Scientometrics (2023) 128:5705–5729
https://doi.org/10.1007/s11192-023-04801-7

Beyond views, productivity, and citations: measuring geopolitical differences of scientific impact in communication research

János József Tóth[1,2] · Gergő Háló[1] · Manuel Goyanes[3]

Received: 19 January 2023 / Accepted: 20 July 2023 / Published online: 5 August 2023

Abstract

Scientometric analyses applying critical sociological frameworks have previously shown that high-prestige research output—with regards to both quantity and impact—is typically clustered in a few core countries and world regions, indicating uneven power relations and systematic biases within global academia. Although citation count is a common formula in these analyses, only a handful of studies investigated altmetrics (impact measures beyond citation-based metrics) in communication science. In this paper, we explore geopolitical biases of impact amongst the most productive scholars in the field of communication from 11 countries and 3 world regions. Drawing on SCOPUS data, we test three formulas that measure scholarly performance (citations per document; views per document; and citations per view) to investigate how geographical location affects the impact of scholars. Our results indicate a strong US-dominance with regard to citation-based impact, emphasizing a further need for de-Westernization within the field. Moreover, the analysis of altmetric formulas revealed that research published by Eastern European and Spanish scholars, although accessed similarly or even more often than American or Western European publications, is less cited than those. Country-level comparisons are also discussed.

Keywords Scientometrics · Geopolitical biases · Matthew-effect · Altmetrics · Citation count · View count · Communication

Introduction

Early key quantitative research findings of spatial scientometrics, a relatively young field drawing both from traditional scientometrics and geography of science (Frenken et al., 2009) showed that high-prestige research output—results published in journals covered by the Science Citation Index (SCI)—is highly clustered in a few core countries both with

✉ János József Tóth
Toth.Janos.Jozsef@uni-nke.hu

1 Department of Science Strategy, National University of Public Service, Budapest, Hungary

2 Institute of Hungarian Research, Budapest, Hungary

3 Department of Communication, Universidad Carlos III de Madrid, Madrid, Spain

regards to quantity and impact (Frame et al., 1977; Narin & Carpenter, 1975). Subsequent investigations into the spatial aspect of scientific knowledge production continued focusing on national differences in science production (Csomós, 2019), while critical social scientific studies contributed to the discussion, reflecting on the uneven power relations and biases in global academia (Demeter, 2019a, 2020; Goyanes & Demeter, 2020; Háló & Demeter, 2022).

In this paper, we continue exploring the intersection of scientometrics and critical sociology through an empirical analysis of geopolitical differences amongst the most productive scholars in communication studies. Over the past century, communication has become an important and emerging area of scientific inquiry in global academia due to major social and technological changes (Marinho & Mariño, 2018). Communication science is generally understood as the study of how people use messages to create meanings within and across various contexts, channels, and media (Craig, 2008), however, the field is still facing challenges in defining its comprehensive identity due to its multidisciplinary foundations as well as the rapidly evolving media and socio-technological environment (Nordenstreng, 2004, 2007; Waisbord, 2019). As the paper at hand applies scientometric means to conceptualize the field, for the purpose of this study, communication science is to be understood as a category of SCOPUS; the major scientometric databases that provide data for the presented analyses.

The study contributes to the field by being the first analysis to measure geopolitical biases among the most productive scholars in communication studies through SCOPUS view counts. Besides testing the more traditional citations per document formula, we also measure scholarly performance through views per document and citations per view and examine how geographical location (derived from a scholar's institutional affiliation) affects the impact of scholars ranked top 500 by SciVal in Communication. Comparing researchers from 11 countries and 3 world regions, we investigate if there are statistically significant differences between the frequency of their publications being accessed as well as cited.

Scientific excellence through the lenses of country-level metrics

Country-level scientometric analyses, as well as its variants focusing on geographic regions (Bornmann & Waltmann, 2011; Godin & Ippersiel, 1996) or organizations (universities, clinics, hospitals, public and private research institutions as centers of knowledge production in a metropolitan region; Matthiessen & Schwartz, 1999; Matthiessen et al., 2010; van Noorden, 2010) remained widely popular in scientometrics over the years. Focusing on the quantities and impact of academic knowledge production, subsequent country-level research can be grouped into two major categories based on the source of data they draw on. The first group deals with interactions occurring within scientific platforms, measuring the acknowledgment and further use of results among members of the scientific community, while the second aims to measure impact outside the peer-review realm and look at activities in various social and other digital media sources via alternative metrics (altmetrics as commonly referred to; Priem et al., 2010; Repiso et al., 2019; Wasike, 2021).

A major traditional indicator for the former—besides the number of published papers—is citation count, a metric considered to indicate the influence, perceived quality, and, ultimately, academic/social value of published research. Research on the spatial distribution of received citations gained a considerable impetus by showing the applicability of Merton's classical concept of the Matthew effect (a cumulative advantage in science) at the country level: Bonitz et al. (1997). On the one hand, it was found that papers authored by US, UK, and another few European core country affiliations received more citations than what could have been expected based on the impact factor of the journal they were published in.

On the other hand, authors affiliated with any other country received fewer citations than expected.[1] The authors coined this systemic discrepancy in expected citations as the 'Matthew Effect for Countries' (MEC), showing that the accumulation of citations is radically uneven between nations. Later results with a global (Pan et al., 2012; Perc, 2014; Schmoch & Schubert, 2008; Zanotto et al., 2016) or a European (Makkonen & Mitze, 2016) focus confirmed that the regional distribution of global science is more of a question of presence versus absence than the competition in a field of weaker and stronger but roughly comparable players. Since both quantity and impact are concentrated in traditional Western countries, and other players' partial success can be directly linked to their westernizing efforts (Demeter et al., 2022a, 2022b; Háló, 2022), critical approaches to these inequalities are often discussed in terms of de-Westernization in communication/media research (Curran & Park, 2000; Gunaratne, 2005; Thussu, 2009; Waisbord & Mellado, 2014; Wang, 2011).

Similar trends arise on the individual level. Individual success of an academic is closely tied to editing (Goyanes & de-Marcos, 2020) and publishing in top-tier journals (Efranmanesh et al., 2017), as well as affiliations with top-tier universities (Cowan & Rossello, 2018). As research on both native-English (Collyer, 2014) and European (Fumasoli et al., 2015) countries has shown, scholars educated at elite Western universities are favored in all of these segments of academic life (Demeter & Toth, 2020). Recent results on the systemic conditions of academic excellence in Communication studies conclude that besides personal traits, being excellent requires "following the research conventions, interests and values of a research community and conducting "sound research" based on tacit rules of the scientific craft, which were acquired at elite universities." (Goyanes & Demeter, 2021, p. 76).

The majority of elite universities being Western, it is not surprising that highly cited individual authors are similarly concentrated in specific geographical areas. Data could be refined even further to expose smaller geographical centers within countries. In one of the earliest country-level citation assessments, Batty (2003) studied 1222 top scientists from ISI's Highly Cited database, covering twelve scientific fields. They found that 815 of these are from the US and 100 are from the UK (the third being Germany with 62, followed by European countries, as well as Japan and Australia in the first 10 places). Also, when looking closer at their institutional concentration, the top 20 institutions among these affiliations (in terms of the number and percentage of scientists cited), which housed nearly 30% of the 1222 highly cited scientists, were from the US (18) or the UK (2). These do not necessarily mirror the domestic efficiency of US education investments, as foreign-born and foreign-educated high-performing scientists systematically migrate to the US due to its high GDP and large Research and Development (R&D) spending (Corley & Sabharwal, 2007; Franzoni et al., 2014; Hunter et al., 2009; Stephan & Levin, 2001). This elite brain drain is another country-level example of cumulative advantage in academia. Economic wealth correlates with scientific production in the case of European countries too (Almeida et al., 2009; Lee et al., 2011). Drawing on the ISI Thomson National Science Indicators on Diskette database (NSIOD-2003), Horta and Veloso (2007) concluded that high-income

[1] The rise of network science and associated concepts like preferential attachment (Price, 1976; Barabási-Albert; 1999) also resulted in observations of the Matthew effect in scientific collaborations and career longevity (Matjaz, 2014).

countries of the EU are generally more successful in amassing publications than low-income ones, and their research output is of the highest impact. However, even including the UK (which is no longer part of the EU), the total international visibility and impact of EU research are still lower than that of the US (Horta & Veloso, 2007).

Regarding the share of publications, citations received, and the average number of citations received per paper, the dominance of the US and the UK is still evident. Counting all publications in English in the ISI Web of Science (WoS) database (Science Citation Index Expanded, Social Sciences Citation Index, and the Arts & Humanities Citation Index) for the period 2003–2010, the analysis of Pan et al. (2012) showed that the US produced around 28.12% of WoS-indexed publications (UK: 6.51 percent) and received 38.22% of all WoS citations (UK: 7.45%) For perspective, the same indicators are 23.65% (WoS publications%) and 26.03% (WoS citations%) for the Western European region and 3.49% and 1.76% for the Eastern European region.

