Impact and Relevance of LIS Journals: A Scientometric Analysis of International and German-Language LIS Journals—Citation Analysis Versus Reader Survey

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The goal of the scientometric analysis presented in this article was to investigate international and regional (i.e., German-language) periodicals in the field of library and information science (LIS). This was done by means of a citation analysis and a reader survey. For the citation analysis, impact factor, citing half-life, number of references per article, and the rate of self-references of a periodical were used as indicators. In addition, the leading LIS periodicals were mapped. For the 40 international periodicals, data were collected from ISI's *Social Sciences Citation Index Journal Citation Reports* (JCR); the citations of the 10 German-language journals were counted manually (overall 1,494 source articles with 10,520 citations). Altogether, the empirical base of the citation analysis consisted of nearly 90,000 citations in 6,203 source articles that were published between 1997 and 2000. The expert survey investigated reading frequency, applicability of the journals to the job of the reader, publication frequency, and publication preference both for all respondents and for different groups among them (practitioners vs. scientists, librarians vs. documentalists vs. LIS scholars, public sector vs. information industry vs. other private company employees). The study was conducted in spring 2002. A total of 257 questionnaires were returned by information specialists from Germany, Austria, and Switzerland. Having both citation and readership data, we performed a comparative analysis of these two data sets. This enabled us to identify answers to questions like: Does reading behavior correlate with the journal impact factor? Do readers prefer journals with a short or a long half-life, or with a low or a high number of references? Is there any difference in this matter among librarians, documentalists, and LIS scholars?

Introduction

Periodicals[1] play an important role in science communication. Scientists read periodicals and, when writing their own articles, they cite articles which they read before. According to Robert K. Merton, citations serve two broad categories of functions: instrumental cognitive and symbolic institutional functions:

> The first of these directs readers to the source of knowledge that have been variously drawn upon in the particular work or are held to be otherwise relevant. . . . However . . . citations are not only essential bibliographic aids for scientists and scholars concerned to assess data and knowledge claims in the citing text or to retrieve further apt information. Along with providing a historically evolving social mechanism for the transmission and advancement of knowledge, citations routinely provide a mechanism for maintaining the distinctive character of scientific property. This derives from the composite of values, norms, and modes of social control that have evolved in the social institutions of science. (Merton, 2000, p. 438)

If a scholar cites an article of a colleague, he raises that colleague's reputation. The information scientist, scientometrician, or sociologist of science gets the required empirical evidence with this reference.

However, the situation is different for nonpublishing readers who were inspired by an article they read and who may later even be able to translate some new ideas from it successfully into practice. Here, the impact of an article is not documented by a reference, making it impossible for a

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[1] While we are aware of the different meanings of "journals" and "periodicals," we use them synonymously in our article, as does the ISI in its *Journal Citation Reports.*

scientometrician to realize any effect. In cases like this, we have to ask the readers of a journal about the perceived relevance.

As a consequence, when analyzing scientific journals, both citation analysis and expert surveys are to be used. Bearing this in mind, we investigated 50 LIS journals by looking at the following two aspects:

1. What is the impact of LIS periodicals? Which are the most influential periodicals? What are the characteristics of these periodicals? What is the "information flow" between them? Questions like these can be answered by means of citation analysis.
2. What is the relevance of LIS periodicals to their readers? How often are they read? Of which practical value is a particular journal? Do different categories of readers (e.g., practitioners vs. scientists, or librarians vs. documentalists[2]) have different reading behaviors? An expert survey is a suitable method to investigate this kind of research questions.

Being members of the German-speaking LIS community, the authors are not only interested in international science communication but also in communication of German-speaking countries, and especially in how they are connected. In this context, we will observe if German-language LIS periodicals cite their international counterparts and vice versa. For this reason, in addition to 40 international LIS journals, we included 10 leading German-language periodicals in the field in the study. Data from the 40 international periodicals were collected from the *Journal Citation Reports* (JCR); the citations of the German-language periodicals were counted manually (1,494 source articles with 10,520 citations). Altogether, the empirical base of the citation analysis consisted of nearly 90,000 citations in 6,203 source articles from 4 years of publications (1997 to 2000).

The expert survey investigated reading frequency, applicability of the periodicals to the job of the reader, publication frequency, and publication preference both for all respondents and for different groups among them (practitioners vs. scientists, librarians vs. documentalists vs. LIS scholars, public sector vs. information industry vs. other private company employees). The study was performed in spring 2002. In total, information specialists returned 257 valid questionnaires from Germany, Austria, and Switzerland. This corresponds to a response rate of roughly 15%.

With data both about journal citations and about reading and publishing behavior of German-speaking information professionals, these two data sets could be correlated, allowing us to investigate questions like: Do LIS professionals read periodicals with a higher impact factor more often?

Do they prefer journals with a long or with a short half-life, or with a low or a high number of references? Are there any differences in these behavior patterns between librarians and documentalists?

The project was conducted with the assistance of two groups of students from Graz, Austria, and Cologne, Germany. Some results were already published by the students under the name of "Grazia Colonia" (2002a,b). Our present study is only descriptive in nature. Some parts try to provide some explanations. As a consequence, the study generates hypotheses as well. However, no traces of a theory will be added, which is not rare in information science or in scientometrics. What we need, of course, is a theory about science communication and, as a part of it, LIS communication. This will be the purpose of our future research.

Citation Analysis

Method

According to Eugene Garfield, citation analysis is a tool for journal evaluation (Garfield, 1972). In the past, many empirical journal studies were conducted in different fields. Among them are excellent investigations in our own discipline. Thomas E. Nisonger counted 178 research projects by the year 1997 that analyzed LIS journals (Nisonger, 1999). Nisonger contributed some important studies to this kind of research (Nisonger, 1994, 1995, 2000; Harter, Nisonger, & Weng, 1993).

To obtain data collections from international journals, we used ISI's *Social Sciences Citation Index Journal Citation Reports* (SSCI JCR) for the year 2001 (Institute for Scientific Information, 2001). Besides other products like "Web of Science" (Stock, 1999), "Current Contents Connect," or "Essential Science Indicators" (Stock, 2002b), the JCR (Stock, 2001b) are derived from the product family of the "Web of Knowledge" (Stock, 2002b). These products illustrate the development of footnote indexing used as a bibliographic tool to its becoming an instrument for research policy (Stock, 2002a). The basis of ISI's products are the bibliographical descriptions of articles and their references from approximately 8,000 academic journals, 1,700 of which are in the social sciences. Selecting these journals has been subject to a set of criteria as described by Testa (1997).

