COMPLEMENTARY MATERIAL TO MANUSCRIPT:

Mapping Citation Patterns of Book Chapters in the Book Citation Index.

Daniel Torres-Salinas[a], Rosa Rodríguez-Sánchez[b], Nicolás Robinson-García[c], J. Fdez-Valdivia[b], J. A. García[b]

[a]*EC3: Evaluación de la Ciencia y la Comunicación Científica, Centro de Investigación. Médica Aplicada, Universidad de Navarra, Pamplona, Spain. Email address: torressalinas@gmail.com*

[b]*Departamento de Ciencias de la Computación e I. A., CITIC-UGR, Universidad de Granada, Granada, Spain. Email address: rosa@decsai.ugr.es; jfv@decsai.ugr.es; jags@decsai.ugr.es*

[c]*EC3: Evaluación de la Ciencia y la Comunicación Científica, Universidad de Granada, Granada, Spain. Email address: elrobin@ugr.es*

---

1. Complementary material to section '*2. Data source and processing*'. Configuration of disciplines

The 249 Web of Science subject categories, to which records from Book Citation Index are assigned, were restructured into four categories. Table 1 show an example of the subject categories assigned to 'Arts & Humanities'

Table 1. Web of Science subject categories assigned to 'Arts & Humanities'

Subject Category	Subject Category
Archaeology	Literature
Architecture	Literature, African, Australian, Canadian
Art	Literature, American
Asian Studies	Literature, British Isles
Classics	Literature, German, Dutch, Scandinavian
Cultural Studies	Literature, Romance
Dance	Literature, Slavic
Demography	Medieval & Renaissance Studies
Ethics	Music
Ethnic Studies	Philosophy
Folklore	Poetry
History	Religion
History & Philosophy Of Science	Theater
Humanities, Multidisciplinary	
Language & Linguistics	
Law	
Linguistics	
Literary Theory & Criticism	

Table 2. Web of Science subject categories assigned to 'Engineering & Technology'

Subject Category	Subject Category
Automation & Control Systems	Engineering, Petroleum
Computer Science, Artificial Intelligence	Ergonomics
Computer Science, Cybernetics	Imaging Science & Photographic
Computer Science, Hardware & Architecture	Materials Science, Biomaterials
Computer Science, Information Systems	Materials Science, Ceramics
Computer Science, Interdisciplinary Applications	Materials Science, Characterization &
Computer Science, Software Engineering	Materials Science, Coatings & Films
Computer Science, Theory & Methods	Materials Science, Composites
Construction & Building Technology	Materials Science, Multidisciplinary
Energy & Fuels	Materials Science, Paper & Wood
Engineering, Aerospace	Materials Science, Textiles
Engineering, Biomedical	Medical Informatics
Engineering, Chemical	Medical Laboratory Technology
Engineering, Civil	Metallurgy & Metallurgical Engineering
Engineering, Electrical & Electronic	Mining & Mineral Processing
Engineering, Environmental	Nanoscience & Nanotechnology
Engineering, Geological	Nuclear Science & Technology
Engineering, Industrial	Remote Sensing
Engineering, Manufacturing	Robotics
Engineering, Marine	Soil Science
Engineering, Mechanical	Telecommunications
Engineering, Multidisciplinary	Transportation
Engineering, Ocean	Transportation Science & Technology

Table 3. Web of Science subject categories assigned to 'Social Sciences'

Subject Category	Subject Category
Anthropology	Management
Area Studies	Medicine, Legal
Business	Nursing
Business, Finance	Planning & Development
Communication	Political Science
Criminology & Penology	Psychology, Educational
Economics	Psychology, Psychoanalysis
Education & Educational Research	Psychology, Social
Education, Scientific Disciplines	Public Administration
Education, Special	Social Issues
Family Studies	Social Sciences, Biomedical
Film, Radio, Television	Social Sciences, Interdisciplinary
Geography	Social Sciences, Mathematical Methods
Health Care Sciences & Services	Social Work
Health Policy & Services	Sociology
History Of Social Sciences	Sport Sciences
Hospitality, Leisure, Sport & Tourism	Substance Abuse
Industrial Relations & Labor	Urban Studies
Information Science & Library Science	Women's Studies
International Relations	