The average number of citations per paper is around 10 for US and UK papers, while it varies between 6 and 12 for countries in Western Europe. However, among Eastern European countries, Hungary had the highest average citations per paper (7.31), and Romania had the lowest (3.30). In general, high-income European countries thus seem to be more efficient than lower-income European countries, and their output is of higher impact.

A trend towards more highly cited publications among European countries – even at the cost of quantity in terms of published papers—was indicated by Leydesdorff et al. (2014) among 28 EU nations. Applying integer counting to allocate publications, his analysis allowed for the assumption that, ceteris paribus, 10% of a nation's internationally co-authored publications can be expected to be within the top 10% of the most highly cited publications, while mutatis mutandis, 1% of these publications to be amongst the top-1%. It is noteworthy that not all European countries were found to pull their weight equally: while Western European countries managed to contribute according to or above expectations to both the top 1% and top 10% most highly cited publications, among the countries from the Eastern European region, only Latvia and Estonia scored above expectations in the top 1% and top 10%. All other Eastern European countries performed below expectations in both sets (Leydesdorff et al., 2014).

Furthermore, an epistemic vulnerability of all non-US science was shown by empirical data by Bornmann et al. (2018). The authors calculated that—in addition to the US dominating the top 1% highest cited publications by a 24% share—44% of all references in the top 1% of publications are made to US-authored outputs. This means that US research is the main source of both US and non-US top research from which prolific researchers worldwide draw their knowledge base. The US also has higher-than-expected citations compared to its already high publication volume, and only a few Western European countries show similar patterns (Netherlands: 1.70% share and 2.47% presence in the reference list of top 1% articles; Switzerland: 1.12% and 1.77%; UK: 5.57% and 7.79%; Sweden: 1.15% and 1.49%). Eastern European countries that managed to produce at least 1% of the top 1% highly cited articles all show the opposite tendency; their accumulated knowledge is being used less than expected in top research compared to their publication volume (Bornmann et al., 2018).

Further differences between relative comparative advantages and disadvantages in major disciplines have been shown by Harzing and Giroud (2014). Looking at the share of a country's papers in social sciences relative to all papers between 1994 and 2012, the US, the UK, the Netherlands, and Norway have a medium comparative advantage in this field, while France, Italy, Hungary, Poland, Russia, and Ukraine have a medium comparative disadvantage, and Austria, Germany, Switzerland, Finland, Ireland, Belgium, Sweden, and Denmark have a low comparative disadvantage. Regarding communication research, a seminal study by Lauf (2005) found that communication journals indexed in WoS, as well as the most high-ranking players of this already meticulously screened and selective group are not only mostly US-published, but their gatekeeping processes and content are also heavily dominated by the US. Facing the data, Lauf proposed measures pointing towards a possible international diversification of communication studies by publishing more results coming from so-far underrepresented regions and accepting major regional or national journals into WoS.

Some measures of Thomson Reuters (TR) implemented at this time resonated to the later proposition as the company started to examine more than 10,000 non-US and non-UK journals in 2007, which mainly published research from a particular region or country and covered non-mainstream topics of mostly regional relevance, a portion of them finding ways into the main Thomson Reuters indices like SCI (Science Citation Index), SSCI (Social Science Citation Index), and A&HCI (Arts & Humanities Citation Index). Although these measures had a positive effect on the coverage of Eastern European contributions (Leydesdorff & Wagner, 2009), they left top-ranked journals unaffected due to the lack of implementation of the so-called pillar stone impact criteria during the vetting process (Aman, 2015). Though citation analysis may have been applied in some cases, the importance of a regional journal was not measured by its citation impact. Instead, its inclusion was decided by the specificity of its content that could enrich the source materials already visible to a broader international community of researchers (Testa, 2009). This led to the inclusion of low-impact, quasi-invisible Eastern-European Communication journals into WoS's main databases (Tóth, 2018). It can even be said that, in a sense, TR deepened existing inequalities in the representation of scholars of the "West and the Rest" (Ferguson, 2012) by inflating the number of lower-impact journals in WoS with regional ones, making the bottom more available while the top continued to be as closed as ever for the "Rest".

Nevertheless, the regional expansion of WoS during this period and the slow internationalization of some leading communication journals' editorial boards resulted in the shrinking of the dominance of the US (and the UK) in communication studies. Comparing two five-year periods (1998–2002 and 2013–2017), Demeter (2018c) showed that many journals had increased the number of their non-US editorial staff, while the ratio of articles produced by US-affiliated authors have decreased from 66 to 50 percent, a major share flowing toward Western European and developed Asian countries. However, Eastern European countries, in comparison, only have around 1% of the world's total WoS publication output in communication science (Demeter, 2018c).

In the soft sciences, cultural and epistemic differences across geographical regions have a strong role and influence on what literature are considered relevant and important, and what will eventually be cited and canonized in a particular field (Tóth & Demeter, 2021). Though this study focuses mainly on the science production and recognition of three global regions (Western and Eastern Europe, and the U.S.), additional insights can be gained by considering how other regions fare in global comparisons.

Based on Lauf (2005) and Demeter's (2019b) research, we know that in the field of communication, the list of top 40 countries with the highest share in high-prestige publication output remained, with little variance in order, the same in the past 50 years. With the U.S. leading the ranks, the rest of the list is comprised of 21 European and 18 non-European countries. Among these 18 non-European countries, only 6 have 1% or higher share in the total publication output. These best performers (China, Taiwan, South Korea, Canada, Australia and New Zealand) all have high GDP and the last three also share language and cultural ties through colonial British-American history. The above economic and cultural factors are heavily present in the remaining top-40 countries as well, with the addition of a third cluster comprising of countries with a Hispanic colonial heritage. The African continent's visibility is very low compared to other world regions -not counting South Africa, the overwhelming majority of research by African scholars remain invisible to the international community (Chasi & Rodny-Gumede, 2018), which contributes largely to the "suffocating whiteness of communication studies" originally understood in the frames of racial neoliberalization (Calvente et al., 2020).

To sum up, despite the weakening of the US and the UK's dominance, and the rapidly rising share of China from high-prestige publication outputs, the MEC is still accurately applicable in Communication Studies to show geopolitical inequalities. Most of the field's research output of international prestige and recognition is produced by a handful of developed nations, and the contribution of large regions of the world remains invisible (Demeter, 2018a, 2018b; Goyanes et al., 2022). Based on these results, we expect the following:

H1 There are statistically significant differences in received citations per documents between geographical regions.

To test if the difference exists between the most productive scholars across countries, the corresponding sub-hypothesis will be:

H1a There are statistically significant differences between citation per document within the most productive scholars across countries.

View counts from SCOPUS—a so far neglected metric

Similar to the majority of scientometric research, the largest and most comprehensive journal-level analyses of national diversity in the field of communication studies (see Demeter's more recent (Demeter, 2019b) and Lauf's earlier results (Lauf, 2005) used Web of Science data. The MEC was also originally shown by (now Clarivate, then) Thomson Reuters data. However, scientometric analysis of Communication Studies also often considers Elsevier's SCOPUS (e.g., Demeter, 2017, 2018a, 2018b, 2018c; Tóth, 2018; Trabadela-Robles et al., 2020). The general argument for using SCOPUS is that Elsevier's product represents soft science fields better, indexes more non-article publication type-items, and has more non-English content (Archambault et al., 2006; Li et al., 2014). Both are important for fields where—compared to hard sciences – regional language articles, monographs, chapters, and conference papers have more relevance in disseminating research results. Even though potential biases stemming from geographical deficiencies in WoS's journal coverage (overrepresentation of English-speaking countries, especially in the Social Science Citation and Arts & Humanities Citation Indexes) were mitigated by the introduction of the Emerging Sources Citation Index (ESCI) in 2015, it leaves the national distribution of top journals unaffected, as ESCI journals do not have impact factor and are not ranked by JCR (Journal Citation Reports).

While there is flexibility indicated with regard to the source of data, scientometric research rarely considers testing article-level variables accessible from scientific abstracting and indexing services for visibility and impact other than publications and citations. When in need of other metrics, they turn to sources outside the confines of abstracting and indexing services. These altmetrics date back to the *Altmetrics Manifesto* (Priem et al., 2010) and aim to cover research impact outside the peer-reviewed realm and work not only with "citations" coming from the digital public space – mentions and backlinks pointing to the original research from social media networks, wikis, (micro)blogs and various other sources—but also to emphasize website analytics like the number of views and downloads as impact metrics.