The concept of one of the main indicators, the impact factor, is not without problems. There is substantial literature on this topic (cf., for example, Garfield, 1994a,b; Schloegl, 2001; Stock, 2001a,b; Todorov & Glaenzel, 1988). We do not want to repeat the arguments for and against the impact factor, but we must clearly bear in mind that some of our results are disputable. We believe that the propositions of Wolfgang Glaenzel and Henk F. Moed are correct. They suggest that the "Impact Factor introduced by Eugene Garfield is a fundamental citation-based measure for significance and performance of scientific journals" (Glaenzel & Moed, 2002, p. 171) and that there ". . . are new, exciting challenges in bibliometric citation analysis. The robustness, comprehensibility, methodological

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[2] Unlike in North America, in German-speaking countries "documentalists" became a distinct group different from librarians. While librarians' interests focus on physical media (books), documentalists are more interested in information content. However, the growth of digital media means that overlapping interests make distinctions less and less clear.

reproducibility, apparent simplicity, availability and popularity of the ISI journal impact factor is contrasted by several severe methodological shortcomings and its technical irreproducibility" (ibid., p. 191).

In the first subproject of our scientometric analysis, we focused on citations exclusively. Besides the "classical" bibliometric indicators (Sen, 1999), we broke new ground with the definition of new indicators as well:

- Garfield's impact factor $IF(Z; t)$ is defined as the quotient of the number C of citations in a year t to articles of the years $t - 1$ and $t - 2$ of a given journal Z and the number of source articles of that journal in the years $t - 1$ and $t - 2$, say $S(1)$ and $S(2)$: $IF(Z; t) = C/[S(1) + S(2)]$. The Garfield factor as given in the JCR was used to describe the impact of the 40 international LIS journals. Data were gathered from the "information science & library science" journal subject category. Some journals were not considered because they do not address central issues of LIS.
- The regional impact factor $rIF(Z; t)$ is an adjustment of a formula introduced by Sen, Karanjai, and Munshi (1989) that computes the impact factor of non-SCI journals. For the 10 leading German-language LIS journals we counted all references. The regional impact factor was calculated similarly to the Garfield factor with one difference: The denominator has three elements, the number SC of self-citations of the given journal, the number C^* of the citations to the journal retrieved in the "Web of Science" database, and the number $C(region)$ of citations found in the manually counted regional German-language journals: $rIF(Z_it) = [C^* + SC + C(region)]/[S(1) + S(2)]$.
- The citing half-life means the half-life of the references. We could not calculate the cited half-life (the half-life of the citations) because it was not viable to manually count all citations referring to the investigated German journals.
- Number of references per article.
- Rate of journal self-references (in percent).

Table 1 shows the results of the citation analysis for our sample of the 50 LIS periodicals.

International and German-Language LIS Journals by Impact Factor: Testing Garfield's Hypothesis

In an interview with *Password*, a German newsletter for information industry, Eugene Garfield said:

> I am often surprised at the level of misunderstanding of German editors about citation analysis and the impact factor. There is a great need for national journals written in German and other European languages, but it is absurd to expect them to reach the same level of impact as international journals, unless they adhere to the same standards as leading journals and attract significant original research. German scientists understand that fact of life and for this reason they mainly publish their best work in English in international journals. (Garfield & Stock, 2002, p. 25)

This was confirmed by our study in which English-language journals were placed top in the impact factor ranking (see Table 2). The leading periodicals were *Journal of Documentation* (for details, Vickery, 1994), *Journal of the American Society for Information Science* (now *Journal of the American Society for Information Science and Technology*, or *JASIST*) (for more information, cf. Koehler, 2001; Kraft, 1999; Nisonger, 1999; Smith, 1999; Varlejs, 1999), *Annual Review of Information Science and Technology*, (*ARIST*), *Library Quarterly*, and *College and Research Libraries*. The mean of all 40 international LIS journals was 0.47. The top German-language LIS journal is *Zeitschrift fuer Bibliothekswesen und Bibliographie* with a regional impact factor of 0.44, which is less than one third of the value of the top-ranked *Journal of Documentation* with an impact factor of 1.52. Other top German-language LIS journals are *Bibliothek. Forschung und Praxis*, *ABI-Technik*, *and Bibliotheksdienst* (see Table 3). They all mainly have a library perspective of LIS. This is in contrast to the international periodicals, where the first three positions are taken by information science and documentation journals. The mean regional impact factor of the 10 German LIS periodicals amounted to 0.25, which is significantly lower than the mean impact factor of the international journals. This result shows clearly that Garfield's hypothesis holds true.

All 50 LIS journals have an average impact factor of 0.43. This value was more or less constant during the investigation period: 0.40 in 1997, 0.42 in 1998, 0.49 in 1999, and 0.40 in 2000. With an average of 0.43, the impact in LIS is not as high as, for example, in life sciences, but is at the same level as in engineering (Hooydonk, 1995) and perhaps higher than in some humanities. As Wallace Koehler pointed out, LIS "may no longer be 'little' science, but it is also not 'big' science" (Koehler, 2001, p. 117), rather it is on the way to "big science" (we do hope so). But is LIS in German-speaking countries heading in the same direction?

International and German-Language LIS Journals by Half-Life, References per Article, and Journal Self-References

The average citing half-life of all LIS journals was 4.6 years. In our time window, this value was nearly constant: 4.5 years in 1997, 4.5 years in 1998, and 4.8 years in 1999 and 2000 each. German-language LIS journals had a very short half-life of references (mean: 2.8 years); for instance, *Zeitschrift fuer Bibliothekswesen und Bibliographie* 0.9 years, *Buch und Bibliothek* 2.3 years, *NfD. Information: Wissenschaft und Praxis* 2.4 years, *ABI-Technik* and *Bibliotheksdienst* 2.5 years each. The average citing half-life of international LIS journals amounted to 5.1 years. But there were also some international LIS journals with very short citing half-lives. Among them were *Library Journal* (0.6 years), *Database* (now *E-Content*) (1.5 years), *Online* (1.6 years), and *Interlending & Document Supply* (1.9 years). The international journals with high impact factors tended toward higher citing half-lives: *Journal of Documentation* (5.1 years), *ARIST* (5.2 years), and *JASIST* (7.8 years). German LIS journals refer mainly to short-dated literature, while international journals (besides the mentioned

TABLE 1. LIS journals by (regional) impact factor, citing half-life, number of references per article, and rate of journal self-references (mean values of the period 1997–2000).

