

# AN ANALYSIS OF THE CONSORTIAL USE OF ELECTRONIC JOURNALS IN TURKEY: THE CASE OF SPRINGERLINK AND WILEY INTERSCIENCE DATABASES

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## **Abstract**

One of the most important functions of libraries is to develop and manage an effective collection that best meets the information needs of its users. With the introduction of electronic resources, collection development and management policies have become much more complex and interesting. Using the survey method, 2,770,905 journal articles downloaded by the users of the consortium members (universities) from SpringerLink and Wiley InterScience databases between 2003 and 2007 were evaluated. Journal articles used were analyzed by means of bibliometric laws and core journals were identified.

One third of the articles used were satisfied by the core journals that constitute some 2.2% and 4.5% of all journals. Distributions of articles used for journals do not conform to Bradford's Law. No correlation was observed between the frequencies of use of core journals and a) their impact factors; b) total number of citations they received; and c) their half-lives.

Findings of this study should be used in collection development and management. Frequently used core journals should be retained, while rarely used or never used journals should be excluded from the collection. Findings should be used to negotiate better consortium license agreements.

**Keywords:** SpringerLink; Wiley InterScience; Bradford Law of Scattering; consortial use of electronic journals; core journal titles.

## 1. Introduction

The use of the library collection, especially the use of electronic journals should be monitored and the results should be taken into consideration in order to establish an effective collection development and management policy. The increase in the number of electronic resources and their use made studies about the use of collection inevitable. Libraries spent a large part of their budgets for electronic journals. As a solution for serial crisis, libraries or consortiums sign agreements with publishers for "big deals". However, in recent years big deal agreements are criticized because of an "all or nothing" approach [1]. Libraries purchase all packages with these agreements, but only a small number of core journals satisfy the majority of users' needs. There are some studies about the use analysis of different databases [2, 3, 4, 5, 6, 7, 8] and the relationship between some bibliometric indicators (such as impact factor, half life) and download or use data [5, 8, 9, 10, 11, 12].

This paper attempts to identify the most frequently used core journals by the users of the consortium of Turkish academic libraries included in SpringerLink and Wiley InterScience databases between 2003-2007.

## 2. Methodology

Data used in this paper come from the SpringerLink electronic journals' database of Springer and Wiley InterScience electronic journal database of Wiley. SpringerLink and Wiley InterScience databases contain the full-texts of 2,060 and 1,400 electronic journal titles, respectively. Four-year's worth of COUNTER-compliant download statistics of the Consortium of Anatolian University Libraries (ANKOS), members representing about 3 million full-text journal articles, were obtained from the publishers. ANKOS was created in 2001 as a voluntary association and currently has 104 members. Some of the members are non-university entities. Using the survey method, download statistics were analyzed by means of bibliometric laws. The number of members in the SpringerLink in Turkey from 2004-2007 was 61, 63, 72 and 76, respectively, and in the Wiley InterScience from 2003-2006 was 24, 28, 39 and 48, respectively. The number of full-text articles downloaded from each journal contained in both databases by each university was recorded. Most frequently used "core" journal titles were identified. Tests were carried out to see if the distribution of downloaded articles to journal titles conformed to Bradford's Law of Scattering, which is related with the scattering or distribution of scientific literature on a particular subject in the journals. Using ISI's citation data (*Journal Citation Reports 2006*), the correlation between the journal impact factors of core

journal titles and their use based on the number of downloads was calculated to see if journals with high impact factors were also heavily used by the consortium members. What follows is the preliminary findings of our study.

### 3. Findings and Discussion

Turkish academic users downloaded a total of 1,715,164 full-text articles from 1,779 different journals included in the SpringerLink database (2004-2007), and a total of 1,055,741 full-text articles from 470 different journals included in Wiley InterScience database (2003-2006).