In the digital era, when scientific papers are mostly also published online in some form, it is only natural that usage indicators like the number of views (Bollen et al.,; 2009; Perneger, 2004), downloads (Gorraiz et al., 2014; Moed & Halevi, 2016) and bookmarks (Bar-Ilan et al., 2012; Mohammadi & Thelwall, 2014) are attracting interest in traditional scientometric research as possible forecasters for future citations. Reviewing previous studies, Thelwall (2018) summarized that a positive correlation exists between most altmetric and citation count; the association being stronger (0.5–0.8) at Mendeley reader counts (bookmarks) and weaker (0.1–0.3) at Tweets, Facebook wall posts, blog citations, Google + citations, Reddit citations, and other media mentions. Studies focusing on Twitter exposure found that tweets predict citation rates (Eysenbach, 2011; Peoples et al., 2016), and tweeted articles receive more citations versus those with no tweets (Vaghjiani et al., 2021). Recently, Breitzman (2021) showed that usage in the first six months correlates with a citation index after five years; therefore, these early usage counts can be used to identify papers early that will likely be highly cited, given enough time for other researchers to use them.

Notwithstanding, only a handful of studies analyzed altmetrics in communication science (Torres-Salinas et al., 2013; Repiso et al., 2019; Wasike, 2021; Özkent, 2022) so our knowledge is limited. However, a strong correlation between Mendeley readers/tweets received and WoS citations was found by Repiso et al. (2019), and at least two recent studies (Wasike, 2021; Özkent, 2022) indicated a positive correlation between exposure to social media and article citations in the case of articles in top communication-based journals.

In an environment where strategic altmetrics manipulation (Thelwall, 2021; Zimmermann, 2013), as well as potential national (Kemp, 2022; Singh, 2020; Thelwall & Kousha, 2015) and age (Mohammadi et al., 2015; Sugimoto et al., 2017) biases are already making the application of these measures increasingly complex for research evaluation, any reliable metrics less susceptible for manipulation should be welcomed. It seems that view count measures integrated into abstracting and indexing databases have a few advantages over altmetrics. View counts represent actual instances of a given document being visited within the database, calculated from the sum of abstract views and full-text link clicks, while some altmetrics, most importantly Mendeley bookmarks are referring to potential and not actual readers (Delgado-López-Cózar & Martín-Martín, 2016). Views from a scientific database like SCOPUS are also more likely to be generated by a scholarly audience and more difficult to inflate through digital marketing because of access costs. In comparison, even relatively hard-to-inflate altmetrics generated by a scholarly audience such as Mendeley views can be cost-efficiently tweaked by spamming multiple new profiles to bookmark the very same paper. Other social media mentions, links, and clicks are even easier to adjust and manipulate. Another advantage of accessing articles from a scientific database is that on these platforms, there is no additional context driving the perception of its importance besides traditional article-level metrics: no popularizing summaries and less opportunity to embed the results into cultural or political issues or offer value-laden contextualizations. The number of views can be influenced by a default algorithmic ordering for relevance or recentness or by the author's name, but not by network effects influential within social media.

To sum up, internal view counts are better suited to measure interest from the scientific community towards an article; raised by the research itself, compared to meticulously designed situations consciously created to drive attention toward a specific content in digital space. The view count metric in SCOPUS is considered internal because it shows how many times an article has been viewed in SCOPUS from the results screen and thus cannot be directly influenced by traffic from anywhere outside the database. With that said, no studies so far have exploited the potential of using this metric for analysis. Therefore, we intend to fill this gap and offer our contribution to the literature by comparing countries and their respective geographical regions based on how many views their indexed documents get while also analyzing how the number of views reflects on received citations. We anticipate the followings:

H2 There are statistically significant differences between views per document between geographical regions.

To test if the difference exists between the most productive scholars across countries, the corresponding sub-hypothesis will be:

H2a There are statistically significant differences between views per document within the most productive scholars across countries.

H3 There are statistically significant differences between received citations per view between the examined geographical regions.

To test if the difference exists between the most productive scholars across countries, the corresponding sub-hypothesis will be:

H3a There are statistically significant differences between citation per view within the most productive scholars across countries.

The importance of this study, underpinned by the three hypotheses above, lies in measuring the impact conceptualized through the number of published papers, number of citations, and number of views. While citations per document is a common formula in Matthew-effect analyses (e.g., Pan et al., 2012; Perc, 2014; Schmoch & Schubert, 2008; Zanotto et al., 2016), this will be the first study to measure geopolitical biases among the most productive scholars in communication studies via applying views per document and citations per view measures through SCOPUS data. These formulas make it possible to measure research impact normalized to the number of published papers, the number of citations, and the number of views. It is important to note, therefore, while the number of overall papers tends to raise the number of overall citations when we assess the means for citations per paper, an increase in citations cannot be explained by an increase in publications alone.

Methods

Sample and applied measures

In this paper, we empirically analyzed geopolitical biases among the most productive scholars in communication. We applied three formulas (citations per document, views per document, and citations per view) to measure scholarly performance amongst the top-performing scholars in 11 countries (the UK, France, Germany, Italy, Spain, Poland, Hungary, Russia, Romania, Ukraine, and the US) and 3 corresponding world regions (Western Europe, Eastern Europe, and the US). The reasons for selecting these countries have to do with their broad impact in the literature of communication and because they fairly represent the diversity of communication research in different geographical areas. In addition, their inner connections and cultural bonds enabled us to recode these countries in bigger geographical regions with similar background. The sample was drawn from the SciVal TOP 500 list in Communication for the period between 2017 and 2020.

First, we assessed individual-level publication count, citation count, and view count metrics based on SciVal data for the TOP performing 500 scholars (2017–2020) in the 11 analyzed countries. Second, applying these measures, the three main indicators of our study (I1: citations per document; I2: views per document; I3: citations per view) were formulated as dependent variables. Finally, for H1-H3, country-level affiliation of the scholars (SciVal) served as the independent variable, while in the case of H1a-H3a, the independent variable was the aggregated region-level scholarly affiliation (WE: UK, France, Germany, Italy, Spain; EE: Poland, Hungary, Russia, Romania, Ukraine; US: US).

It is important to note that the US appears both as a country- and a region-level affiliation in the analysis. On the one hand, this can be explained by the sheer size of the US academic population renders the country comparable for analysis to specific European regions. On the other hand, and more importantly, our analysis – being based on individual-level non-additive indicators – allows for comparisons to be made between different sample sizes (WE: 2500; EE: 2082; US: 500). In fact, the analysis design even enables performance differences of countries and regions to be investigated and contrasted to each other at the same time. The above argument – very importantly – also allows for countries that do not have 500 top-performing scholars listed in SciVal to enter the analysis. These occurrences indicate that between 2017 and 2020, the number of scholars in these countries publishing at least one Scopus-indexed was below 500 (i.e., Hungary: 409; Romania: 251; Ukraine: 423). Descriptive statistics of the countries under analysis and their corresponding values for our three dependent variables are reported in Table 1.

Analysis strategy

Our study posed three hypotheses and three corresponding sub-hypotheses. A preliminary analysis of our three dependent variables (I1-I3) suggested that they were positively skewed amongst researchers. A follow-up analysis further indicated that they do not fit a normal distribution across countries and geographical regions (Shapiro–Wilk test; $p = 0.000$). Accordingly, we ran the non-parametric equivalent of a one-way ANOVA (i.e., the Kruskall-Wallis H test, also commonly known as one-way ANOVA on ranks). For H1a, H2a, and H3a, we considered the three impact measures (i.e., citations per document, views per document, citations per view) as dependent variables and the country of the most productive scholars as the independent variable. Similarly, for testing H1, H2, and H3, we considered geographical location (US, Western Europe, and Eastern Europe) as the independent variable and citations per document, views per document, and citations per view as the dependent variables. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons.

