

Journal Futures: Changing Modes of Researcher Communication as the Internet Matures—Results of a New Global Study

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For more than 400 years, journals have fulfilled four basic functions for the scientific community: registration, dissemination, archiving, and certification. The same key factors—human ego and vanity—have motivated the recording, dissemination, collection, and preserving of information and have encouraged people to impart knowledge and discoveries. The same criticisms—too many periodicals and information overload—were recorded as early as 1789. Journal numbers have risen steadily by about 3.46% a year since the early 18th century. Today, according to *Ulrich's Periodicals Directory*, there are about 21,000 active refereed learned journals. The growth reflects the growing number of research workers.

With so many journals in publication and the Internet entering its adolescence, it was time to learn what researchers thought of the state of scientific literature. A global study, conducted by Elsevier in partnership with the Centre for Information Behaviour and the Evaluation of Research (CIBER) and National Opinion Polls, examined the behavior and attitudes of researchers. The

objective was to understand how researchers' motivations and behaviors have been affected as Internet use reaches early maturity. Some 6344 researchers completed the online survey, and 70 participated in followup telephone interviews. Key findings are presented here.

Publishing motivations remain the same: dissemination of results, advancing one's career, securing funding, receiving recognition, and establishing precedence. However, recognition and precedence have become much more important, perhaps because of the huge amounts of data on the Web.

Researchers showed ambivalence toward funding bodies: 63% thought they had too much power, but only 23% felt they dictated where research is published.

Most respondents (70%) disagreed that it is better to publish many papers—quality is as important as quantity. Numbers of papers per author have declined since the 1950s as collaboration has increased. Younger researchers tend to publish in niche journals, and this allows them to communicate with their peers. Publication in prestigious general journals is more important later, when researchers may seek tenure and advancement. After tenure is attained, publishing in niche journals tends to resume.

Peer review was overwhelmingly supported. Only 4% of respondents thought refereed journals were not required; 82% agreed that peer review improved quality; and 85% were willing to review some papers, although time is an issue (40% stated that they cannot review manuscripts as thoroughly as they would like). New proposed forms of peer review, such as continuous review, posed concerns, for example, that the final version not be altered and remain citable and that review-

ing be limited to qualified people.

Most respondents (60%) indicated that publishers added value, but 17% overall and significantly more in computer sciences (26%) and mathematics (22%) did not agree with this premise. Most felt that informal channels of communication—such as e-mail, meetings, and discussions—were still important.

Reading behavior is slowly changing: 22% prefer to read from home. Electronic versions have not yet taken over; most respondents disagreed that an article will be read only if available electronically. Junior authors (49%) were much more likely to depend on electronic articles.

There was strong support for the publication of supplementary data: 75% wanted to access it, but only 52% wanted to share their own (fewer in life sciences and medicine). Stated concerns were misinterpretation and competition.

There was evidence of high demand for articles published more than 10 years ago. Many researchers were referring to papers 40 or 50 years old.

Overall awareness of repositories was low (60%). Aspects viewed positively included free and ready access, elevation of the profile of an institution, and free exchange of information. Concerns included credit, funding, longevity of access, and quality control.

In the future, some behaviors will change. Researchers will use technology more for around-the-clock electronic access, quicker and more efficient identification of research, global collaboration, and more efficient peer review. However, unless mechanisms driving researchers' motivations change, the fundamentals will remain the same: registration, dissemination, archiving, and certification. 