Table 4. Web of Science subject categories assigned to 'Science'

Subject Category	Subject Category
Acoustics	Mechanics
Agricultural Economics & Policy	Medicine, General & Internal
Agricultural Engineering	Medicine, Research & Experimental
Agriculture, Dairy & Animal Science	Meteorology & Atmospheric Sciences
Agriculture, Multidisciplinary	Microbiology
Agronomy	Microscopy
Allergy	Mineralogy
Anatomy & Morphology	Multidisciplinary Sciences
Andrology	Mycology
Anesthesiology	Neuroimaging
Astronomy & Astrophysics	Neurosciences
Audiology & Speech-Language Pathology	Nutrition & Dietetics
Behavioral Sciences	Obstetrics & Gynecology
Biochemical Research Methods	Oceanography
Biochemistry & Molecular Biology	Oncology
Biodiversity Conservation	Operations Research & Management Science
Biology	Ophthalmology
Biophysics	Optics
Biotechnology & Applied Microbiology	Ornithology
Cardiac & Cardiovascular Systems	Orthopedics

Cell & Tissue Engineering

Cell Biology

Chemistry, Analytical

Chemistry, Applied

Chemistry, Inorganic & Nuclear

Chemistry, Medicinal

Chemistry, Multidisciplinary

Chemistry, Organic

Chemistry, Physical

Clinical Neurology

Critical Care Medicine

Crystallography

Dentistry, Oral Surgery & Medicine

Dermatology

Developmental Biology

Ecology

Electrochemistry

Emergency Medicine

Endocrinology & Metabolism

Entomology

Environmental Sciences

Environmental Studies

Evolutionary Biology

Fisheries

Food Science & Technology

Forestry

Gastroenterology & Hepatology

Genetics & Heredity

Geochemistry & Geophysics

Geography, Physical

Geology

Geosciences, Multidisciplinary

Geriatrics & Gerontology

Gerontology

Hematology

Horticulture

Immunology

Infectious Diseases

Instruments & Instrumentation

Integrative & Complementary Medicine

Limnology

Marine & Freshwater Biology

Mathematical & Computational Biology

Mathematics

Mathematics, Applied

Mathematics, Interdisciplinary Applications

Otorhinolaryngology

Paleontology

Parasitology

Pathology

Pediatrics

Peripheral Vascular Disease

Pharmacology & Pharmacy

Physics, Applied

Physics, Atomic, Molecular & Chemical

Physics, Condensed Matter

Physics, Fluids & Plasmas

Physics, Mathematical

Physics, Multidisciplinary

Physics, Nuclear

Physics, Particles & Fields

Physiology

Plant Sciences

Polymer Science

Primary Health Care

Psychiatry

Psychology

Psychology, Applied

Psychology, Biological

Psychology, Clinical

Psychology, Developmental

Psychology, Experimental

Psychology, Mathematical

Psychology, Multidisciplinary

Public, Environmental & Occupational Health

Radiology, Nuclear Medicine & Medical Imaging

Rehabilitation

Reproductive Biology

Respiratory System

Rheumatology

Spectroscopy

Statistics & Probability

Surgery

Thermodynamics

Toxicology

Transplantation

Tropical Medicine

Urology & Nephrology

Veterinary Sciences

Virology

Water Resources

Zoology

**2. Complementary material to section '*4.1. General description of the databas*e'.
Basic characterization of the Book Citation Index.**

Table 5. Total Books and Book Chapters indexed in the Book Citation Index per year. Period 2005-2011

Number of records	2005	2006	2007	2008	2009	2010	2011	Total
Books	1870	2722	3529	3965	5691	5721	5307	28805
Book Chapters	24267	33985	45123	51036	73956	73637	65612	367616
Total	**26137**	**36707**	**48652**	**55001**	**79647**	**79358**	**70919**	**396421**

Only records with Web of Science category assigned were included in the study. Records with no Web of Science assigned are 9995 are around 2% of the Book Citation Index Database

Table 6. Number of Book Chapters per country taking into account publisher's origin.