Table 1 Descriptive statistics of the three dependent variables across countries under analysis

Dependent variable	Country	Mean	Standard Deviation
Citations per document	UK	4.546	0.300
	France	2.406	0.194
	Germany	3.957	0.249
	Italy	2.937	0.175
	Spain	2.211	0.103
	Poland	1.498	0.132
	Hungary	1.928	0.176
	Russia	1.397	0.143
	Romania	3.452	0.665
	Ukraine	3.851	0.345
	US	4.787	0.200
Views per document	UK	17.558	0.593
	France	12.383	0.905
	Germany	14.499	0.609
	Italy	18.199	0.941
	Spain	23.016	0.824
	Poland	14.523	0.703
	Hungary	10.435	0.489
	Russia	21.488	1.156
	Romania	16.978	2.284
	Ukraine	23.279	0.754
	US	17.550	0.407
Citations per view	UK	0.245	0.014
	France	0.278	0.023
	Germany	0.301	0.014
	Italy	0.182	0.010
	Spain	0.126	0.006
	Poland	0.121	0.017
	Hungary	0.167	0.014
	Russia	0.058	.004
	Romania	0.233	0.117
	Ukraine	0.174	0.015
	US	0.277	0.016

Results

H1 stated that there are statistically significant differences between citations per document across geographical regions. A Kruskal–Wallis test was implemented for Western Europe ($n = 2{,}500$), Eastern Europe ($n = 2082$), and the United States ($n = 500$). Distributions of I1 scores were similar for all geographical regions, as assessed by visual inspection of a boxplot. Medians for I1 scores were significantly different between countries, χ^2 (2) = 685.303, $p = 0.000$. The post hoc analysis for citations per document revealed statistically significant differences between Easter Europe (*Mdn* = 1.000) and Western Europe (*Mdn* = 1.7500)

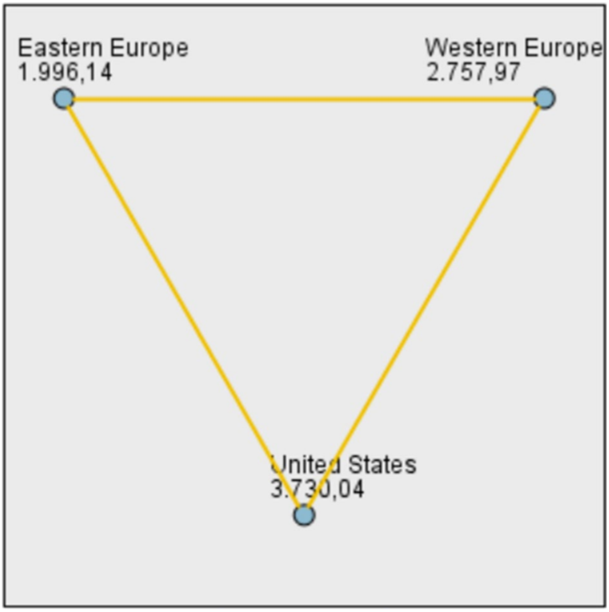

Fig. 1 Pairwise Comparison between geographical regions I1 (citations per document). Each node shows the sample average of I1. Orange lines represent statistically significant associations, while black lines represent non-significant ones

($p=0.000$), between Eastern Europe and the United States (3.8571) ($p=0.000$), and between Western Europe and the United States ($p=0.000$). Pairwise comparisons are graphically represented in Fig. 1. H1 was supported.

H2 stated that there are statistically significant differences between views per document across geographical regions. Distributions of I2 scores were similar for all geographical regions, as assessed by visual inspection of a boxplot. Medians for I2 scores were statistically significantly different between countries, χ^2 (2) = 84.853, $p=0.000$. The post hoc analysis for views per document revealed statistically significant differences between Eastern Europe (*Mdn* = 12.0000), the United States (*Mdn* = 16.5714) ($p=0.000$), and between Western Europe (*Mdn* = 12.3333) and the United States ($p=0.000$), but not between Eastern Europe and Western Europe ($p=0.356$). Pairwise comparisons are graphically represented in Fig. 2. H2 was supported.

H3 stated that there are statistically significant differences between citations per view across geographical regions. Distributions of I3 scores were similar for all geographical regions, as assessed by visual inspection of a boxplot. Medians for I3 scores were statistically significantly different between countries, χ^2 (2) = 706.822, $p=0.000$. The post hoc analysis for citations per view revealed statistically significant differences between Eastern Europe (*Mdn* = 0.0345) and Western Europe (*Mdn* = 0.1304) ($p=0.000$), between Eastern Europe and the United States (*Mdn* = 0.2304) ($p=0.000$), and between Western Europe and the United States ($p=0.000$). Pairwise comparisons are graphically represented in Fig. 3. H3 was supported.

H1a stated that there are statistically significant differences between citations per document across country-level affiliations of the most cited scholars. A Kruskal–Wallis test was implemented for the United Kingdom ($n=500$), France ($n=500$), Germany ($n=500$), Italy ($n=500$), Spain ($n=500$), Poland ($n=500$), Hungary ($n=408$), Russia ($n=500$), Romania ($n=251$), and the United States ($n=500$). Distributions of I1 scores were similar for all countries, as assessed by visual inspection of a boxplot. Medians for I1 scores were

Fig. 2 Pairwise Comparison between geographical regions I2 (views per document). Each node shows the sample average of I2. Orange lines represent statistically significant associations, while black lines represent non-significant ones

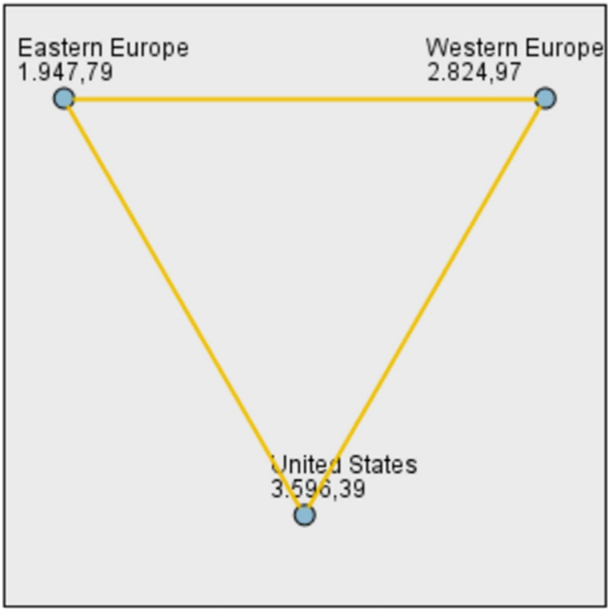

Fig. 3 Pairwise Comparison between geographical regions I3 (citations per view). Each node shows the sample average of I3. Orange lines represent statistically significant associations, while black lines represent non-significant ones

statistically significantly different between countries, χ^2 (10) = 845.423, $p = 0.000$. The post hoc analysis for citations per document is reported in Table 2 and graphically represented in Fig. 4.

H2a stated that there are statistically significant differences between views per document across country-level affiliations of the most cited scholars. Distributions

Table 2 Differences between countries in I1 (citations per document)

Country	Pairwise comparison	p value
Russia (Md*n* = 0.5000)	Poland (Md*n* = .0000)	1.000 n.s
	Romania (Md*n* = 0.9000)	1.000 n.s
	Hungary (Md*n* = 1.0000)	1.000 n.s
	France (Md*n* = 1.0000)	.000
	Ukraine (Md*n* = 1.0000)	.000
	Spain (Md*n* = 1.667)	.000
	Italy (Md*n* = 1.7083)	.000
	Germany (Md*n* = 2.2250)	.000
	United Kingdom (Md*n* = 2.4500)	.000
	United States (Md*n* = 3.8571)	.000
Poland	Romania	1.000 n.s
	Hungary	1.000 n.s
	France	.000
	Ukraine	.000
	Spain	.000
	Italy	.000
	Germany	.000
	United Kingdom	.000
	United States	.000
Romania	Hungary	1.000 n.s
	France	.153 n.s
	Ukraine	.001
	Spain	.000
	Italy	.000
	Germany	.000
	United Kingdom	.000
	United States	.000
Hungary	France	.417 n.s
	Ukraine	.002
	Spain	.000
	Italy	.000
	Germany	.000
	United Kingdom	.000
	United States	.000
France	Ukraine	1.000 n.s
	Spain	.001
	Italy	.000
	Germany	.000
	United Kingdom	.000
	United States	.000
Ukraine	Spain	.753 n.s
	Italy	.429 n.s
	Germany	.000
	United Kingdom	.000
	United States	.000

Table 2 (continued)

Country	Pairwise comparison	p value
Spain	Italy	.838 n.s
	Germany	.027
	United Kingdom	.000
	United States	.000
Italy	Germany	.058 n.s
	United Kingdom	.000
	United States	.000
Germany	United Kingdom	1.00 n.s
	United States	.000
United Kingdom	United States	.000

Adjusted significant values. Medians in brackets. n.s = non-significant

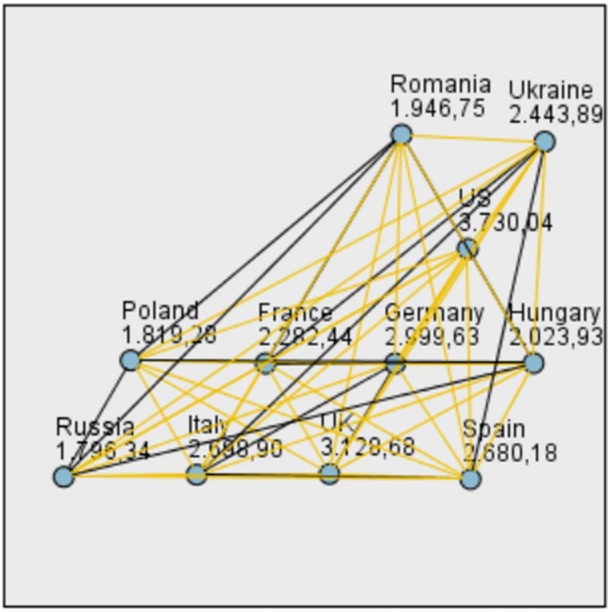

Fig. 4 Pairwise Comparison between countries for I1 (citations per document). Each node shows the sample average of I1. Orange lines represent statistically significant associations, while black lines represent non-significant ones

of I2 scores were similar for all countries, as assessed by visual inspection of a boxplot. Medians for I2 scores were statistically significantly different between countries, $\chi^2(10) = 734.375$, $p = 0.000$. The post hoc analysis for views per document is reported in Table 3 and graphically represented in Fig. 5.

