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| **Article**  **Bibliometrics of Vietnam Publications in the Science Citation Index: general trends and comparison with other tropical countries**  **Authors**  Nguyễn Thị Nha Trang1, Julián Monge-Nájera2 & Yuh-Shan Ho3\*   1. Department of Biotechnology, College of Health Science, Asia University, No. 500 Lioufeng Road, Wufeng, Taichung 41354, Taiwan; nhatrangnguyen113@gmail.com 2. Laboratorio de Ecología Urbana, Vicerrectoría de Investigación, Universidad Estatal a Distancia, 2050 San José, Costa Rica; [julianmonge@gmail.com](mailto:julianmonge@gmail.com) 3. Trend Research Centre, Asia University, No. 500 Lioufeng Road, Wufeng, Taichung 41354, Taiwan; ysho@asia.edu.tw   \*Correspondence |

**Digital Appendix 1**

**Nomenclature and Additional Tables**

**Countries with changing status or names**

Articles from England, Scotland, Northern Ireland, and Wales were marked as United Kingdom. Affiliations in Hong Kong prior to 1997 were included under China. Affiliations in the Union of Soviet Socialist Republics were marked as Russia or Belarus depending on their origin. Affiliations in Czechoslovakia were checked and re-categorized as in Czech Republic. Affiliations in the Neth Antilles (Netherlands Antilles) were marked as being from the Netherlands. Affiliations in Fr Polynesia (French Polynesia), French Guiana, New Caledonia, and Reunion were re-categorized as France. Affiliations in Rep Congo were marked as Congo (Republic of the Congo. Affiliations in Zaire were re-categorized as Dem Rep Congo (The Democratic Republic of the Congo). Affiliations in Greenland were marked as Denmark. Affiliations in Puerto Rico were marked as USA. Affiliations in United Ara and United Arab were re-categorized as U Arab Emirates (United Arab Emirates).v Acad Sci USSR and USSR Acad Sci (USSR Academy of Sciences) were marked as Russian Acad Sci (Russian Academy of Sciences).

TABLE 3

Top ten most productive journals

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Journals | *TP* (%) | *IF*2018 | Web of Science category | *TC*2018 | *CPP*2018 |
| PLoS One | 393 (1.3) | 2.776 | Multidisciplinary sciences | 5 054 | 13 |
| Zootaxa | 265 (0.85) | 0.990 | Zoology | 1 798 | 6.8 |
| Journal of Magnetism and Magnetic Materials | 202 (0.65) | 2.683 | Multidisciplinary materials science  Condensed matter physics | 2 320 | 11 |
| Journal of Electronic Materials | 194 (0.62) | 1.676 | Electrical and electronic engineering  Multidisciplinary materials science  Applied physics | 346 | 1.8 |
| Advances in Natural Sciences-Nanoscience and Nanotechnology | 172 (0.55) | N/A | Nanoscience and nanotechnology  Multidisciplinary materials science  Applied physics | 796 | 4.6 |
| Journal of Mathematical Analysis and Applications | 164 (0.53) | 1.188 | Applied mathematics  Mathematics | 1 381 | 8.4 |
| Journal of the Korean Physical Society | 163 (0.52) | 0.630 | Multidisciplinary physics | 692 | 4.2 |
| Journal of Optimization Theory and Applications | 158 (0.51) | 1.600 | Operations research and management science  Applied mathematics | 1 824 | 12 |
| Journal of High Energy Physics | 155 (0.5) | 5.833 | Particles and fields physics | 2 661 | 17 |
| Physical Review B | 148 (0.47) | 3.736 | Multidisciplinary materials science  Applied physics  Condensed matter physics | 2 679 | 18 |

*TP* (%): rank and the percentage of number of articles; *IF*2018: journal impact factor in 2018; *TC*2018: the total number of citations from Web of Science Core Collection since publication to the end of 2018; *CPP*2018: number of citations (*TC*2018) per publication (*TP*).