Country	Nr Book Chapters	% Book Chapters	Country	Nr Book Chapters	% Book Chapters
ENGLAND	**138932**	37,79%	SCOTLAND	**810**	0,22%
UNITED STATES	**135062**	36,74%	FINLAND	**572**	0,16%
GERMANY	**50990**	13,87%	ITALY	**572**	0,16%
NETHERLANDS	**24418**	6,64%	JAPAN	**305**	0,08%
SWITZERLAND	**4889**	1,33%	POLAND	**184**	0,05%
AUSTRIA	**3376**	0,92%	MEXICO	**137**	0,04%
CANADA	**2284**	0,62%	PEOPLES R CHINA	**119**	0,03%
SINGAPORE	**1868**	0,51%	INDIA	**108**	0,03%
AUSTRALIA	**1318**	0,36%	HUNGARY	**106**	0,03%
FRANCE	**847**	0,23%	---	**---**	---

Note: We consider in this table countries we at least 100 Book Chapters Indexed

Table 7. Main Publishers in the Book Citation according number of book chapters indexed

Publisher and country	Nr of Book Chapter	Publisher and country	Nr of Book Chapter
SPRINGER (Netherlands)	100487	ROYAL SOC CHEMISTRY (England)	2547
PALGRAVE (England)	44658	AUSTRALIAN NATL UNIV (Australia)	2435
ROUTLEDGE (England)	41494	IOS PRESS (Netherlards)	2434
NOVA SCIENCE PUBLISHERS, INC (United States)	14153	CHANDOS PUBL (England)	2092
WALTER DE GRUYTER & CO (Germany)	13429	UNIV NORTH CAROLINA PRESS (United States)	1980
CAMBRIDGE UNIV PRESS (England)	11994	AMER SOC MICROBIOLOGY (United States)	1915
HUMANA PRESS INC (United States)	10771	E J BRILL (Netherlands)	1839
EDWARD ELGAR PUBLISHING LTD (England)	7955	EDITIONS RODOPI B V (Netherlands)	1628
ELSEVIER (Netherlands)	7907	GEOLOGICAL SOC PUB.HOUSE (United States)	1586
PRINCETON UNIV PRESS (United States)	7762	ARTECH HOUSE (United States)	1492
UNIV CALIFORNIA PRESS (United States)	6441	KARGER (Switzerland)	1449
CRC PRESS-TAYLOR & FRANCIS G. (United States)	5694	BIRKHAUSER VERLAG AG (Switzerland)	1448
WOODHEAD PUBL LTD (England)	5391	WILFRID LAURIER UNIV PRESS (Canada)	1447
ANNUAL REVIEWS (United States)	5326	INTELLECT LTD (England)	1385
EMERALD GROUP PUBLISHING LIMITED (England)	4137	PSYCHOLOGY PRESS (England)	1291
BLACKWELL SCIENCE PUBL (England)	4100	TAYLOR & FRANCIS LTD (England)	1286
CABI PUBLISHING-C A B INT (England)	4010	TRANS TECH PUBLICATIONS LTD (Switzerland)	1229
UNIV PENNSYLVANIA PRESS (United States)	3981	WORLD SCIENTIFIC PUBL CO PTE LTD (Singapore)	1223
INFORMATION AGE PUBL.(United States)	3596	GEOLOGICAL SOC AMER INC (United Stated)	1174
M I T PRESS (United States)	2719	SIAM (United States)	1076

Note: We consider in this table publishers we at least 1000 Book Chapters Indexed

3. Complementary material to section *'4.2. Histograms and calculation of information gain'* and section *'5. Discussion'*. Coefficients C & alfa and Goodness of fit of Lotka´s Law .