H3a stated that there are statistically significant differences between citations per view across country-level affiliations of the most cited scholars. Distributions of I3 scores were similar for all countries, as assessed by visual inspection of a boxplot. Medians for I3 scores were statistically significantly different between countries χ^2 $(10) = 877.709$, $p = 0.000$. The post hoc analysis for citations per view is reported in Table 4 and graphically represented in Fig. 6.

Table 3 Differences between countries in I2 (views per document)

Country	Pairwise comparison	p value
Hungary (Md*n* = 0.5000)	France (Md*n* = 7.0000)	1.000 n.s
	Romania (Md*n* = 7.667)	1.000 n.s
	Poland (Md*n* = 10.0000)	.000
	Germany (Md*n* = 10.5000)	.000
	Italy (Md*n* = 13.5000)	.000
	United Kingdom (Md*n* = 14.5500)	.000
	Russia (Md*n* = 14.0000)	.000
	United States (Md*n* = 16.5712)	.000
	Spain (Md*n* = 19.1667)	.000
	Ukraine (Md*n* = 20.000)	.000
France	Romania	1.000 n.s
	Poland	.000
	Germany	.000
	Italy	.000
	United Kingdom	.000
	Russia	.000
	United States	.000
	Spain	.000
	Ukraine	.000
Romania	Poland	.120 n.s
	Germany	.009
	Italy	.000
	United Kingdom	.000
	Russia	.000
	United States	.000
	Spain	.000
	Ukraine	.000
Poland	Germany	1.000 n.s
	Italy	.000
	United Kingdom	.000
	Russia	.000
	United States	.000
	Spain	.000
	Ukraine	.000
Germany	Italy	.005
	United Kingdom	.000
	Russia	.000
	United States	.000
	Spain	.000
	Ukraine	.000

Table 3 (continued)

Country	Pairwise comparison	p value
Italy	United Kingdom	1.000 n.s
	Russia	1.000 n.s
	United States	.000
	Spain	.000
	Ukraine	.000
United Kingdom	Russia	1.000 n.s
	United States	.004
	Spain	.000
	Ukraine	.000
Russia	United States	.021
	Spain	.000
	Ukraine	.000
United States	Spain	1.000 n.s
	Ukraine	.067 n.s
Spain	Ukraine	1.000 n.s

Adjusted significant values. Medians in brackets. n.s = non-significant

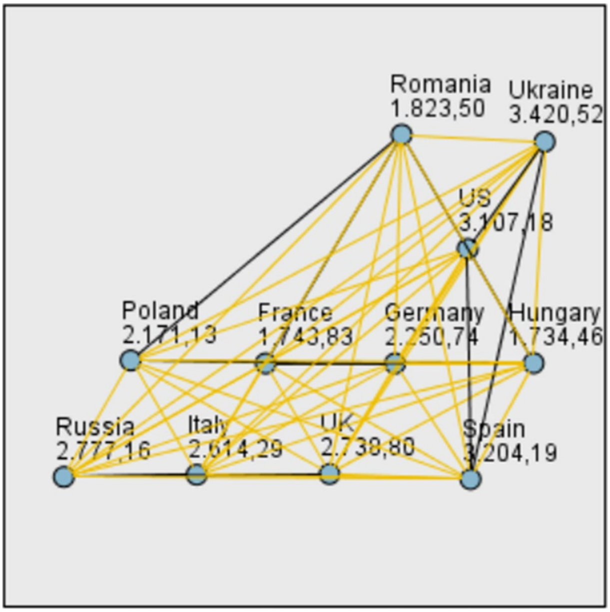

Fig. 5 Pairwise Comparison between countries for I2 (views per document). Each node shows the sample average of I2. Orange lines represent statistically significant associations, while black lines represent non-significant ones

Discussion

Prior to this research, the scholarly community already had a good picture of the geopolitically unequal distribution of scientific impact in Communication Studies, as shown

Table 4 Differences between countries in I3 (citations per view)

Country	Pairwise comparison	p value
Russia (Md*n* = 0.0158)	Poland (Md*n* = 0.0000)	1.000
	Romania (Md*n* = 0.0370)	.007
	Hungary (Md*n* = 0.0370)	.000
	Ukraine (Md*n* = 0.0526)	.000
	Spain (Md*n* = 0.0000)	.000
	Italy(Md*n* = 0.0833)	.000
	France (Md*n* = 0.1270)	.000
	United Kingdom (Md*n* = 0.1667)	.000
	Germany (Md*n* = 0.2105)	.000
	United States (Md*n* = 0.2304)	.000
Poland	Romania	1.000 n.s
	Hungary	.012
	Ukraine	.008
	Spain	.000
	Italy	.000
	France	.000
	United Kingdom	.000
	Germany	.000
	United States	.000
Romania	Hungary	1.000 n.s
	Ukraine	1.000 n.s
	Spain	.029
	Italy	.000
	France	.000
	United Kingdom	.000
	Germany	.000
	United States	.000
Hungary	Ukraine	1.000
	Spain	.542 n.s
	Italy	.000
	France	.000
	United Kingdom	.000
	Germany	.000
	United States	.000
Ukraine	Spain	.616 n.s
	Italy	.000
	France	.000
	United Kingdom	.000
	Germany	.000
	United States	.000
Spain	Italy	1.000 n.s
	France	.604 n.s
	United Kingdom	.000
	Germany	.000
	United States	.000

Table 4 (continued)

Country	Pairwise comparison	p value
Italy	France	1.000 n.s
	United Kingdom	.000
	Germany	.000
	United States	.000
France	United Kingdom	.000
	Germany	.000
	United States	.000
United Kingdom	Germany	1.000 n.s
	United States	.000
Germany	United States	.018

Adjusted significant values. Medians in brackets. n.s = non-significant

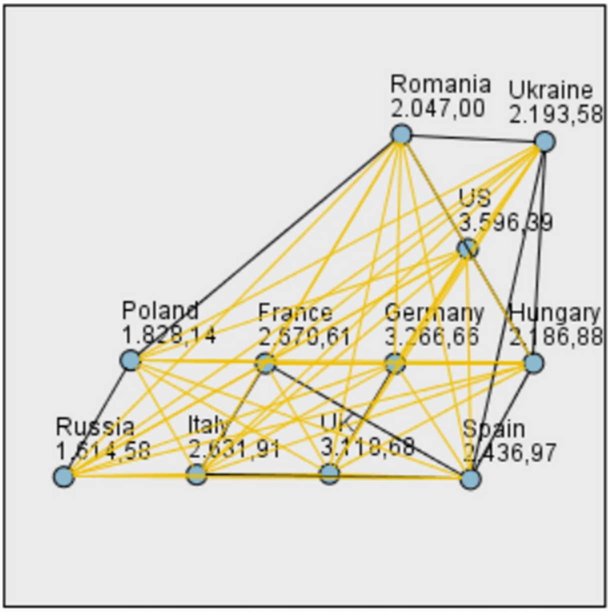

Fig. 6 Pairwise Comparison between countries for I3 (citations per view). Each node shows the sample average of I3. Orange lines represent statistically significant associations, while black lines represent non-significant ones

through numerous analyses of the numbers and distribution of published documents and received citations (Demeter, 2017, 2019b; Lauf, 2005). In line and in broad agreement with studies comparing groups of knowledge-producing agents via citations per document from the past two decades, our results confirm that a statistically significant difference exists between the citations of top scholars in Communication studies from the United States, Western Europe, and Eastern Europe. Our findings provide three interrelated contributions within this line of inquiry.

First, through a new empirical analysis, this study shows that the top US scholars are the most highly cited, followed by their Western and Eastern European peers, while country-level comparisons revealed that the top US scholars have by far the highest impact per document. Adding to our understanding of a significant Americanization of the field discussed in other studies (Chakravartty et al., 2018; Demeter et al., 2022a, 2022b; Gunaratne, 2010; Waisbord & Mellado, 2014), our results direct the attention toward the need of a further de-Westernization in communication studies.