TABLE 4

14 most frequently collaborative countries with TP > 1 000

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Country | *TP* | *TP* *R* (%) | *FP* *R* (%) | *RP* *R* (%) | *CPP*2018 |
| USA | 3 949 | 1 (13) | 4 (4.6) | 4 (5.0) | 30 |
| Japan | 3 866 | 2 (12) | 1 (7.1) | 1 (7.6) | 18 |
| South Korea | 3 431 | 3 (11) | 2 (5.8) | 2 (7.0) | 17 |
| France | 3 343 | 4 (11) | 3 (4.8) | 3 (5.1) | 23 |
| United Kingdom | 2 565 | 5 (8.2) | 10 (1.9) | 10 (2.2) | 39 |
| Germany | 2 543 | 6 (8.1) | 6 (3.0) | 6 (3.1) | 27 |
| Australia | 2 430 | 7 (7.8) | 5 (3.3) | 5 (3.6) | 25 |
| China | 2 342 | 8 (7.5) | 7 (2.8) | 7 (2.5) | 30 |
| Netherlands | 1 503 | 9 (4.8) | 11 (1.9) | 11 (1.9) | 37 |
| Russia | 1 457 | 10 (4.7) | 12 (1.7) | 12 (1.8) | 28 |
| Thailand | 1 308 | 11 (4.2) | 14 (1.2) | 14 (1.2) | 32 |
| Taiwan | 1 296 | 12 (4.2) | 8 (2.2) | 8 (2.4) | 25 |
| Belgium | 1 253 | 13 (4.0) | 9 (1.9) | 9 (2.2) | 23 |
| Italy | 1 155 | 14 (3.7) | 16 (0.67) | 16 (0.77) | 40 |

*TP R* (%): total number of articles and rank; *FP R* (%): total number of first-author articles and rank; *RP R* (%): total number of corresponding-author articles and rank; *CPP*2018: citations per publication (*CPP*2018 = *TC*2018/*TP*).

TABLE 5

Top ten productive institutes

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Institute | *TP* | *TP R* (%) | *IP R* (%) | *CP R* (%) | *FP R* (%) | *RP R* (%) | *SP R* (%) | *CPP*2018 |
| Vietnam Academy of Science and Technology | 5 673 | 1 (18) | 1 (21) | 1 (18) | 1 (8) | 1 (7.6) | 1 (20) | 8.3 |
| Vietnam National University | 3 933 | 2 (13) | 2 (14) | 2 (12) | 2 (4.9) | 2 (4.7) | 2 (7.7) | 12 |
| Hanoi University of Science and Technology | 2 092 | 3 (6.7) | 4 (8.1) | 4 (6.5) | 5 (3.0) | 5 (2.9) | 6 (3.7) | 8.6 |
| Ton Duc Thang University | 2 023 | 4 (6.5) | 6 (3.1) | 3 (7.0) | 4 (3.1) | 3 (3.9) | 5 (4.3) | 4.9 |
| Vietnam National University Ho Chi Minh City | 1 999 | 5 (6.4) | 3 (11) | 5 (5.7) | 3 (3.3) | 4 (3.3) | 3 (6.9) | 8.5 |
| Duy Tan University | 1 038 | 6 (3.3) | 10 (1.1) | 6 (3.6) | 8 (0.95) | 8 (0.88) | 8 (1.7) | 9.9 |
| Hanoi National University of Education | 960 | 7 (3.1) | 5 (5.5) | 10 (2.7) | 6 (1.7) | 6 (1.6) | 4 (4.7) | 5.7 |
| Can Tho University | 869 | 8 (2.8) | 11 (1.0) | 7 (3.0) | 10 (0.78) | 10 (0.58) | 12 (1.3) | 11 |
| Hue University | 824 | 9 (2.6) | 7 (1.9) | 9 (2.7) | 9 (0.91) | 9 (0.77) | 7 (2.3) | 6.6 |
| Oxford University Clinical Research Unit | 782 | 10 (2.5) | 81 (0.077) | 8 (2.9) | 7 (1.0) | 7 (0.92) | 87 (0.10) | 58 |

*TP*: total number of articles; *TP R* (%): rank of total number of articles and percentage; *IP R* (%): rank of institute independent articles and percentage; *CP R* (%): rank of inter institutionally collaborative articles and percentage; *FP R* (%): rank of first-author articles and percentage; *RP R* (%): rank of corresponding-author articles and percentage; *SP R* (%): rank of single author articles and percentage; *CPP*2018: citations per publication (*CPP*2018 = *TC*2018/*TP*).

