

1st ed. 2019, Approx. 850 p.

Printed book

Hardcover

Ca. 329,99 € | Ca. £279.99 | Ca. \$399.99

[1]Ca. 353,09 € (D) | Ca. 362,99 € (A) | Ca. CHF 363,00

eBook

Available from your library or springer.com/shop



W. Glänzel, H.F. Moed, U. Schmoch, M. Thelwall (Eds.)

Springer Handbook of Science and Technology Indicators

Series: Springer Handbooks

- Includes state-of the-art descriptions of the wide variety of indicators and methods used for research and innovation assessment
- Represents a timely and up-to-date reference, taking into account recent technological developments and their impact on the field of science and technology studies
- Offers an invaluable resource for practitioners, scientists and policy makers alike

This handbook presents the state of the art of quantitative methods and models to understand and assess the science and technology system. Focusing on various aspects of the development and application of indicators derived from data on scholarly publications, patents and electronic communications, the individual chapters, written by leading experts, discuss theoretical and methodological issues, illustrate applications, highlight their policy context and relevance, and point to future research directions. A substantial portion of the book is dedicated to detailed descriptions and analyses of data sources, presenting both traditional and advanced approaches. It addresses the main bibliographic metrics and indexes, such as the journal impact factor and the h-index, as well as altmetric and webometric indicators and science mapping techniques on different levels of aggregation and in the context of their value for the assessment of research performance as well as their impact on research policy and society. It also presents and critically discusses various national research evaluation systems. Complementing the sections reflecting on the science system, the technology section includes multiple chapters that explain different aspects of patent statistics, patent classification and database search methods to retrieve patent-related information. In addition, it examines the relevance of trademarks and standards as additional technological indicators.

Lifelong 40% discount for authors



Order online at springer.com / or for the Americas call (toll free) 1-800-SPRINGER / or email us at: customerservice@springernature.com. / For outside the Americas call +49 (0) 6221-345-4301 / or email us at: customerservice@springernature.com.

The first \in price and the £ and \$ price are net prices, subject to local VAT. Prices indicated with [1] include VAT for books; the \in (D) includes 7% for Germany, the \in (A) includes 10% for Austria. Prices indicated with [2] include VAT for electronic products; 19% for Germany, 20% for Austria. All prices exclusive of carriage charges. Prices and other details are subject to change without notice. All errors and omissions excepted. [3] No discount for MyCopy.



Springer Handbook of Science and Technology Indicators – Table of Contents

W. Glänzel, H.F. Moed, U. Schmoch, M. Thelwall: Editors' Introduction

PART A: Analysis of Data Sources and Network Analysis

- V. Larivière, C.R. Sugimoto: The Journal Impact Factor: A brief history, critique, and discussion of adverse effects
- 2. M. Zitt, A. Lelu, M. Cadot, G. Cabanac: Bibliometric delineation of scientific fields
- 3. R. Rousseau, I. Zhang, X. Hu: Knowledge Integration: Its meaning and measurement
- 4. E. Delgado López-Cózar, E. Orduna-Malea, A. Martín-Martín: Google Scholar as a data source for research assessment
- 5. D. Torres-Salinas, N. Robinson-García, H.F. Moed: Disentangling open access
- 6. K. Borner, S. Milojević: Science Forecasts: Modeling and communicating developments in science, techn. and innovation
- 7. M.J. Cobo Martín, J. A. Moral-Muñoz, A. G. López-Herrera, E. Herrera-Viedma: Science mapping analysis software tools
- 8. K. Boyack, R. Klavans: Creation and analysis of large-scale bibliometric networks
- 9. B. Thijs: Science mapping and the identification of topics: Theoretical and methodological considerations

PART B: Advancement of Methodology for Research Assessment

- 10. A. van Raan: Measuring science: Basic principles and application of advanced bibliometrics
- 11. L. Waltman, N.J. van Eck: Field normalization of scientometric indicators
- 12. A. Schubert, G. Schubert: All along the h-index-related literature: A guided tour
- 13. W. Glänzel, B. Thijs, K. Debackere: Citation classes: A distribution-based approach for evaluative purposes
- 14. L. Wildgaard: An overview of author-level indicators of research performance
- 15. M. Lenzerini, C. Daraio: Challenges, approaches and solutions in data integration for research and innovation
- 16. L. Leydesdorff, I. Ivanova, M. Meyer: Synergy in innovation systems: Redundancy in the triple helix of university-industry-government relations

PART C: Science Systems and Research Policy

- 17. K. Debackere, W. Glänzel, B. Thijs: Scientometrics shaping science policy, science policy shaping scientometrics: Experience from the ECOOM case
- 18. S. Hinze, L. Butler, P. Donner: Different processes, similar results? A comparison of performance monitoring in the UK, Australia and Germany
- 19. J. Leta, R. das Neves Machado, R.M. Lovón Canchumani: Scientific collaboration among BRICS: Trends and priority areas
- 20. Z. Ma: The relevance of national journals from a Chinese perspective
- 21. G. Halevi: Bibliometric studies on gender disparities in science
- 22. E. Pallari, G. Lewison, I. McAllister: How biomedical research can inform both clinicians and the general public
- 23. L. Bornmann: Societal impact measurement of research papers
- 24. C. Daraio: Econometric approaches to the measurement of research productivity
- 25. G. Sievertsen: Developing Current Research Information Systems (CRIS) as data sources for studies of research

PART D: New Indicators for Research Assessment

- 26. P. Wouters, Z. Zahedi, R. Costas: Social media metrics for new research evaluation
- 27. A. Zuccala, N. Robinson-García: Reviewing, indicating, and counting books for modern research evaluation systems
- 28. S. Haustein: Scholarly Twitter metrics
- 29. E. Mohammadi, M. Thelwall: Readership data and research impact
- 30. J. Bar-llan: Data collection from the Web for informetric purposes
- 31. K. Kousha: Web citation indicators for wider impact assessment of articles
- 32. E.A. Henneken, M. Kurtz: Usag bibliometrics as a tool to measure research activity
- 33. M. Thelwall: Online indicators for non-standard academic outputs

PART E: Advancement of Methodology for Patent Analysis

- 34. C.K.-S. Leung, W. Lee, J.J. Song: Information technology-based patent retrieval methods
- 35. R. Frietsch, P. Neuhäusler: The role of patent attorney in the filing process
- 36. I. Gialampoukidis, A. Moumtzidou, S. Vrochidis, I. Kompatsiaris: Exploiting images for patent search
- 37. U. Schmoch, M. Khan: Methodological challenges for creating accurate patent indicators
- 38. B. van Looy, T. Magerman: Similarity of patents and publications
- 39. S. Ranaei, A. Suominen, A. Porter, T. Kässi: Application of text-analytics in quantitative study of science and technology
- 40. A. Bonaccorsi, G. Fantoni, R. Apreda, D. Gabelloni: Functional patent classification

PART F: Patent System, Patents and Economics

- 41. P. Neuhäusler, R. Frietsch: Computer-implemented inventions in Europe
- 42. S. Mendonça, U. Schmoch, P. Neuhäusler: Interplay of patents and trademarks as tools in economic competition
- 43. C.-Y. Wong, H.-N. Fung: Post catch-up science and techn. trajectories: Publish. and patenting activities of China and Korea
- 44. K. Blind: Standardization and standards as science and innovation indicators