LIS journal	Impact factor (rank)	Citing half-life (rank)	References per article (rank)	Self-references (%) (rank)
*ABI-Technik**	0.34 (20)	2.50 (**8**)	10.20 (31)	3.41 (27)
Annual Review of Information Science and Technology (*ARIST*)	1.23 (**3**)	5.15 (29)	n.d.	n.d.
ASLIB Proc.	0.31 (26)	4.50 (26)	15.37 (24)	2.01 (38)
*Bibliothek. Forschung und Praxis**	0.39 (13)	5.18 (30)	16.50 (22)	1.20 (44)
*Bibliotheksdienst**	0.35 (21)	2.50 (**8**)	5.27 (42)	12.69 (**6**)
*BIT Online**	0.04 (45)	2.53 (**10**)	14.39 (26)	0.00 (48)
*Buch und Bibliothek**	0.31 (25)	2.28 (**6**)	4.09 (44)	22.77 (**1**)
Canadian J of Information Science	0.18 (39)	7.20 (42)	29.86 (7)	2.87 (30)
College and Research Libraries	0.94 (**5**)	5.93 (34)	18.37 (18)	12.42 (**7**)
E-Content (*Database*)	0.29 (28)	1.50 (**3**)	1.27 (48)	20.32 (**3**)
Electronic Library	0.21 (35)	2.60 (11)	8.92 (36)	2.80 (31)
Government Inf Quarterly	0.36 (19)	3.78 (20)	16.63 (21)	4.76 (20)
Information Processing & Management	0.61 (**7**)	6.65 (38)	33.11 (**3**)	4.14 (22)
Information Society	0.41 (14)	5.95 (35)	29.84 (**8**)	1.44 (43)
Information Technology and Libraries	0.29 (27)	3.25 (15)	10.81 (30)	2.34 (36)
Interlending & Document Supply	0.32 (23)	1.90 (**5**)	13.30 (27)	5.66 (16)
International J of Information Management	0.45 (**10**)	5.83 (33)	28.53 (**9**)	2.05 (37)
Proceedings des Internationalen Symposiums f Info.wiss. (*ISI*)*	0.01 (47)	3.90 (21)	10.84 (29)	0.60 (46)
Internet World	0.57 (n.d.)	n.d.	n.d.	n.d.
J of Academic Librarianship	0.38 (16)	5.08 (27)	18.08 (19)	3.90 (25)
J of Documentation	1.52 (**1**)	5.10 (28)	32.59 (**4**)	6.49 (15)
J of Education for Library and Inf Sc	0.02 (46)	8.10 (47)	15.67 (23)	7.29 (14)
J of Government Information	0.29 (29)	4.15 (23)	20.74 (14)	3.92 (24)
J of Information Ethics	0.14 (42)	6.83 (41)	15.02 (25)	1.66 (41)
J of Information Science	0.55 (**8**)	5.58 (31)	20.18 (15)	3.04 (28)
J of Librarianship and Inf Sc	0.23 (34)	4.48 (25)	22.37 (11)	1.73 (40)
J of Scholarly Publishing	0.18 (38)	6.33 (37)	8.35 (38)	2.58 (34)
JASIST	1.29 (**2**)	7.75 (46)	31.99 (**5**)	9.33 (**10**)
Knowledge Organisation	0.37 (17)	7.63 (44)	20.11 (16)	3.02 (29)
Library & Information Science Research	0.44 (11)	6.68 (39)	36.77 (**2**)	2.80 (31)
Library Acquisitions	0.15 (41)	3.40 (17)	7.68 (39)	4.20 (21)
Library and Information Science	2.17 (n.d.)	n.d.	9.50 (33)	10.53 (**8**)
Library Collections, Acquisitions & Technical Services	0.07 (43)	4.05 (22)	8.64 (37)	0.18 (47)
Library Hi Tech	0.17 (40)	3.50 (18)	5.92 (41)	5.01 (19)
Library J	0.29 (29)	0.60 (**1**)	1.58 (46)	21.70 (**2**)
Library Quarterly	1.05 (**4**)	7.68 (45)	42.94 (**1**)	4.08 (23)
Library Resources & Technical Services	0.32 (24)	6.73 (40)	21.78 (12)	3.46 (26)
Library Trends	0.52 (**9**)	5.68 (32)	28.52 (**10**)	1.62 (42)
Libri	0.21 (36)	6.00 (36)	21.22 (13)	1.86 (39)
*NfD. Information Wissenschaft und Praxis**	0.20 (37)	2.35 (**7**)	9.87 (32)	5.26 (18)
Online	0.33 (22)	1.63 (**4**)	1.37 (47)	17.65 (**5**)
Online Inf Review (*Online & CD-ROM Review*)	0.24 (32)	2.73 (12)	7.03 (40)	2.39 (35)
*Password**	0.03 (44)	2.90 (14)	2.24 (45)	2.73 (33)
Proceedings of the ASIS Annual Meeting	0.00 (48)	3.75 (19)	18.41 (17)	0.76 (45)
Program	0.40 (15)	3.38 (16)	9.34 (34)	8.15 (11)
*ProLibris**	0.28 (31)	2.73 (12)	4.16 (43)	9.47 (**9**)
Reference & User Services Quarterly (*RQ*)	0.36 (18)	4.18 (24)	13.28 (28)	7.79 (12)
Scientometrics	0.75 (**6**)	7.53 (43)	17.63 (20)	17.81 (**4**)
Social Science Information	0.24 (33)	>10.00 (48)	31.14 (**6**)	5.40 (17)
*Zeitschrift fuer Bibliothekswesen und Bibliographie**	0.44 (11)	0.93 (**2**)	8.93 (35)	7.77 (13)

*Manual calculation (otherwise: data from JCR); n.d.: no data or not enough data for ranking; bold: top 10 ranking.

exceptions) quote older publications, too. This leads to the following questions: Do German-language LIS periodicals lack historical background in parts? And: Does German-language LIS have enough theoretical background?

LIS journals have on average 15.9 references per article, but this indicator is more than twice as high for international (18.3) as for German-language periodicals (8.7). Among the journals with the longest list of references are *Library Quarterly* (42.9 references per article), *Library & Information Science Research* (36.8), *Information Processing & Management* (33.1), *Journal of Documentation* (32.6), and *JASIST* (32.0). *Bibliothek. Forschung und Praxis* (16.5) and

TABLE 2. LIS journals by (regional) impact factor (average values of the period 1997–2000).

Rank	All LIS journals	Impact factor
1	*J of Documentation*	1.52
2	*JASIST*	1.29
3	*Annual Review of Information Science and Technology*	1.23
4	*Library Quarterly*	1.05
5	*College and Research Libraries*	0.94
6	*Scientometrics*	0.75
7	*Information Processing & Management*	0.61
8	*J of Information Science*	0.55
9	*Library Trends*	0.52
10	*International J of Information Management*	0.45
11	*Library & Inf Sc Research*	0.44
12	*Zeitschrift fuer Bibliothekswesen und Bibliographie*	0.44
—	*LIS average*	0.43

TABLE 3. German-language LIS journals by regional impact factor (average values of the period 1997–2000).

Rank	German LIS journals	Regional IF
1	*Zeitschrift fuer Bibliothekswesen und Bibliographie*	0.44
—	*LIS average*	0.43
2	*Bibliothek. Forschung und Praxis*	0.42
3	*ABI-Technik*	0.34
4	*Bibliotheksdienst*	0.34
5	*Buch und Bibliothek*	0.31
6	*ProLibris*	0.29
7	*NfD. Information: Wissenschaft und Praxis*	0.20
8	*Password*	0.03
9	*BIT Online*	0.02
10	*ISI Proceedings*	0.01

TABLE 4. Citation indicators of international and German-language LIS journals (average values of the period 1997–2000).

