4, the general bibliometric analysis is the dominant method, with a percentage of 28.4%. The second ranked method is citation analysis (24.8%). The difference in the percentage between the top two methods is marginal. All of the other methods, including co-citation, bibliographical coupling, co-authorship, content analysis, and statistics, fall below 6.3%.

Although approximately 40% of the studies used two or more methods, most of them were general bibliometric analysis, citation analysis, or both. In addition, with the growth in the tools for visualizing relationships, numerous studies used software for social network to visualize the connection between authors, documents, institutions, and countries. This may explain why the social network analysis and citation analysis, co-citation, co-authorship,

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Table 4. Distribution of Research Methods

No.	Research method(s)	No. of documents	Percentage
1	General bibliometric analysis (GB)	125	28.4
2	Citation analysis (CA)	109	24.8
3	GB and CA	82	18.6
4	Co-citation	18	4.1
5	CA and social network analysis (SNA)	12	2.7
6	Co-citation and SNA	10	2.3
7	CA, co-citation, and SNA	6	1.4
8	GB and content analysis	6	1.4
9	GB,CA and SNA	6	1.4
10	Bibliographical coupling (BC) and co-citation	5	1.1
11	CA and content analysis	5	1.1
12	Co-authorship	5	1.1
13	GB and co-word	5	1.1
14	GB,CA, and co-authorship	5	1.1
15	GB and co-authorship	4	0.9
16	GB, co-authorship, and SNA	4	0.9
17	CA and co-citation	3	0.7
18	CA and survey/interview	3	0.7
19	GB, CA, co-citation, and SNA	3	0.7
20	BC	2	0.5
21	GB and co-citation	2	0.5
22	GB and survey/interview	2	0.5
23	GB, co-word, and SNA	2	0.5
24	GB, co-word, and survey	2	0.5
25	CA, co-citation, and content analysis	2	0.5
26	Statistics	2	0.5
27	BC and co-word	1	0.2
28	Co-authorship, co-word, and SNA	1	0.2
29	Content analysis	1	0.2
30	GB and BC	1	0.2
31	GB and statistics	1	0.2
32	GB and text-mining	1	0.2
33	GB, CA, and survey	1	0.2
34	GB, co-authorship, and content analysis	1	0.2
35	GB,CA and co-citation	1	0.2
36	CA, co-authorship, and SNA	1	0.2
Total		440	100.0

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co-word, and bibliographic coupling frequently concur.

4. Discussion

This study demonstrates that scientometrics is a relatively constrained research field in Taiwan. Compared to publications in other scientific fields such as chemistry, environmental science and information management (Lai, Hwang, Liang, Huang, & Wu, 2011; Tsay & Kuo, 2009), the publications in scientometric research is relatively limited. A recent rise in the number of scientometric researchers and publications since 2000 indicates that scientometrics is an emerging field in Taiwan. However, if scientometrics has been a growing field worldwide since the 1980s, what had caused scientometrics to grow significantly in Taiwan since only 2000?

To date, the triggers for the growth of scientometrics in Taiwan have not been investigated. Among several possible causes, two possible causes may be related to the development of research activities in Taiwan over recent decades. First, to promote academic competitiveness, Taiwan's Ministry of Education launched a project called "Fifty Billion New Taiwan Dollars over Five Years" in 2006 to fund major universities for developing first-class universities and research centers in Asia and worldwide. Academic research is one of the key requirements for universities to receive subsidization. The project's effect can be observed in several global university rankings and the increase in the levels of internationalization (Chang, Wu, Ching, & Tang, 2009; Lawson, 2007). This suggests that research evaluation deserves more attention. The sign can be observed after 2006 based on this study. In addition, certain universities, such as Asia University and Taipei Medical University, have recently begun using bibliometrics and have established research centers to track the development of academic fields within their institute. Second, courses in scientometrics encourage more LIS graduate students to pursue scientometric research. This study shows that most of LIS graduate students were guided by professors set up courses in scientometrics. Although scientometrics has been regarded as a subfield of LIS, courses in scientometrics were not offered in Taiwanese universities until 1994. The Department of Library and Information Science at Tamkang University launched the course in bibliometrics; since 2002, the departments of library and information science at other universities have begun to offer the same course.

Researchers in scientometric in Taiwan represent a wide scope of disciplines. An analysis of the disciplinary distribution of

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scientometric researchers that includes the authors of journal articles and graduate students submitting theses shows that LIS researchers contribute a significantly higher percentage of scientometric research than any other discipline. This is consistent with the research by Menegini and Packer (2010), which showed that information science researchers were a key group of Brazilian scientometric researchers. A plausible explanation for the dominant contributions of the LIS field is the frequent use of bibliometric methodologies, as this study confirms.

Regarding the aspect of research topic, Dutt et al. (2003) divided all research articles published in *Scientometrics* between 1978 and 2001 into seven categories and showed that articles relating to scientometric assessment accounted for the largest proportion of publications (33.9%). The scope of scientometric assessment includes three topics that are assigned in this study: indicators, journal ranking, and research evaluation. The accumulated percentage of the three topics generated from this study (14.0%) is considerably lower than the percentage of the scientometric assessment found by Dutt et al. (2003). This indicates that the distribution of research topics differs among countries. Research on scientometric assessment has not received high attention by researchers in Taiwan.

5. Conclusion

This study explored the characteristics and trends of scientometric research in Taiwan based on journal articles and theses by using bibliometric methods and content analysis. Scientometric research was found to be a growing field in Taiwan. The interdisciplinary characteristic of scientometric research was also demonstrated. Moreover, this study revealed the distribution and trends in disciplines of researchers, research topics, and research methods. The various academic backgrounds of scientometric researchers suggest that further investigation is warranted concerning the selection of research topics by authors. This would contribute to a better understanding of scientometric research and of the benefits of collaboration between researchers in various disciplines.

Acknowledgements

This research was supported by a grant from the National Science Council of Taiwan (NSC99-2410-H-030-085).

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(Received: 2012/8/10; Accepted: 2012/11/12)

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