| Year    |    | Number of journals |     |            |      |            |      |       |       |
|---------|----|--------------------|-----|------------|------|------------|------|-------|-------|
|         |    | 1st region         |     | 2nd region |      | 3rd region |      | Total |       |
|         |    | N                  | %   | N          | %    | N          | %    | N     | %     |
| 2003/06 | W  | 21                 | 4.5 | 64         | 13.6 | 385        | 81.9 | 470   | 100.0 |
| 2003    | W  | 22                 | 5.9 | 62         | 16.8 | 286        | 77.3 | 370   | 100.0 |
| 2004    | W  | 19                 | 4.9 | 59         | 15.2 | 309        | 79.8 | 387   | 99.0  |
| 2005    | W  | 20                 | 5.1 | 55         | 13.9 | 321        | 81.1 | 396   | 100.1 |
| 2006    | W  | 19                 | 4.3 | 57         | 13.0 | 361        | 82.6 | 437   | 99.0  |
| 2004/07 | SL | 39                 | 2.2 | 147        | 8.3  | 1593       | 89.5 | 1779  | 100.0 |
| 2004    | SL | 19                 | 4.0 | 55         | 11.6 | 402        | 84.5 | 476   | 100.1 |
| 2005    | SL | 19                 | 3.3 | 53         | 8.9  | 526        | 88.0 | 598   | 100.1 |
| 2006    | SL | 52                 | 3.9 | 165        | 12.4 | 1115       | 83.7 | 1332  | 100.0 |
| 2007    | SL | 45                 | 2.5 | 174        | 9.9  | 1547       | 87.6 | 1766  | 100.0 |

Table 1: Distribution of journals by regions for SpringerLink (SL) and Wiley InterScience (W) databases [13]

Table 1 shows the frequencies and percentages of journal titles satisfying one third, two thirds, and all requests downloaded between 2003-2006 from Wiley InterScience and 2004-2007 from SpringerLink, as well as on an annual basis. Data presented in Table 1 and Figure 1 show the annual distributions of journal titles by regions. One third of all downloaded articles (575,268) from SpringerLink came from 39 core journals (2.2% of all SpringerLink titles). Some 147 journals (8.3% of all SpringerLink titles) supplied the second one third (571,486) of the total while 1,593 journals (89.5% of all SpringerLink titles) supplied the last one third (568,410). One third (348,300) of all downloaded articles from Wiley InterScience from 2003-2006, came from 21 core journals (4.5% of all Wiley InterScience titles).

Some 64 journals (13.6% of all Wiley InterScience titles) supplied the second one third (351,810) of the total, while 385 journals (81.9% of all Wiley InterScience titles) supplied the last one third (355,631). One third of all downloaded articles came from very few journals and a large number of journal titles were rarely used.

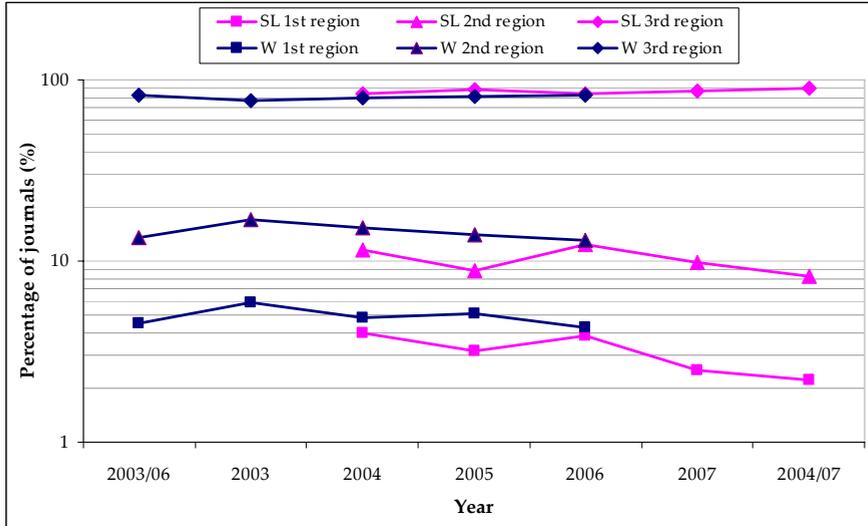


Figure 1: Yearly distributions of journal titles by region for SpringerLink (SL) and Wiley InterScience (W) databases.