Table 8. Fit of Lotka´s Law in the four disciplines.

ARTS & HUMANITIES	ENGINEERING & TECHNOLOGY

General model:
$$f(x) = C/x^{\alpha}$$
 	
Coefficients (with 95% confidence bounds):
  - $C = 0.05067$ (0.05061, 0.05073)
  - $\alpha = 1.89$ (1.885, 1.894)
 	
Goodness of fit:
  - **SSE**: 3.363e-06
  - **R-square**: 0.9988
  - **Adjusted R-square**: 0.9988
  - **RMSE**: 3.165e-05
	General model:
	$$f(x) = C/x^{\alpha}$$
	
	Coefficients (with 95% confidence bounds):
	  - $C = 0.07966$ (0.07953, 0.07979)
	  - $\alpha = 1.652$ (1.647, 1.656)
	
	Goodness of fit:
	  - **SSE**: 1.454e-05
	  - **R-square**: 0.998
	  - **Adjusted R-square**: 0.998
	  - **RMSE**: 6.581e-05

SCIENCE	SOCIAL SCIENCE

General model:
$$f(x) = C/x^{\alpha}$$
 	
Coefficients (with 95% confidence bounds):
  - $C = 0.08922$ (0.08902, 0.08941)
  - $\alpha = 1.279$ (1.275, 1.282)
 	
Goodness of fit:
  - **SSE**: 3.496e-05
  - **R-square**: 0.9967
  - **Adjusted R-square**: 0.9967
  - **RMSE**: 0.000102
	General model:
	$$f(x) = C/x^{\alpha}$$
	
	Coefficients (with 95% confidence bounds):
	  - $C = 0.06972$ (0.06959, 0.06985)
	  - $\alpha = 1.66$ (1.655, 1.665)
	
	Goodness of fit:
	  - **SSE**: 1.52e-05
	  - **R-square**: 0.9973
	  - **Adjusted R-square**: 0.9973
	  - **RMSE**: 6.728e-05

SSE: sum of squares due to error **R-square**: coefficient of determination **adjustedR-square**: degree of freedom adjusted R-square **RMSE**: Root mean squared error (standard error)	

4. Complementary material for section '*4.3. Comparing publishers Information Gain using Heliocentric Clockwise Maps* (Figures 4, 5, 6 and 7)'.
Data used in Heliocentric Clockwise Maps

Table 9. Data for Figure 4. Heliocentric Clockwise Map representing the Information Gain for top academic publishers in Arts & Humanities in the Book Citation Index. Period 2005-2011.

PUBLISHER	NR OF BOOKS CHAPTERS	TOTAL CITES	CITATION AVERAGE	INFORMATION GAIN
PALGRAVE	22444	2587	0.12	0.077
ROUTLEDGE	14222	1483	0.10	0.159
WALTER DE GRUYTER & CO	11757	2301	0.20	0.202
SPRINGER	10528	3176	0.30	0.247
CAMBRIDGE UNIV PRESS	6219	2068	0.33	0.457
PRINCETON UNIV PRESS	3964	349	0.09	0.671
UNIV CALIFORNIA PRESS	3251	185	0.06	0.826
UNIV PENNSYLVANIA PRESS	2966	439	0.15	0.854
UNIV NORTH CAROLINA PRESS	1682	98	0.06	1.334
EDWARD ELGAR PUBLISHING LTD	1603	258	0.16	1.355
EDITIONS RODOPI B V	1497	195	0.13	1.425
E J BRILL	1447	27	0.02	1.517
AUSTRALIAN NATL UNIV	1284	283	0.22	1.586
MANEY PUBLISHING	906	47	0.05	1.946
M I T PRESS	874	398	0.46	1.983
WILFRID LAURIER UNIV PRESS	867	136	0.16	1.972
INTELLECT LTD	578	54	0.09	2.439
EDINBURGH UNIV PRESS	546	13	0.02	2.529
UTAH STATE UNIV PRESS	540	38	0.07	2.514
PURDUE UNIV PRESS	497	66	0.13	2.608

Table 10. Data for Figure 5. Heliocentric Clockwise Map representing the Information Gain for top academic publishers in Science in the Book Citation Index. Period 2005-2011.