In Western and Eastern Europe, we found insufficient evidence that the impact of scholars is significantly different based on their region. The impact of top-performing scholars from Romania and Hungary is not that different from those of France (in our sample, the country with the weakest median citation value from the Western European region). While having a similar impact as their French colleagues, we also found insufficient evidence for top Ukrainian performers being that far behind their Spanish and Italian counterparts. Ukraine, with one of the highest median citation values among Eastern European countries, also differs from other members of the Eastern European region analyzed here. Germany and the UK – top impact countries from the Western European region – are similar to each other, but while data from the UK shows very strong evidence for them being different from every other country in their respective region, the evidence for Germany being different from Spain or Italy is weak.

Second, the number of citations and published papers are common measures of spatial scientometrics and have a long tradition of measuring performance in Communication studies, including the more recent ones of those of the top-performing scholars (Demeter et al., 2022c; Goyanes, 2022). Our study, while making use of these more common metrics, also focused on so far unaddressed metrics, views received to articles written by top-performing scholars within a major abstracting and indexing service, compared to the number of publications and citations they have. Focusing on this metric enabled us to suggest a description of inequalities less distorted by self-marketing (either from the part of the author, their institution, or the journal they published in) or extra epistemic values embedded in (or to be harvested from) the published research. We aimed at mitigating the effects of an increased digital presence to visibility, trying to tie this metric more tightly to its appeal for an actual scientific community using SCOPUS. For the number of internal view counts to increase, the paper has to be visited through the SCOPUS interface as a result of browsing or searching the database, an activity typically performed by researchers and, to a lesser extent, librarians and science administrators. To summarize, this metric is coming from the activity of a more tightly targeted audience; therefore, future analyses using this metric can potentially describe geopolitical biases inside academia with a better relevant resolution than traditional altmetrics.

The question remains that how these newly developed formulas would fair in different research areas. This paper only used them for analyzing communication studies, and their measures may be weaker for other fields with different characteristics. It can be argued that the new metrics would work better with research areas where the consensus of the scientific community is stronger on excellent publications being generally indexed in SCOPUS (or Web of Science if examining "usage counts" instead of "view counts") and that a researcher should aim at publishing mainly in indexed and highly ranked venues. Since coverage for book-oriented disciplines in the two main indexing database is weaker compared to article-oriented disciplines, and it takes significantly more time to produce and publish a book than a journal article or conference paper, it is not expected that the new metrics would work as well with research fields where monographs are significantly more important for a researcher than with those where journal articles or conference proceedings are. This is something to consider in the future when one would want to use these metrics in their analyses of the humanities (and even then; for example analytical philosophy or archaeology could be a better fit than classical literature or history). There are also major differences in the ease of access to SCOPUS around the globe, some linked to financial constraints, some to research cultures or current events (see f.e. the shrinking access to full-text international journals in Russia). Interest from a scientific community without the financial or institutional background necessary for SCOPUS subscription will not necessarily manifest in view counts when researchers browse Sci-Hub or similar shadow libraries instead. Overal, it is plausible that the newly introduced metrics could work better or worst with areas of different pubication characteristics than communication studies, and applicability would be influenced by access characteristics of different world regions to commercial abstracting and indexing databases. However, tools for accurately weighing these factors when including the "citation per view" indicator in the analysis are yet to be developed and tested.

Third, looking at the view count calculated from SCOPUS for articles written by SCIVAL Top 500 communication scholars in the U.S., our analysis revealed statistically significant differences between Eastern Europe and the United States and between Western Europe and the United States. Notwithstanding, we found no significant difference between Eastern and Western Europe in the case of views per publication. It is immediately apparent that based on these internal view counts, Eastern European communication research is more accessed than used. If we compare the countries ranked by citations per view and citations per document side by side, both columns show approximately the same relative order, while the highest median values for views per article belong to Ukraine and Spain. The latter, same as Poland and Russia, is especially weak in converting views to actual citations. For reasons currently unknown, research published by Eastern European and Spanish scholars is less cited but visited more than or similar to those published by American or Western European scholars. These results are especially concerning as they indicate a strong Western bias in citation practices within the academic sphere. One possible explanation is that—although reading inclusively—scholars prefer to cite their peers of the same diaspore, and as there is an apparent overrepresentation of Western scholars in international publishing (Demeter, 2017, 2018a, 2020), this inevitably leads to a biased over-citation of the same groups of authors in top journals. Furthermore, as the quality of references—that is, the journal these were originally published in – is indicative of the quality of the citing paper, non-Western scholars are also called forth to prioritize these sources to be able to publish in leading journals. Further investigations into the socio-cultural factors behind these dynamics of Western scholars' over-citation are therefore prompted.

Future research may explore geographical or institutional diversity in the source of view counts, which would be useful to refine our results further. Some countries like the U.S. give more weight to metrics drawn from Web of Science, while others like Poland and Hungary rely more on SCOPUS in their performance evaluations and promotion policies in Communication Studies. This may not only create large differences in what type of journal indexing researchers prioritize when sending papers for publication—constituting a limitation of this study in itself -, but may also affect Scopus view counts coming from specific countries. However, this data is proprietary to ELSEVIER and currently not accessible to the authors. The data could be used to show differences between regions and countries in SCOPUS access, and use and control our results for regional overrepresentations in view counts.

A qualitative analysis should also investigate how academics who published SCOPUS-indexed articles use the database in different regions and what decision-making patterns they follow when citing an article found in the database.

Funding Open access funding provided by National University of Public Service.

References

Almeida, J. A. S., Pais, A. A. C. C., & Formosinho, S. J. (2009). Science indicators and science patterns in Europe. *Journal of Informetrics, 3*(2), 134–142. https://doi.org/10.1016/j.joi.2009.01.001

Aman, V. (2015). *Local, networked or external? Inclusion of regional journals in WoS and its effect*. In F. Pehar, C. Schlogl, & C. Wolff (Eds.) "Reinventing information science in the networked society. Proceedings of the 14th International Symposium on Information Science (ISI 2015)" Zadar, Croatia, 19th, 21st May 2015 (pp. 359–369). Glückstadt: Verlag Werner Hülsbusch.

Archambault, É., Vignola-Gagné, É., Côté, G., Larivière, V., & Gingrasb, Y. (2006). Benchmarking scientific output in the social sciences and humanities: The limits of existing databases. *Scientometrics, 68*(3), 329–342. https://doi.org/10.1007/s11192-006-0115-z

Bar-Ilan, J., Haustein, S., Peters, I., Priem, J., Shema, H. & Terliesner, J. (2012). Beyond citations: Scholars' visibility on the social Web. In É. Archambault, Y. Gingras & V. Larivière (eds.), *Proceedings of 17th International Conference on Science and Technology Indicators, Montréal: Science-Metrix and OST* (p./pp. 98–109).

Batty, M. (2003). The Geography of Scientific Citation. *Environment and Planning a: Economy and Space, 35*(5), 761–765. https://doi.org/10.1068/a3505com

Bollen, J., de Sompel, H. V., Hagberg, A., & Chute, R. (2009). A principal component analysis of 39 scientific impact measures. *PLoS ONE, 4*(6), e6022. https://doi.org/10.1371/journal.pone.0006022

Bonitz, M., Bruckner, E., & Scharnhorst, A. (1997). Characteristics and impact of the matthew effect for countries. *Scientometrics, 40*(3), 407–422. https://doi.org/10.1007/BF02459289

Bornmann, L., Wagner, C., & Leydesdorff, L. (2018). The geography of references in elite articles: Which countries contribute to the archives of knowledge? *PLoS ONE, 13*(3), e0194805. https://doi.org/10.1371/journal.pone.0194805

Bornmann, L., & Waltman, L. (2011). The detection of "hot regions" in the geography of science—A visualization approach by using density maps. *Journal of Informetrics, 5*(4), 547–553. https://doi.org/10.1016/j.joi.2011.04.006

Breitzman, A. (2021). The relationship between web usage and citation statistics for electronics and information technology articles. *Scientometrics, 126*(3), 2085–2105.

Calvente, L. B. Y., Calafell, B. M., & Chávez, K. R. (2020). Here is something you can't understand: The suffocating whiteness of communication studies. *Communication and Critical/cultural Studies, 17*(2), 202–209. https://doi.org/10.1080/14791420.2020.1770823

Chakravartty, P., Kuo, R., Grubbs, V., & McIlwain, C. (2018). CommunicationSoWhite. *Journal of Communication, 68*(2), 254–266. https://doi.org/10.1093/joc/jqy003

Chasi, C., & Rodny-Gumede, Y. (2018). Decolonising Communication Studies: Advancing the Discipline through Fermenting Participation Studies. In B. Mutsvairo (Ed.), *Palgrave Handbook on Communication and Media Research in Africa* (pp. 55–71). Palgrave.