TABLE 6

Top ten collaborative institutions overseas

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Institute | *TP* | *TP R* (%) | *FP R* (%) | *RP R* (%) | *CPP*2018 |
| University of Oxford UK | 1 151 | 1 (3.7) | 24 (0.24) | 16 (0.30) | 52 |
| Russian Academy of Sciences Russia | 692 | 2 (2.2) | 1 (0.90) | 1 (0.93) | 28 |
| University of Liverpool UK | 516 | 3 (1.7) | 120 (0.080) | 115 (0.091) | 44 |
| Polish Academy of Sciences Poland | 515 | 4 (1.6) | 67 (0.12) | 44 (0.16) | 25 |
| University of Cambridge UK | 504 | 5 (1.6) | 206 (0.051) | 103 (0.094) | 46 |
| University of Edinburgh UK | 478 | 6 (1.5) | 299 (0.035) | 239 (0.049) | 50 |
| Heidelberg University Germany | 461 | 7 (1.5) | 831 (0.010) | 381 (0.029) | 63 |
| University of Bristol UK | 453 | 8 (1.5) | 155 (0.064) | 151 (0.071) | 44 |
| University of Genoa Italy | 449 | 9 (1.4) | 299 (0.035) | 326 (0.036) | 30 |
| University of Glasgow UK | 442 | 10 (1.4) | 274 (0.038) | 269 (0.042) | 31 |

*TP*: total number of articles; *TP R* (%): rank of total number of articles and percentage; *FP R*(%): rank of first-author articles and percentage; *RP R* (%): rank of corresponding-authorarticles and percentage; *CPP*2018: citations per publication (*CPP*2018 = *TC*2018/*TP*).

TABLE 7

The ten classic articles with TC2018 more then 1 000

|  |  |  |  |
| --- | --- | --- | --- |
| Rank  (*TC*2018) | Rank  (*C*2018) | Article titles | references |
| 1 (4 577) | 2 (777) | Comprehensive molecular portraits of human breast tumors | Koboldt et al. (2012) |
| 2 (2 742) | 7 (628) | The global distribution and burden of dengue | Bhatt et al. (2013) |
| 3 (2 719) | 3 (754) | Global regional and national age-sex specific all-cause and cause-specific mortality for 240 causes of death 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013 | Naghavi et al. (2015) |
| 4 (2 385) | 1 (1 116) | A global reference for human genetic variation | Altshuler et al. (2015) |
| 5 (1 934) | 6 (632) | Global regional and national incidence prevalence and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013 | Vos et al. (2015) |
| 6 (1 788) | 119 (38) | A novel coronavirus associated with severe acute respiratory syndrome | Ksiazek et al. (2003) |
| 7 (1 725) | 15 (275) | Comprehensive genomic characterization of squamous cell lung cancers | Hammerman et al. (2012) |
| 8 (1 174) | 4 (734) | Global regional and national life expectancy all-cause mortality and cause-specific mortality for 249 causes of death 1980-2015: a systematic analysis for the Global Burden of Disease Study 2015 | Wang et al. (2016) |
| 9 (1 121) | 17 (260) | Comprehensive molecular characterization of urothelial bladder carcinoma | Weinstein et al. (2014) |
| 10 (1 011) | 5 (700) | Global regional and national incidence prevalence and years lived with disability for 310 diseases and injuries 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015 | Vos et al. (2016) |

*TC*2018: the total number of citations from Web of Science Core Collection since publication to the end of 2018; *C*2018: number of citations in 2018.b

TABLE 8

Characteristics of language

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Language | *TP* | % | *AU* | *APP* | *TC*2018 | *CPP*2018 |
| English | 31017 | 99 | 510506 | 16 | 402392 | 13 |
| French | 94 | 0.30 | 363 | 3.9 | 261 | 2.8 |
| Russian | 64 | 0.21 | 218 | 3.4 | 170 | 2.7 |
| German | 19 | 0.061 | 87 | 4.6 | 58 | 3.1 |
| Chinese | 8 | 0.026 | 47 | 5.9 | 26 | 3.3 |
| Japanese | 5 | 0.016 | 31 | 6.2 | 4 | 0.80 |
| Czech | 2 | 0.0064 | 2 | 1.0 | 0 | 0 |
| Dutch | 2 | 0.0064 | 7 | 3.5 | 0 | 0 |
| Portuguese | 1 | 0.0032 | 5 | 5.0 | 4 | 4.0 |
| Korean | 1 | 0.0032 | 5 | 5.0 | 3 | 3.0 |
| Slovak | 1 | 0.0032 | 2 | 2.0 | 3 | 3.0 |
| Slovene | 1 | 0.0032 | 2 | 2.0 | 1 | 1.0 |
| English French | 1 | 0.0032 | 2 | 2.0 | 2 | 2.0 |