PUBLISHER	NR OF BOOKS CHAPTERS	TOTAL CITES	CITATION AVERAGE	INFORMATION GAIN
SPRINGER	54542	59787	1.10	0.067
HUMANA PRESS INC	10560	9108	0.86	0.325
NOVA SCIENCE PUBLISHERS. INC	9764	1039	0.11	0.644
ELSEVIER	7376	66897	9.07	1.328
ROUTLEDGE	3850	577	0.15	0.941
CAMBRIDGE UNIV PRESS	3272	13886	4.24	0.791
CRC PRESS-TAYLOR & FRANCIS GROUP	3234	4080	1.26	0.821
CABI PUBLISHING-C A B INT	3074	3691	1.20	0.855
BLACKWELL SCIENCE PUBL	2670	4199	1.57	0.932
ROYAL SOC CHEMISTRY	2255	2002	0.89	1.067
AMER SOC MICROBIOLOGY	1915	3256	1.70	1.249
WOODHEAD PUBL LTD	1887	1299	0.69	1.224
GEOLOGICAL SOC PUBLISHING HOUSE	1525	5938	3.89	2.086
PALGRAVE	1475	247	0.17	1.542
KARGER	1413	2429	1.72	1.525
UNIV CALIFORNIA PRESS	1275	1265	0.99	1.571
PRINCETON UNIV PRESS	1224	77	0.06	2.024
BIRKHAUSER VERLAG AG	1197	809	0.68	1.627
GEOLOGICAL SOC AMER INC	1105	4420	4.00	2.349

Table 11. Data for Figure 6. Heliocentric Clockwise Map representing the Information Gain for top academic publishers in Social Science in the Book Citation Index. Period 2005-2011.

PUBLISHER	NR OF BOOKS CHAPTERS	TOTAL CITES	CITATION AVERAGE	INFORMATION GAIN
ROUTLEDGE	29849	6198	0.21	0.062
PALGRAVE	27531	5220	0.19	0.073
SPRINGER	20657	8952	0.43	0.119
EDWARD ELGAR PUBLISHING LTD	6997	2000	0.29	0.411
PRINCETON UNIV PRESS	4347	1216	0.28	0.697
EMERALD GROUP PUBLISHING LIMITED	3912	2657	0.68	0.827
INFORMATION AGE PUBLISHING-IAP	3420	1064	0.31	0.802
CAMBRIDGE UNIV PRESS	3132	2337	0.75	0.916
UNIV CALIFORNIA PRESS	2731	359	0.13	1.019
NOVA SCIENCE PUBLISHERS. INC	2488	164	0.07	1.090
WALTER DE GRUYTER & CO	2161	488	0.23	1.149
UNIV PENNSYLVANIA PRESS	1797	586	0.33	1.308
CHANDOS PUBL	1742	161	0.09	1.395
AUSTRALIAN NATL UNIV	1542	403	0.26	1.446
IOS PRESS	1459	457	0.31	1.505
M I T PRESS	1214	1027	0.85	1.749
CABI PUBLISHING-C A B INT	1181	775	0.66	1.810
INTELLECT LTD	1012	174	0.17	1.868
CRC PRESS-TAYLOR & FRANCIS GROUP	882	188	0.21	2.020
TAYLOR & FRANCIS LTD	800	126	0.16	2.120

Table 12. Data for Figure 7. Heliocentric Clockwise Map representing the Information Gain for top academic publishers Engineering & Technology in the Book Citation Index. Period 2005-2011.