LIS journals	Impact factor	Citing half-life	References per article	Journal self-references
International journals (n = 40; source: JCR)	0.47	5.1	18.3	5.8%
German-language journals (n = 10)	0.25	2.8	8.7	6.6%

12.1% in 1997 to 26.0% in 2000. The share of cited articles has remained steady, while there was a decline in citations of monographs (including articles in monographs) from 41.3% in 1997 to 27.2% in 2000.

The rate of journal self-references, i.e., references to the journal in which the citing article was published, amounted to an average of 5.9% in the LIS journals. There were only small differences between the mean values of German-language and international periodicals. A high degree of journal self-reference was noticed in small subfields like the information industry (*Database*: 20.3%, *Online*: 17.7%) or science communication (*Scientometrics*: 17.8%) and in the cases of library association journals like *Buch und Bibliothek* (22.8%) and *Bibliotheksdienst* (12.7%). The journal with the second highest rate of self-references was *Library Journal* (21.7%). If the journal self-reference rate is considered as an indicator for openness of a subfield, it can be used to identify "closed shops," as is the case with some journals of library associations. However, LIS journals are widely open for contents from other sources in general. Table 4 shows the mean values of the citation indicators discussed above for the international and German-language journals.

Mapping International and German-Language LIS Journals

If authors reference papers in journals other than the publishing one, where does their input come from? Or: Which other journals are given credit by LIS authors? According to sociometrics, each reference to a journal means a "vote" cast for this journal. The results can be displayed in a sociograph. In our study, we worked with the following threshold values. Only the top 10 sources referenced by each journal were included in the mapping procedure. In addition, we considered only journals that were referenced at least three times in any volume. The numbers in Figures 1 and 2 indicate the sum of the references from the years 1997 to 2000. The resulting maps can be compared with trading accounts: In this sense, the information flow between a cited journal X and a referencing journal Y corresponds to exports from X to Y and imports from X to Y. Counting the number of journals to which there are relations, two indicators can be distinguished: According to the terminology of Kleinberg (1999), a journal is a *hub* if it has many import relations (i.e., it references to many journals). A journal is an *authority* if it has many export relations

BIT Online (14.4) are the top referencing German LIS journals. If one relates the length of the list of references to an author's familiarity with existing research results, the number of references can be regarded as an indicator for the scientific quality of a paper.[3] In this sense, German-language LIS journals are less scientific than international ones. The claim that this may be due to the fact that German-writing authors do not cite all relevant sources because they do not know them will be discussed in the Reader Survey section.

As a by-product of the manual citation analysis of the German-language LIS journals, our results show ratios of cited monographs, journal articles, and Web pages between 1997 and 2000. According to Zhang (1998), the impact of electronic sources in LIS was small before 1997. At least for the 10 German-language LIS journals, we have been able to observe a strong increase in the citations to Web pages from

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[3] Of course, the authors are aware that the length of the reference list also depends on other criteria like discipline, document type, type of journal, etc.

FIG. 1. Map of German-language LIS journals (1997–2000).

(i.e., it is cited by many journals). If a journal is both a hub and an authority, it can be called a *star*.

Figure 1 shows the result of the mapping procedure primarily[4] for the German-language LIS journals. At the center, only German-language LIS journals can be found. As can be seen, the star journal is *Bibliotheksdienst*, with six export and seven import relations. Other journals with high degrees of "information exchange" are *Bibliothek. Forschung und Praxis* with five import relations as a hub and *Zeitschrift fuer Bibliothekswesen und Bibliographie* (*ZfBB*) with five export relations as an authority. There is only a low level of unidirectional information flow between German-language and international LIS periodicals. For this reason, the international LIS journals (marked by grey ellipses) were drawn at the periphery in Figure 1.

When mapping the international journals, another threshold value was used. Accordingly, only journals with three and more export relations were included in the mapping procedure. The result is exhibited in Figure 2.

Since the grey-marked journals were not part of our sample, only their information exports could be plotted. As can be seen and what is not surprising, the core of the LIS "world" consists of two continents: library science and information science. Among the international journals, the following hubs were identified:

- *JASIST* (8 import relations)
- *ARIST*
- *College and Research Libraries*
- *Library Quarterly*
- *Library Trends*
- *Reference & User Services Quarterly* (*RQ*) (7 import relations each).

Authorities are:

- *JASIST* (8 export relations)
- *Communications of the ACM*
- *Journal of Documentation*
- *Library Journal* (5 export relations each).

Taking into account the two journal listings shows that LIS has a definite star: *JASIST*, which is both top hub and top authority.

There is not much information exchange between international, i.e., English-writing, and German-writing LIS authors. German-writing authors cite at least some international journals such as *JASIST*, *Online*, *Digital Libraries*, *Library Journal*, or *Libri* (see Figure 1). Authors of the English-language LIS periodicals cite their German-writing counterpart to such a small extent that the defined threshold

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[4] English-language LIS periodicals were only considered if they referenced or were referenced by the German ones.
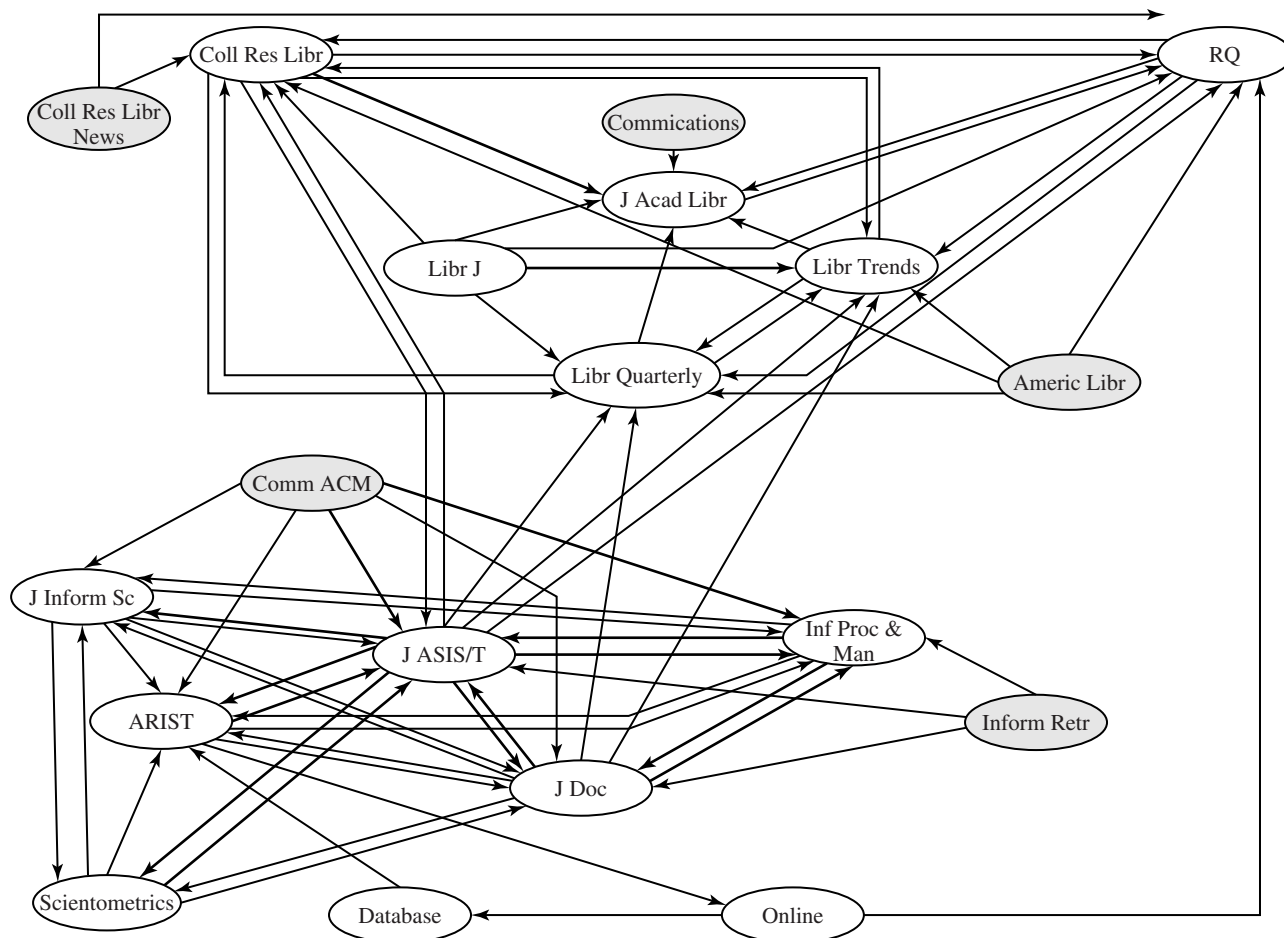
FIG. 2. Map of international LIS journals (1997–2000).