Collyer, F. M. (2014). Sociology, Sociologists, and Core-Periphery Reflections. *Journal of Sociology, 50*(3), 252–268.

Corley, E. A., & Sabharwal, M. (2007). Foreign-Born Academic Scientists and Engineers: Producing More and Getting Less Than Their U.s.-Born Peers? *Research in Higher Education, 48*(8), 909–940.

Cowan, R., & Rossello, G. (2018). Emergent structures in faculty hiring networks, and the effects of mobility on academic performance. *Scientometrics, 117*(1), 527–562. https://doi.org/10.1007/s11192-018-2858-8

Craig, R. T. (2008). Communication in the conversation of disciplines. *Russian Journal of Communication, 1*(1), 7–23. https://doi.org/10.1080/19409419.2008.10756694

Csomós, G. (2019). On the challenges ahead of spatial scientometrics focusing on the city level. *Aslib Journal of Information Management, 72*(1), 67–87. https://doi.org/10.1108/AJIM-06-2019-0152

Curran, J., & Park, M.-J. (Eds.). (2000). *De-Westernizing media studies*. Routledge.

Delgado-López-Cózar, E., & Martín-Martín, A. (2016). Thomson Reuters utiliza altmétricas: Usage counts para los artículos indizados en la Web of Science. *Anuario ThinkEPI, 10*, 209–221. https://doi.org/10.3145/thinkepi.2016.43

Demeter, M. (2017). The core-periphery problem in communication research: A network analysis of leading publication. *Publishing Research Quarterly, 33*(4), 402–420. https://doi.org/10.1007/s12109-017-9535-2

Demeter, M. (2018a). The Global South's Participation in the International Community of Communication Scholars: From an Eastern European Point of View. *Publishing Research Quarterly, 34*(2), 238–255. https://doi.org/10.1007/s12109-018-9585-0

Demeter, M. (2018b). Nobody notices it? Qualitative inequalities of leading publications in communication and media research. *International Journal of Communication, 12*, 31.

Demeter, M. (2018c). Changing center and stagnant periphery in communication and media studies. *International Journal of Communication, 12*, 2893–2921.

Demeter, M. (2019a). The world-systemic dynamics of knowledge production: The distribution of transnational academic capital in the social sciences. *Journal of World-Systems Research, 25*(1), 111–144. https://doi.org/10.5195/jwsr.2019.887

Demeter, M. (2019b). The winner takes it all: International inequality in communication and media studies today. *Journalism & Mass Communication Quarterly, 96*(1), 37–59. https://doi.org/10.1177/1077699018792270

Demeter, M. (2020). Academic Knowledge Production and the Global South: Questioning Inequality and Under-representation. *Springer International Publishing*. https://doi.org/10.1007/978-3-030-52701-3

Demeter, M., & Toth, T. (2020). The world-systemic network of global elite sociology: The western male monoculture at faculties of the top one-hundred sociology departments of the world. *Scientometrics, 124*(3), 2469–2495.

Demeter, M., Goyanes, M., Navarro, F., Mihalik, J., & Mellado, C. (2022b). Rethinking De-westernization in communication studies: The Ibero-American movement in international publishing. *International Journal of Communication, 16*, 20.

Demeter, M., Pelle, V., Mikulás, G., & Goyanes, M. (2022a). Higher quantity, higher quality? Current publication trends of the most productive journal authors on the field of communication studies. *Publishing Research Quarterly, 38*(3), 445–464. https://doi.org/10.1007/s12109-022-09893-2

Demeter, M., Jele, A. & Major, Z. B. (2022c). The model of maximum productivity for research universities SciVal author ranks, productivity, university rankings, and their implications. *Scientometrics, 127*, 4335–4361. https://doi.org/10.1007/s11192-022-04432-4

Efranmanesh, M., Tahira, M., & Abrizah, A. (2017). The publication success of 102 nations in Scopus and the performance of their Scopus-indexed journals. *Publishing Research Quarterly, 33*(4), 421–433.

Eysenbach, G. (2011). Can tweets predict citations? Metrics of social impact based on twitter and correlation with traditional metrics of scientific impact. *Journal of Medical Internet Research, 13*(4), e2012. https://doi.org/10.2196/jmir.2012

Ferguson, N. (2012). *Civilization: The West and the rest*. Penguin.

Frame, J. D., Narin, F., & Carpenter, M. P. (1977). The distribution of world science. *Social Studies of Science, 7*(4), 501–516.

Franzoni, C., Scellato, G., & Stephan, P. (2014). The mover's advantage: The superior performance of migrant scientists. *Economics Letters, 122*(1), 89–93. https://doi.org/10.1016/j.econlet.2013.10.040

Frenken, K., Hardeman, S., & Hoekman, J. (2009). Spatial scientometrics: Towards a cumulative research program. *Journal of Informetrics, 3*(3), 222–232. https://doi.org/10.1016/j.joi.2009.03.005

Fumasoli, T., Goastellec, G., & Kehm, B. M. (2015). *Academic work and careers in Europe: Trends, challenges, perspectives*. Springer.

Godin, B., & Ippersiel, M.-P. (1996). Scientific collaboration at the regional level: The case of a small country. *Scientometrics, 36*(1), 59–68. https://doi.org/10.1007/BF02126645

Gorraiz, J., Gumpenberger, C., & Schlögl, C. (2014). Usage versus citation behaviours in four subject areas. *Scientometrics, 101*(2), 1077–1095. https://doi.org/10.1007/s11192-014-1271-1

Goyanes, M., & de-Marcos, L. (2020). Academic influence and invisible colleges through editorial board interlocking in communication sciences: A social network analysis of leading journals. *Scientometrics, 123*(2), 791–811. https://doi.org/10.1007/s11192-020-03401-z

Goyanes, M., & Demeter, M. (2020). How the geographic diversity of editorial boards affects what is published in JCR-ranked communication journals. *Journalism & Mass Communication Quarterly, 97*(4), 1123–1148.