When the download statistics were analyzed on an annual basis, core journal titles seemed to be quite stable. Ranks of individual journal titles based on the number of downloads did not fluctuate much on a yearly basis. Spearman rank order correlation coefficients ( $\rho$ ) were 0.836, 0.505, and 0.781 for SpringerLink core journal titles for three consecutive years; the corresponding coefficients for Wiley InterScience core journal titles were 0.556, 0.796, and 0.760 (Table 2).

| Years       | Spearman rank order correlation coefficient ( $\rho$ ) |                    |
|-------------|--|--------------------|
|             | SpringerLink   | Wiley InterScience |
| 2003 - 2004 | -  | 0.556              |
| 2004 - 2005 | 0.836  | 0.796              |
| 2005 - 2006 | 0.505  | 0.760              |
| 2006 - 2007 | 0.781  | -                  |

Table 2: Correlation coefficients for the core journal titles that were common in two consecutive years

The most frequently used journals and their rank orders were based on the number of articles downloaded as a total and on an annual analyzed basis. Fourteen journals (36%) for SpringerLink and 13 journals (62%) for Wiley InterScience appeared in core journal lists of all the years. It appears that most of the core journals were common on an annual basis as well as that of the total use. Their rank orders were similar, too.

Although a small number of core journal titles satisfied one third or half of all download requests for both SpringerLink and Wiley InterScience databases, distributions of downloaded articles to journal titles did not conform to Bradford's Law of Scattering. It should be noted that the data used in this study come from many different universities and departments based in Turkey.

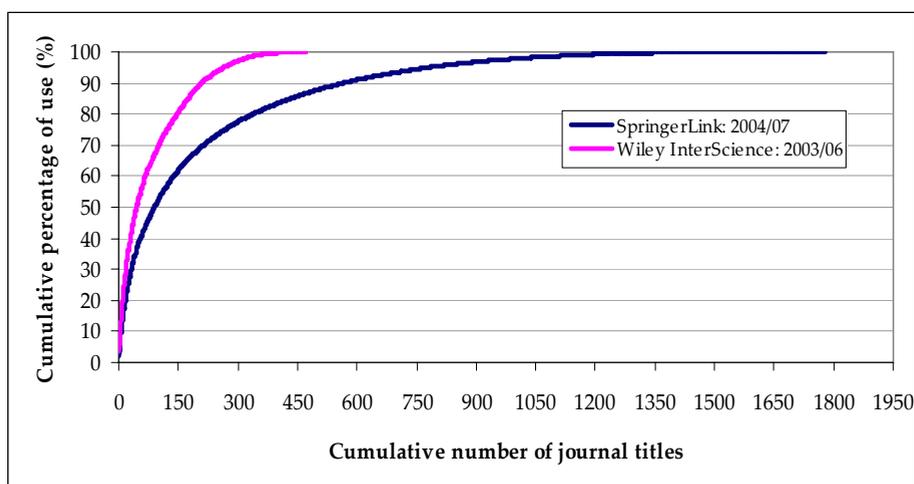


Figure 2: Bradford curves for the use of journal titles in SpringerLink ( $N= 1779$ ) and Wiley InterScience ( $N= 470$ ).

We checked if there is any correlation between the journal impact factors (IFs) and the download statistics. IF values of core journals along with the total number of citations to articles that were published therein were obtained from ISI's Journal Citation Reports 2006.

The IF values of journals ranged between 5.247 and 0.418 for SpringerLink and 10.446 and 0.568 for Wiley InterScience. No correlation was observed between the frequencies of use of core journals and a) their impact factors; b) total number of citations they received; and c) their ranks. For example, the journal *Diabetologia* ranks 31<sup>st</sup> in the list based on the number of downloaded articles from the SpringerLink database, while the same journal ranks at the top of the core journal list based on IF.

The corresponding citation-based mean half-lives were 6.4 years for Springer-Link core journals and 7.2 years for Wiley InterScience [14].

#### 4. Conclusion

The preliminary findings of our analysis based on download statistics of all Turkish universities from SpringerLink and Wiley InterScience databases show that 39 SpringerLink and 21 Wiley InterScience core journals invariably satisfied one third of the all download requests. Lists of core journal titles seem to be persistent in that they do not change very much on an annual basis. A large number of journal titles were rarely used. Coupled with the pricing data, findings based on four years' worth of national usage statistics can be used by individual university libraries, as well as by the consortium management to develop better collection management policies and to negotiate more favorable "big deals" with publishers, thereby improving the conditions of the national consortial license for all Turkish universities [15].

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