values were not reached. A similar result was found in a study about foreign authorship distribution in *JASIST* and *Journal of Documentation* (He & Spink, 2002). Accordingly, 125 authors from the United Kingdom and 110 from Canada published articles in *JASIST* and *American Documentation*, respectively, in the period 1950 to 1999. However, only 25 authors were from Germany, 6 from Switzerland, and 3 from Austria. In the British *Journal of Documentation*, 128 authors were from the United States, but only 8 from Germany, 3 from Switzerland, and none from Austria. This might raise the following question: Are there any invisible borderlines between English-speaking information scientists and their German-speaking colleagues?

Correlations Among Impact Factor, Half-Life, Number of References, and Journal Self-References

Among the four citation indicators, correlations (Pearson) were calculated both for German-language and for international LIS journals. Based on these correlations, we tried to reflect on the direction of influence, bearing in mind that correlation is a measure which only indicates the strength between two variables.

As is revealed by Table 5, impact factor and citing half-life show weakly positive correlations for international but negative correlations for German-language periodicals. For international journals, there is also a positive correlation between impact factor and the number of references per article but none for the German-language periodicals. The impact factor correlates much more positively with the rate of journal self-references for the German journals than for the international ones. The more authors of a German-language LIS journal reference other articles in this journal, the higher is its regional impact factor. If a high rate of self-references is related to "incest," it can be concluded that a higher degree of incest in German-language journals leads to a higher regional impact factor. Citing half-life and references per article are strongly connected, especially for the international journals ($+0.73$). If a journal has many references per article, its citing half-life is high, meaning that older sources come into consideration, too. The correlations between the rate of journal self-references and the number of references per article as well as the citing half-life are negative, while German LIS periodicals have slightly lower correlation coefficients than international ones. This can be interpreted as follows: The more a journal references itself, the less its half-life. If a

TABLE 5. Correlations (Pearson) among impact factor, citing half-life, number of references per article, and rate of journal self-references for 40 international and 10 German-language LIS journals (1997–2000).

	International LIS journals	German LIS journals
Impact factor * citing half-life	+0.25	−0.20
Impact factor * references per article	+0.30	+0.02
Impact factor * journal self-reference rate	+0.27	+0.45
Citing half-life * references per article	+0.73	+0.45
Citing half-life * journal self-reference rate	−0.31	−0.41
References per article * journal self-reference rate	−0.40	−0.62

journal cites itself, it is usually referenced to more current content. And, finally, the less an LIS periodical references itself, the higher its number of references per article. In all correlations, the rate of journal self-reference turned out to correlate more strongly in the German-language LIS journals.

Reader Survey

Method

The survey aimed to explore the use of LIS journals in German-language countries by means of expert opinions. In particular, the following research questions were investigated:

1. Which are the most relevant LIS journals for German-speaking information professionals? In order to determine the relevance of a journal, the following indicators were used:

   reading frequency: number of respondents who read a journal
   applicability: number of information professionals who can apply the periodical at work
   publication frequency: number of respondents who published in the journal in the past 10 years
   publication preference: number of information professionals who find it important to publish in the journal.

2. Is there a relation between the relevance of a journal and different attributes of the respondents? In detail, it was explored if

   practitioners and scientists,
   employees in the public sector, in the information industry, and in another private company,
   librarians, documentalists, and information scientists (membership of a library, information and documentation, or academic LIS association, as well as education in librarianship, information and documentation, or "information science"[5] were used to identify different occupational groups),

respondents with different levels of education,
   LIS professionals of different ages,
   male and female respondents

consider different LIS journals relevant.

For cost reasons, the survey was performed electronically. The questionnaires were attached to e-mails that were sent to mailing lists of librarians, documentalists, and academic LIS associations in Austria and Germany.[6] The number of addressees amounted to approximately 1,800. The response rate of approximately 15% was relatively high. Altogether, 257 questionnaires were analyzed, 221 of which were from Germany, 32 from Austria, and one from Switzerland. In three cases, the country of origin could not be traced.

In the following, the most important results of the expert survey will be presented. First of all, we give some information about the participants of the survey. Afterwards, we will introduce the results concerning reading frequency, applicability, publication frequency, and publication preference of the LIS journals. Finally, we will answer the question if the results depend on different attributes of the respondents.

Characteristics of the Survey Participants

Eighty-eight percent of the questionnaires were returned by practitioners, 9% by scientists. One percent of the respondents regarded themselves as practitioners and scientists. Two percent made no statement. Most of the respondents (88%) work in the public sector, whereas only 5% have jobs in the private information sector. Six percent are employed by firms in other sectors. Sixty-six percent of the participants in the survey are members of a library association; 11% are affiliated with an information and documentation association. The proportion of respondents who subscribe to membership with only an academic LIS association (e.g., university association for information science [Hochschulverband Informationswissenschaft], German computer society [Gesellschaft fuer Informatik]—special interest group "information retrieval") amounts to only 1%. Nine percent are affiliated with more than one LIS association. Thirteen percent did not declare their membership or are not members in any of the LIS associations. Based on membership in LIS associations, it

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[5] In German-language countries, there are universities and so-called universities of applied sciences (Fachhochschulen). While the first provide a more theoretical education, the latter have a more practice-oriented approach. A full study in librarianship or information and documentation is only offered by universities of applied sciences. At universities, "information science" can only be enrolled in as part of or in combination with other studies in most cases.