Goyanes, M., & Demeter, M. (2021). Dr. excellent: The systemic and personal conditions for being an academic star in communication studies. *KOME, 9*(2), 65–80. https://doi.org/10.17646/KOME.75672.64
Goyanes, M., Demeter, M., Cheng, Z., & de Zúñiga, H. G. (2022). Measuring publication diversity among the most productive scholars: How research trajectories differ in communication, psychology, and political science. *Scientometrics, 127*(6), 3661–3682. https://doi.org/10.1007/s11192-022-04386-7
Gunaratne, S. (2005). *The dao of the press: A humanocentric theory*. Hampton Press.
Gunaratne, S. (2010). De-Westernizing communication/social science research: Opportunities and limitations. *Media, Culture & Society, 32*(3), 473–500. https://doi.org/10.1177/0163443709361159
Háló, G. (2022). A review of online communication research in Hungary. *Online Media and Global Communication, 1*(2), 410–436. https://doi.org/10.1515/omgc-2022-0026
Háló, G., & Demeter, M. (2022). International VS national academic bibliographies. A comparative analysis of publication and citation patterns in scopus, google scholar, and the hungarian scientific bibliography. *New Review of Academic Librarianship,*. https://doi.org/10.1080/13614533.2022.2138475
Harzing, A.-W., & Giroud, A. (2014). The competitive advantage of nations: An application to academia. *Journal of Informetrics, 8*(1), 29–42. https://doi.org/10.1016/j.joi.2013.10.007
Horta, H., & Veloso, F. M. (2007). Opening the box: Comparing EU and US scientific output by scientific field. *Technological Forecasting and Social Change, 74*(8), 1334–1356. https://doi.org/10.1016/j.techfore.2007.02.013
Hunter, R., Oswald, A., & Charlton, B. G. (2009). The elite brain drain. *Economic Journal, 119*(538), 231–251.
Kemp, S. (2022). *TWITTER STATISTICS AND TRENDS*. Datareportal. Retrieved from https://datareportal.com/essential-twitter-stats
Lauf, E. (2005). National diversity of major international journals in the field of communication. *Journal of Communication, 55*(1), 139–151. https://doi.org/10.1111/j.1460-2466.2005.tb02663.x
Lee, L.-C., Lin, P.-H., Chuang, Y.-W., & Lee, Y.-Y. (2011). Research output and economic productivity: A Granger causality test. *Scientometrics, 89*(2), 465–478.
Leydesdorff, L., & Wagner, C. S. (2009). Macro-level indicators of the relations between research funding and research output. *Journal of Informetrics, 3*(4), 353–362.
Leydesdorff, L., Wagner, C. S., & Bornmann, L. (2014). The European Union, China, and the United States in the top-1% and top-10% layers of most-frequently cited publications: Competition and collaborations. *Journal of Informetrics, 8*(3), 606–617. https://doi.org/10.1016/j.joi.2014.05.002
Li, J., Qiao, L., Li, W., & Jin, Y. (2014). Chinese-language articles are not biased in citations: Evidences from Chinese-English bilingual journals in scopus and web of science. *Journal of Informetrics, 8*(4), 912–916. https://doi.org/10.1016/j.joi.2014.09.003
Makkonen, T., & Mitze, T. (2016). Scientific collaboration between 'old' and 'new' member states: Did joining the European union make a difference? *Scientometrics, 106*(3), 1193–1215. https://doi.org/10.1007/s11192-015-1824-y
Marinho, S., & Mariño, M. V. (2018). A landscape of communication methodologies and epistemology (M. Dale, Trans.). *Comunicação e Sociedade, 33*, 15–21.
Matthiessen, C. W., & Schwarz, A. W. (1999). Scientific centres in Europe: An analysis of research strength and patterns of specialisation based on bibliometric indicators. *Urban Studies, 36*(3), 453–477. https://doi.org/10.1080/0042098993475
Matthiessen, C. W., Schwarz, A. W., & Find, S. (2010). World cities of scientific knowledge: systems, networks and potential dynamics. An analysis based on bibliometric indicators. *Urban Studies, 47*(9), 1879–1897. https://doi.org/10.1177/0042098010372683
Moed, H. F., & Halevi, G. (2016). On full text download and citation distributions in scientific-scholarly journals. *Journal of the Association for Information Science and Technology, 67*(2), 412–431. https://doi.org/10.1002/asi.23405
Mohammadi, E., & Thelwall, M. (2014). Mendeley readership altmetrics for the social sciences and humanities: Research evaluation and knowledge flows. *Journal of the Association for Information Science and Technology, 65*(8), 1627–1638. https://doi.org/10.1002/asi.23071
Mohammadi, E., Thelwall, M., Haustein, S., & Larivière, V. (2015). Who reads research articles? An altmetrics analysis of mendeley user categories. *Journal of the Association for Information Science and Technology, 66*(9), 1832–1846. https://doi.org/10.1002/asi.23286
Narin, F., & Carpenter, M. P. (1975). National publication and citation comparisons. *Journal of American Society for Information Science, 26*(2), 80–93.
Nordenstreng, K. (2007). Soul-searching in Communication Research.
Nordenstreng, K. (2004). Ferment in the field: Notes on the evolution of communication studies and its disciplinary nature. *Javnost—the Public, 11*(3), 5–17. https://doi.org/10.1080/13183222.2004.11008856

Özkent, Y. (2022). Social media usage to share information in communication journals: An analysis of social media activity and article citations. *PLoS ONE, 17*(2), e0263725. https://doi.org/10.1371/journal.pone.0263725
Pan, R. K., Kaski, K., & Fortunato, S. (2012). World citation and collaboration networks: Uncovering the role of geography in science. *Scientific Reports, 2*(1), 902. https://doi.org/10.1038/srep00902
Peoples, B. K., Midway, S. R., Sackett, D., Lynch, A., & Cooney, P. B. (2016). Twitter predicts citation rates of ecological research. *PLoS ONE, 11*(11), e0166570. https://doi.org/10.1371/journal.pone.0166570
Perc, M. (2014). The Matthew effect in empirical data. *Journal of the Royal Society Interface, 11*(98), 20140378. https://doi.org/10.1098/rsif.2014.0378
Perneger, T. V. (2004). Relation between online "hit counts" and subsequent citations: Prospective study of research papers in the BMJ. *BMJ, 329*(7465), 546–547. https://doi.org/10.1136/bmj.329.7465.546
Priem, J., Taraborelli, D., Groth,, P., Neylon, C. (2010). *Altmetrics: A manifesto.* 26 October 2010. http://altmetrics.org/manifesto
Repiso, R., Castillo-Esparcia, A., & Torres-Salinas, D. (2019). Altmetrics, alternative indicators for web of science communication studies journals. *Scientometrics, 119*(2), 941–958. https://doi.org/10.1007/s11192-019-03070-7
Schmoch, U., & Schubert, T. (2008). Are international co-publications an indicator for quality of scientific research? *Scientometrics, 74*(3), 361–377. https://doi.org/10.1007/s11192-007-1818-5
Singh, L. (2020). A systematic review of higher education academics' use of microblogging for professional development: Case of twitter. *Open Education Studies, 2*(1), 66–81. https://doi.org/10.1515/edu-2020-0102
Stephan, P. E., & Levin, S. G. (2001). Exceptional contributions to US science by the foreign-born and foreign-educated. *Population Research and Policy Review, 20*(1), 59–79. https://doi.org/10.1023/A:1010682017950
Sugimoto, C. R., Work, S., Larivière, V., & Haustein, S. (2017). Scholarly use of social media and altmetrics: A review of the literature. *Journal of the Association for Information Science and Technology, 68*(9), 2037–2062. https://doi.org/10.1002/asi.23833
Testa, J. (2009). *Regional content expansion in Web of Science: opening borders to exploration.* GlobalHigherEd. Retrieved January 15, 2009 from https://globalhighered.wordpress.com/2009/01/15/regional-content-expansion-in-web-of-science/
Thelwall, M. (2018). Using altmetrics to support research evaluation. In M. Erdt, A. Sesagiri Raamkumar, E. Rasmussen, & Y.-L. Theng (Eds.), *Altmetrics for research outputs measurement and scholarly information management* (pp. 11–28). Springer. https://doi.org/10.1007/978-981-13-1053-9_2
Thelwall, M. (2021). Measuring societal impacts of research with Altmetrics? Common problems and mistakes. *Journal of Economic Surveys, 35*(5), 1302–1314. https://doi.org/10.1111/joes.12381
Thelwall, M., & Kousha, K. (2015). ResearchGate: Disseminating, communicating, and measuring Scholarship? *Journal of the Association for Information Science and Technology, 66*(5), 876–889. https://doi.org/10.1002/asi.23236
Thussu, D. K. (Ed.). (2009). *Internationalizing media studies*. Routledge.
Torres-Salinas, D., Cabezas-Clavijo, Á., & Jiménez-Contreras, E. (2013). Altmetrics: New indicators for scientific communication in Web 2.0. *Comunicar, 21*(41), 53–60. https://doi.org/10.3916/C41-2013-05
Tóth, J. (2018). "U.S. journals can afford to remain regional, but we can not." Author distribution-based internationality of Eastern European Communication Journals. *KOME, 6*(2), 1–15. https://doi.org/10.17646/KOME.2018.21
Tóth, J., & Demeter, M. (2021). Prestige and independence-controlled publication performance of researchers at 14 Hungarian research institutions between 2014 and 2018—A data paper. *KOME, 9*(1), 41–63. https://doi.org/10.17646/KOME.75672.61
Trabadela-Robles, J., Nuño-Moral, M.-V., Guerrero-Bote, V. P., & De-Moya-Anegón, F. (2020). Análisis de dominios científicos nacionales en Comunicación (Scopus, 2003–2018). *Profesional De La Información, 29*, 4. https://doi.org/10.3145/epi.2020.jul.18
Vaghjiani, N. G., Lal, V., Vahidi, N., Ebadi, A., Carli, M., Sima, A., & Coelho, D. H. (2021). Social media and academic impact: Do early tweets correlate with future citations? *Ear, Nose & Throat Journal,*. https://doi.org/10.1177/01455613211042113
Van Noorden, R. (2010). Cities: Building the best cities for science. *Nature, 467*, 7318. https://doi.org/10.1038/467906a
Waisbord, S. (2019). *Communication: A Post-Discipline* (1st edition). Polity.
Waisbord, S., & Mellado, C. (2014). De-westernizing communication studies: A reassessment. *Communication Theory, 24*(4), 361–372. https://doi.org/10.1111/comt.12044
Wang, G. (Ed.). (2011). *De-Westernizing communication research: Altering questions and changing frameworks*. Routledge.

Wasike, B. (2021). Citations gone social: examining the effect of altmetrics on citations and readership in communication research. *Social Science Computer Review, 39*(3), 416–433. https://doi.org/10.1177/0894439319873563

Zanotto, S. R., Haeffner, C., & Guimarães, J. A. (2016). Unbalanced international collaboration affects adversely the usefulness of countries' scientific output as well as their technological and social impact. *Scientometrics, 109*(3), 1789–1814. https://doi.org/10.1007/s11192-016-2126-8

Zimmermann, C. (2013). Academic Rankings with RePEc. *Econometrics, 1*, 249–280. https://doi.org/10.3390/econometrics1030249