*TP*: number of publications; *AU*: number of authors; *APP*: number of authors per publication; *TC*2018: the total number of citations from Web of Science Core Collection since publication to the end of 2018; *CPP*2018: number of citations (*TC*2018) per publication (*TP*).

TABLE 9

Yearly distribution of articles authors pages and references for Vietnam

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Year | *TP* | *AU* | *AU*/*TP*\* | *NR* | *NR*/*TP* | *PG* | *PG*/*TP* |
| 1991 | 119 | 326 | 2.7 | 1 718 | 14 | 1 224 | 10 |
| 1992 | 146 | 454 | 3.1 | 2 373 | 16 | 1 366 | 9.4 |
| 1993 | 121 | 384 | 3.2 | 2 098 | 17 | 1 091 | 9.0 |
| 1994 | 127 | 429 | 3.4 | 2 143 | 17 | 1 199 | 9.4 |
| 1995 | 186 | 625 | 3.4 | 3 506 | 19 | 1 930 | 10 |
| 1996 | 208 | 788 | 3.8 | 3 846 | 18 | 1 582 | 7.6 |
| 1997 | 240 | 985 | 4.1 | 4 723 | 20 | 2 163 | 9.0 |
| 1998 | 226 | 1 025 | 4.5 | 4 637 | 21 | 1 967 | 8.7 |
| 1999 | 262 | 1 218 | 4.6 | 5 542 | 21 | 2 269 | 8.7 |
| 2000 | 316 | 1 382 | 4.4 | 7 228 | 23 | 3 058 | 10 |
| 2001 | 362 | 1 720 | 4.8 | 9 027 | 25 | 3 260 | 9.0 |
| 2002 | 351 | 1 778 | 5.1 | 8 388 | 24 | 3 390 | 10 |
| 2003 | 476 | 2 374 | 5.0 | 10 625 | 22 | 4 228 | 8.9 |
| 2004 | 441 | 2 721 | 6.2 | 11 033 | 25 | 4 514 | 10 |
| 2005 | 558 | 2 955 | 5.3 | 13 877 | 25 | 5 258 | 9.4 |
| 2006 | 637 | 3 542 | 5.6 | 16 201 | 25 | 5 861 | 9.2 |
| 2007 | 741 | 5 348 | 7.2 | 20 014 | 27 | 6 900 | 9.3 |
| 2008 | 920 | 6 560 | 7.1 | 24 421 | 27 | 8 466 | 9.2 |
| 2009 | 943 | 6 583 | 7.0 | 26 270 | 28 | 9 018 | 10 |
| 2010 | 1 194 | 9 688 | 8.1 | 36 128 | 30 | 11 742 | 10 |
| 2011 | 1 357 | 12 553 | 9.3 | 42 237 | 31 | 13 554 | 10 |
| 2012 | 1 711 | 35 293 | 21 | 54 373 | 32 | 17 371 | 10 |
| 2013 | 2 160 | 54 738 | 25 | 69 715 | 32 | 21 925 | 10 |
| 2014 | 2 439 | 60 020 | 25 | 82 847 | 34 | 26 507 | 11 |
| 2015 | 2 739 | 66 030 | 24 | 95 652 | 35 | 30 756 | 11 |
| 2016 | 3 312 | 63 967 | 19 | 124 386 | 38 | 38 115 | 12 |
| 2017 | 3 932 | 82 173 | 21 | 152 841 | 39 | 47 149 | 12 |
| 2018 | 4 992 | 85 618 | 17 | 203 165 | 41 | 60 534 | 12 |
| Total | 31 216 | 511 277 |  | 1 039 014 |  | 336 397 |  |
| Average |  |  | 16 |  | 33 |  | 11 |

*TP*: number of articles; *TP*\*: number of articles with author information; *AU*: number of authors; *NR*: number of cited reference; *PG*: page counts.