[6] Because of the way the data were collected, the study is descriptive.

TABLE 6. Periodicals which are read by more than 10 respondents (ranked by the total number of mentions).

Rank	Journal	Most issues	Several issues	Few issues	Total
1	*Bibliotheksdienst*	140	25	31	196
2	*Buch und Bibliothek (BuB)*	110	28	39	177
3	*ABI-Technik*	63	35	61	159
4	*Zeitschrift fuer Bibliothekswesen und Bibliographie (ZfBB)*	68	22	43	133
5	*Bibliothek. Forschung und Praxis*	48	31	37	116
6	*BIT Online*	45	32	31	108
7	*NfD. Information: Wissenschaft und Praxis*	65	14	10	89
8	*ProLibris*	33	19	8	60
9	*VOeB-Mitteilungen*	36	11	8	55
10	*Password*	25	10	16	51
11	*Libri*	5	12	14	31
12	*Online*	7	7	13	27
13	*Internet World*	3	4	16	23
14	*J of Information Science*	2	7	11	20
15	*ASLIB Proceedings*	1	4	14	19
16	*Intl. J of Information Management*	2	5	11	18
16	*Library Quarterly*	1	9	8	18
18	*Library J*	4	5	8	17
19	*J of Documentation*	1	4	11	16
20	*College & Research Libraries*	5	3	7	15
21	*J of the American Society for Information Science and Technology (JASIST)*	3	6	5	14
22	*Proceedings des Internationalen Symposiums fuer Informationswissenschaft (ISI)*	8	0	5	13
22	*Online Information Review*	4	2	7	13
23	*J of Librarianship and Information Science*	0	2	10	12
24	*E-Content*	3	3	5	11
24	*Library Trends*	3	1	7	11
24	*Electronic Library*	2	3	6	11

could be assumed that the majority of respondents (77%) have an education in library science. Compared with this, the share of respondents with an education in information and documentation (8%) is relatively small. This holds true for the graduates of a university study in information science as well (6%). It is worth noting that approximately 5% have no education in LIS. As mentioned above, it can be summarized that the participants of the survey were mostly librarians, public sector staff, and practitioners.

Relevance of LIS Journals

Reading frequency. Table 6 lists those from 51 LIS periodicals[7] which were read by more than 10 respondents. As can be seen, only library journals got more than 100 mentions. The most read LIS journal is *Bibliotheksdienst* (for details, see Juchem, 2002). With 89 mentions, the first nonlibrarian journal is *NfD. Information: Wissenschaft und Praxis*, edited by the German documentalist's association (Deutsche Gesellschaft fuer Informationswissenschaft und Informationspraxis). If one takes into account that the majority of the respondents were librarians, this result is not surprising. It is remarkable, however, that from the 11 German-language LIS periodicals to choose from, 10 are top ranked. The first international journal (*Libri*) is placed only eleventh, with 31 mentions. The last 28 ranks are held by English-language LIS periodicals. Altogether, only one quarter of the read periodicals are in English. At least with regard to the reading preferences of LIS journals, German-speaking information professionals do not demonstrate strong international orientation.

If one considers the extent to which a journal is read (most issues, several issues, few issues), it becomes apparent that especially journals of LIS associations (*Bibliotheksdienst, Buch und Bibliothek, NfD. Information: Wissenschaft und Praxis, VOeB-Mitteilungen, Prolibris*) are perused regularly. English-language periodicals are read less intensively, however.

Applicability. The journal ranking with regard to the applicability of the periodicals is similar to that of Table 6. This means that the information professionals read primarily those journals that they can use in their work. This applies in particular to German-language journals.

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[7] While the citation analysis considered 10 German-language LIS journals, the reader survey included 11, adding "VOEB Mitteilungen" to the list. This is the publication of the Austrian librarian association. It was excluded in the citation analysis because they hardly publish scientific papers.

TABLE 7. Periodicals that are used for publication by more than one respondent.

Rank	Journal	Mentions
1	*Buch und Bibliothek (BuB)*	42
2	*Bibliotheksdienst*	40
3	*Zeitschrift fuer Bibliothekswesen und Bibliographie (ZfBB)*	20
4	*NfD. Information: Wissenschaft und Praxis*	19
5	*BIT Online*	15
6	*Bibliothek. Forschung und Praxis*	14
7	*VOeB-Mitteilungen*	13
8	*ProLibris*	12
9	*ABI-Technik*	11
10	*Password*	6
11	*ISI Proceedings*	5
12	*ASLIB Proceedings*	2
12	*Electronic Library*	2
12	*J of Information Science*	2

Publication frequency. It was unexpected that 42% of the respondents (109 persons) published at least one article in an LIS journal. Because only 22 respondents regarded themselves as scientists, this means that most publications were from practitioners. As can be observed in Table 7, most articles were published in journals edited by LIS associations. The share of publications in these journals is 59%.[8] From the international periodicals, only *Aslib Proceedings*, *Electronic Library*, and *Journal of Information Science* published articles by more than one respondent. Only 8% of all periodicals used for publication referred to English-language journals. This shows the low international orientation of the respondents once again.

Publication preference. There is hardly any difference between journal rankings with regard to publication frequency and those relating to publication preference. Hence respondents published in those journals they found it important to publish in. The reported values on publication preference are approximately twice as high as the actual number of publications for most German-language journals. For some prestigious international journals, among them *JASIST*, this ratio is even higher.

According to correlation coefficients (Pearson), reading frequency can be used as a sound basis for applicability (+1.0), publication frequency (+0.93), and publication preference (+0.93). Also, the strong relation between publication frequency and publication preference is confirmed (+0.99).

Results Depending on Different Attributes of the Respondents

In the following, we will investigate if different attributes of the respondents result in different journal rankings. Because the journal ranking with regard to the reading frequency turned out to be the base ranking here as well, only this indicator will be considered below.

Practitioners versus scientists. As is revealed in Table 8, practitioners and scientists have different reading behaviors. While six library journals were top ranked by the former, the most read journal by the latter is a documentalist's journal. Five in 14 journals are not included in the other group's ranking, and vice versa. As was expected, scientists read more English journals. The fact that scientists peruse certain periodicals more often is also confirmed by association measures. Accordingly, the following values were computed for Cramers-V: *JASIST*: 0.4, *ISI Proceedings*: 0.38, *Password*: 0.35, *International Journal of Information Management*: 0.35, *Aslib Proceedings*: 0.3, *Journal of Information Science*: 0.29. It has to be considered, however, that the scientists who participated in the survey constituted only one tenth (22 respondents) of the practitioners (228 respondents). Though the journal rankings of the two groups of LIS professionals seem to be plausible, a response bias cannot be excluded because of the relatively small scale of participating scientists. This applies to the following two comparisons as well.