| PUBLISHER	NR OF BOOKS CHAPTERS	TOTAL CITES	CITATION AVERAGE	INFORMATION GAIN
SPRINGER	28471	12140	0.43	0.014
WOODHEAD PUBL LTD	3551	1279	0.36	0.596
CRC PRESS-TAYLOR & FRANCIS GROUP	2696	1282	0.48	0.774
NOVA SCIENCE PUBLISHERS. INC	2670	283	0.11	0.822
ARTECH HOUSE	1319	252	0.19	1.402
TRANS TECH PUBLICATIONS LTD	1229	741	0.60	1.481
IOS PRESS	1189	707	0.59	1.462
BLACKWELL SCIENCE PUBL	964	829	0.86	1.685
ROYAL SOC CHEMISTRY	600	703	1.17	2.165
CHAPMAN & HALL/CRC PRESS	392	465	1.19	2.660
CAMBRIDGE UNIV PRESS	353	269	0.76	2.830
ELSEVIER	330	1571	4.76	3.504
ASTM INTERNATIONAL	328	18	0.05	2.896
WORLD SCIENTIFIC PUBL CO PTE LTD	313	136	0.43	2.926
PAN STANFORD PUBLISHING PTE LTD	307	63	0.21	2.898
BIRKHAUSER BOSTON	282	254	0.90	3.057
SIAM	268	284	1.06	3.167
M E SHARPE INC	237	163	0.69	3.309
WIT PRESS	236	72	0.31	3.219

5. Complementary material for section '*4.3. Comparing publishers Information Gain using Heliocentric Clockwise Maps*' considering the inclusion of Annual Reviews. Only figures which would be modified are included

Figure 1. Heliocentric Clockwise Map representing the Information Gain for top academic publishers in Science in the Book Citation Index. Period 2005-2011.
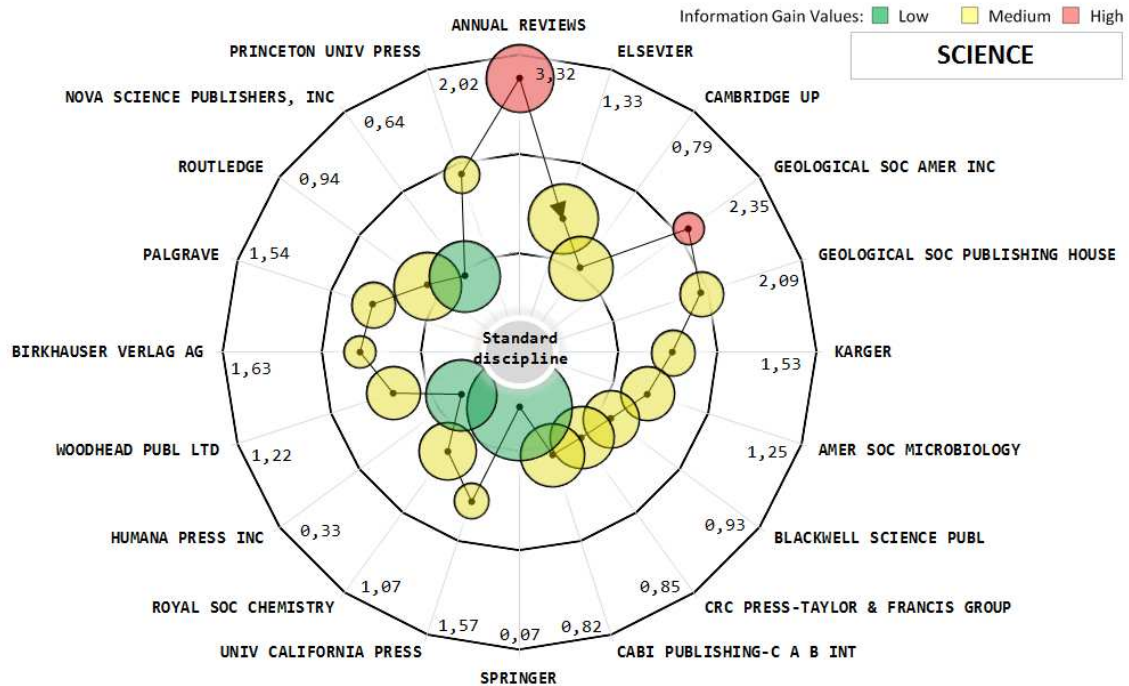
Note: Citation average values ranged from 60.18 (ANNUAL REVIEWS) to 0.06 (PRINCETON UNIVERSITY PRESS) | Volume values ranged from 54 542 (SPRINGER) to 1 197 (BIRKHAUSER VERLAG AG). Colors representing the Information Gain Values are introduced to aid the reader on the interpretation of the map.