Sector of employment: Public sector versus private information sector versus firm in other sectors. Reading behavior is influenced by sector of employment as well (Table 9). In the public sector, library journals got the most mentions. This is not surprising because librarians, with 226 respondents, were by far the majority and work mostly in the public sector. In contrast, employees of the private information sector (12 respondents) or of other private companies (16 persons) placed *NfD. Information: Wissenschaft und Praxis* first and *Password* second. The good ranks for *Password* in the journal rankings of employees from private companies are also revealed by the value for Cramers-V (0.33). Contrary to the public sector, other nonlibrary journals, for instance *Online*, are also read more often.

Occupational category: librarians versus documentalists versus information scientists. An analysis of reading behavior depending on membership in an LIS association (librarianship, information and documentation, academic LIS association[9]) reveals clear occupational differences (see Table 10). The top-10 ranking of members of a library association includes library journals with only one exception (*NfD. Information: Wissenschaft und Praxis*). By contrast, this journal and *Password* lead the lists of the members of a documentalist and an academic LIS association. Besides, documentalists read journals that don't necessarily relate to their professional environment (*Online*, *Aslib Proceedings*, and *Internet World*). Scientists, however, use academic journals more often. These results become obvious in correlations. The higher values of Cramers-V for *NfD. Information:*

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[8] Publication in the 51 periodicals for selection = 100%. Periodicals that were mentioned by a respondent but not included in the journal list were not considered.

[9] Contrary to members of a librarian and a documentalist association, exclusive membership was not a requirement for information scientists.

TABLE 8. Reading frequency of German-speaking LIS professionals: Practitioners vs. scientists.

	Ranking of practitioners (P) (n1 = 228)				Ranking of scientists (S) (n2 = 22)		
Rank	Journal	No.	Rank S	Rank	Journal	No.	Rank P
1	*Bibliotheksdienst*	178	5	1	*NfD*	16	7
2	*Buch und Bibliothek (BuB)*	160	5	2	*Password*	14	10
3	*ABI-Technik*	142	3	3	*ABI-Technik*	12	3
4	*ZfBB*	119	10	3	*Bibliothek. Forschung und Praxis*	12	5
5	*Bibliothek. Forschung und Praxis*	99	3	5	*Bibliotheksdienst*	11	1
6	*BIT Online*	92	5	5	*BIT Online*	11	6
7	*NfD*	70	1	5	*Buch und Bibliothek (BuB)*	11	2
8	*ProLibris**	55	–	8	*Intl J of Information Management**	10	–
9	*VOeB Mitteilungen**	47	–	8	*JASIST**	10	–
10	*Password*	36	2	10	*ASLIB Proceedings**	9	–
11	*Libri**	22	–	10	*ISI Proceedings**	9	–
12	*Online*	17	10	10	*J of Information Science**	9	–
13	*Internet World**	15	–	10	*Online*	9	12
14	*College & Research Libraries**	12	–	10	*ZfBB*	9	4

*Journal not included in the other ranking.

TABLE 9. Reading frequency depending on the sector of employment (public sector vs. private information sector vs. firm in other sectors).

	Public sector (n1 = 226)			Private information sector (n2 = 12)			Firm in other sectors (n3 = 16)	
Rank	Journal	No.	Rank	Journal	No.	Rank	Journal	No.
1	*Bibliotheksdienst**	180	1	*NfD**	10	1	*NfD**	13
2	*Buch und Bibliothek (BuB)**	167	2	*BIT Online*†	8	2	*Password**	11
3	*ABI-Technik*	144	2	*Password**	8	3	*Bibliotheksdienst**	9
4	*ZfBB*†	124	4	*ABI-Technik*	6	4	*ABI-Technik*	8
5	*Bibliothek. Forschung/Praxis*†	107	4	*Buch und Bibliothek (BuB)**	6	5	*Online*†	4

*Journal only included in another top ranking.
†Journal has no correspondence in the other top rankings.

TABLE 10. Reading frequency depending on the membership in LIS associations (librarianship vs. information and documentation vs. academic LIS association).

	Librarian association (n1 = 171)			Documentalist association (n2 = 27)			Academic LIS association (n3 = 11)	
Rank	Journal	No.	Rank	Journal	No.	Rank	Journal	No.
1	*Bibliotheksdienst**	144	1	*NfD*	25	1	*NfD*	10
2	*Buch und Bibliothek (BuB)**	136	2	*Password**	22	2	*Password**	9
3	*ABI-Technik**	110	3	*ABI-Technik**	13	3	*ISI Proceedings*†	8
4	*ZfBB**	96	3	*Bibliotheksdienst**	13	4	*JASIST*†	7
5	*Bibliothek. Forschung/Praxis**	85	5	*BIT Online*	12	5	*ASLIB Proceedings**	6
6	*BIT Online*	65	6	*Internet World*†	8	5	*Bibliothek. Forschung/Praxis**	6
7	*ProLibris*†	51	7	*Buch und Bibliothek (BuB)**	7	5	*Intl J of Info Management*†	6
8	*VOeB Mitteilungen*†	40	8	*ASLIB Proceedings**	5	8	*BIT Online*	5
9	*NfD*	30	8	*Online*†	5	8	*J of Information Science*†	5
10	*Libri*†	21	8	*ZfBB**	5			

*Journal only included in another top ranking.
†Journal has no correspondence in the other top rankings.

Wissenschaft und Praxis (0.45), *Password* (0.48), and *Aslib Proceedings* (0.36) can be attributed to frequent use by documentalists and scientists. *Proceedings des Internationalen Symosiums fuer Informationswissenschaft* (ISI) (Cramers-V: 0.53), *International Journal of Information Management* (Cramers-V: 0.53), *JASIST* (Cramers-V: 0.51), and *Journal of Information Science* (Cramers-V: 0.43) are mostly read by members of academic LIS associations. Documentalists and scientists also usually use more English-language journals than librarians.

The results depending on education in librarianship, information and documentation, or a study of information science at a university are quite similar, which confirms the difference in journal use among librarians, documentalists, and information scientists.

Level of education, age, and gender. A comparison of the reading behavior relating to the level of education (PhD, master degree from university, master degree from university of applied sciences) points out only minor differences between the various rankings. There were only slightly bigger deviations in rankings between graduates with PhDs and those with master degrees. Different age[10] and gender had hardly any influence on the journal relevance.

Citation Analysis Versus Reader Survey

Comparison of Indicators of Citation Analysis and Reader Survey

In this section, we will discuss if there is a connection between the indicators of the expert survey and those of the citation analysis. Again, we will try to assess the directions of the influence, knowing that they have yet to be tested in a future study. Table 11 shows the correlations between reading frequency[11] and the citation indicators for all journals. As can be seen, the correlations are low in general. There is a slightly negative correlation (-0.11) between reading frequency and impact factor, indicating that the impact factor hardly influences reading behavior. The correlation is more negative with the number of references per article (-0.32) and the citing half-life (-0.42), which means that German-speaking information professionals are inclined to use journals with fewer references, i.e., journals, whose articles age more quickly. The only positive yet weak correlation ($+0.24$) exists with the self-citation rate of a journal.

As mentioned before, German-speaking information professionals rely very heavily on journals in their mother tongue.[12] For this reason, the correlations were computed only for the German-language LIS periodicals (see Table 12). Since reading frequency and applicability as well as publication frequency and publication preference correlate nearly equally with the citation indicators, Table 12 does not list all results.

As can be seen, correlations considering only the German-language LIS journals show a slightly different picture. For instance, there is a strong correlation ($+0.7$) between reading frequency and regional impact factor. The higher the regional impact factor, the more a German-language LIS journal is read. This would suggest that impact factor is relevant for

TABLE 11. Correlations (Pearson) between reading frequency of German-speaking LIS professionals and citation indicators for all LIS journals (n = 50).

Reading frequency * (regional) impact factor	-0.11
Reading frequency * citing half-life	-0.42
Reading frequency * references per article	-0.32
Reading frequency * journal self-reference rate	$+0.24$

TABLE 12. Correlations (Pearson) between reading/publication frequency of German-speaking LIS professionals and citation indicators for German-language LIS journals (n = 10).

Reading frequency * regional impact factor	$+0.70$
Reading frequency * citing half-life	-0.35
Reading frequency * references per article	-0.05
Reading frequency * journal self-reference rate	$+0.58$
Publication frequency * regional impact factor	$+0.49$
Publication frequency * citing half-life	-0.35
Publication frequency * references per article	-0.31
Publication frequency * journal self-reference rate	$+0.85$

German-speaking information professionals only if the publication language of the journal is German. However, there is nearly no difference in the correlations of the reading and publication indicators with the citing half-life and the number of references per article between German-language and all periodicals.[13]

It is remarkable that the self-citation rate correlates highly both with reading ($+0.58$) and publication frequency ($+0.85$). The higher the self-citation rate of a journal, the more likely it is read, and even higher is the probability that an article is published in it by a German-speaking information professional. On the assumption that the self-citation rate indicates the openness of a periodical, it can be concluded that the German-speaking LIS forms an "island" in the international LIS community with a few "subislands" inside, at least as regards usage of the journals surveyed. As a matter of fact, as already mentioned in the section Reader Survey, the journals of the regional LIS associations play an outstanding role in the reading and even more in the publication behavior of German-speaking information professionals.

Scanlan's Hypothesis

In an article in *Serials Librarian*, Brian D. Scanlan reported about the *Drug Information Journal*. Though this journal with more than 1,500 subscriptions is a very successful product of Pergamon Press, it is not included in the ISI databases because its impact factor is too low. Since this journal is mainly read in companies and not by scientists, Scanlan argued that a journal for primarily nonacademic readers cannot be evaluated by means of impact factor: "As

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[10] The respondents were divided into the following age categories: 20–incl. 30, 31–incl. 40, 41–incl. 50, 51–incl. 60, more than 60 years.

[11] Since there was strong correlation among reading frequency, applicability, publication frequency, and publication preference, only correlation coefficients between reading frequency and citation indicators are stated.

[12] For instance, 92% of the journals used for publication are in German.

[13] The only exception is that there is no relation (-0.05) between reading frequency and the length of reference list of German-language LIS journals.

TABLE 13. Correlations (Pearson) between reading frequency of German-speaking LIS professionals and impact factor (depending on whether respondents are practitioners or scientists, or members of a librarian, a documentalist, or an academic LIS association) for German-language LIS journals (n = 10).

Reading frequency of practitioners * regional impact factor	+0.71
Reading frequency of scientists * regional impact factor	−0.17
Reading frequency of members of librarian associations * regional impact factor	+0.76
Reading frequency of members of documentalist associations * regional impact factor	−0.34
Reading frequency of members of academic LIS associations * regional impact factor	−0.59

its users, however, are primarily in industry and do not generally write articles, they obviously cannot cite the journal. Impact factors, then, are of little value to special librarians" (Scanlan, 1987, p. 65).

Because respondents did not use international journals very often, we will check if Scanlan's hypothesis holds true for German-language LIS journals only. In order to assess practice orientation, we use self-assessments of the respondents. In particular, we draw upon the distinction between practitioners and scientists and membership in LIS associations. We assume that single membership in a library and information and documentation association shows a more practice-oriented approach whereas membership in an academic LIS association shows a stronger focus on research and teaching.

The results shown in Table 13 contradict Scanlan's claim because the correlation between reading frequency and impact factor is a little negative (−0.17) for scientists whereas it is strongly positive (+0.71) for practitioners. In other words, the more practitioners read a German-language journal, the higher its impact factor. The correlations depending on membership in LIS associations allow a slight differentiation. Accordingly, practitioners can be divided into librarians and documentalists. Membership in an academic LIS association can be considered a more restricted indicator for information scientists. Keeping this in mind, librarians (+0.76) are responsible for the strong positive correlation of the practitioners, whereas documentalists show a negative correlation (−0.34). If the narrower definition is applied to scientists, the relation between reading frequency and impact factor is even more negative (−0.59). It seems that German-speaking information professionals completely disprove Scanlan's hypothesis.

In order to analyze this paradoxical result, the journal rankings depending on membership in LIS associations (see Table 10) will be studied in more detail. The academic information science community in German-speaking countries has only one publication organ: the *Proceedings des Internationalen Symposiums fuer Informationswissenschaft (ISI)*. Because this periodical is hardly cited by librarians and documentalists, it has a very low impact. Another reason for the negative correlation is that information scientists read international journals (which are not considered among German-language journals) and journals top ranked by members of an information and documentation association as well. Because the documentalists are also a relatively small occupational group, though more numerous than information scientists, the journals in their occupational field also have low impact (*NfD. Information: Wissenschaft und Praxis*: 0.2, *Password*: 0.03). The situation is different for librarians, however, who have a sufficiently critical mass to edit several German-language librarian journals that attract a certain degree of demand.

It can be concluded that Scanlan's claims cannot be verified for the German-speaking LIS community because of two main reasons. The first one is the low international orientation and the "self-absorption" (with regard to journal usage) especially of librarians in German-language countries. The second main reason is that the practitioners, especially the librarians, are not only the most numerous occupational group of the German-language LIS community, they also publish often. However, the academic information science community cannot reach a significant impact because it is relatively small in German-speaking countries. The majority of journals used for publication (156) must be ascribed to practitioners. The respondents who declared themselves scientists published only in 51 journals. Hence it follows that Scanlan's assumption that practitioners do not publish does not apply to the respondents in this survey.

Acknowledgments

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