Figure 2. Heliocentric Clockwise Map representing the Information Gain for top academic publishers in Engineering & Technology in the Book Citation Index. Period 2005-2011.
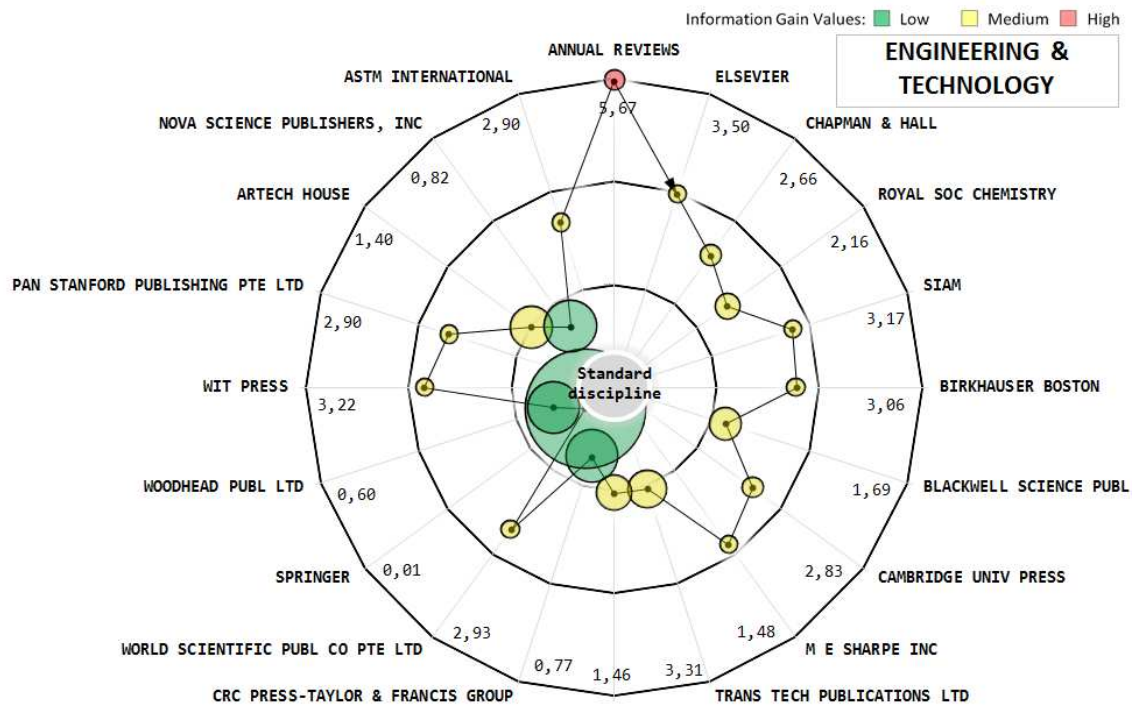
Note: Citation average values ranged from 33.95 (ANNUAL REVIEWS) to 0.05 (ASTM INTERNACIONAL) | Volume values ranged from 28 471 (SPRINGER) to 236 (WIT PRESS). Colors representing the Information Gain Values are introduced to aid the reader on the interpretation of the map.