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Foreword

The 28th Nordic Workshop on Bibliometrics and Research Policy 2023 (NWB2023) marks another milestone in our ongoing journey to explore, understand, and shape the ever-evolving landscape of bibliometrics and research policy. In the context of the Nordic region, NWB has served as a hub for researchers, policymakers, and practitioners to engage in meaningful discussions, share insights, and foster collaborations for nearly three decades. The NWB2023 grapples with the challenges and opportunities brought about by the increasing availability of data and technological advancements.

In the Book of Abstracts of NWB2023, you will find a diverse array of contributions that highlight the cutting-edge research and innovative approaches being pursued by our community. Our collective exploration of topics such as research evaluation, patent analysis, research funding, research integration, policy citation, information retrieval, bibliometric analysis, scholarly publishing, peer review, multilingual scientific discourse, citation practices, research mobility, international collaboration, and open science and the evolving role of libraries in research support reflects our commitment to addressing these challenges head-on. These abstracts represent the collective wisdom, expertise, and passion of our participants, and they offer a glimpse into the exciting discussions and presentations that await us during the workshop.

As we dive into the abstracts and engage in the discussions over the coming days, let us remember the importance of our shared mission: to advance knowledge, promote transparency, and foster excellence in research. By coming together as a community, we have the power to shape the future of bibliometrics and research policy in ways that benefit not only academia but society at large.

We would like to extend our heartfelt gratitude to all the authors, reviewers, and sponsors who have contributed to the success of this workshop. Your dedication and commitment are the driving force behind our shared achievements.

Together, we will continue to shape the future of scholarship.

Warm regards,

The NWB2023 organizing committee

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Contents

Keynote speeches

Challenges of causality in Open Science

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Abstract

Open Science has been steadily on the rise in the past decade. This includes Open Science practices, infrastructures, and policies, and touches on virtually all aspects of the research cycle and the academic system. The impacts of Open Science are often in the spotlight, but we should clearly distinguish it from the effects of Open Science on impacts. In the PathOS project, we are interested in understanding the causal effects of Open Science. Causal effects are difficult to infer in general. A fundamental problem is that many of the concepts of interest are not directly observable. Scientometrics studies typically use various metrics as indicators of the (unobserved) concepts of interest, but this also raises some thorny questions around causality. We will review some of the challenges around causality that emerge when studying open science and indicators and suggest ways forward.

Estimating expert review quality scores for journal articles with bibliometrics and artificial intelligence

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Abstract

Bibliometric indicators are often used to help estimate the quality of academic journal articles, but with little systematic evidence about the relationship between the two. This talk summarises the findings of studies of this relationship for quality scores from the UK Research Excellence Framework (REF) 2021, the world's most financially important systematic academic expert review exercise. It also reports the extent to which machine learning can estimate the quality of journal articles from bibliometric information and metadata. These studies drew on an almost complete set of individual article quality scores from REF2021 – the largest science-wide data set of this nature. The bibliometric analyses surprisingly suggest that there may be a positive association between quality scores and article or journal citation rates in all broad fields. This relationship is never very strong and is weak in some social sciences and in the arts and humanities. The machine learning analyses developed a range of strategies to predict quality scores alongside expert reviewers to reduce the human labour needed for reviewing, then asked a sample of the original expert reviewers to comment on the desirability of the strategies. Although a technically desirable strategy was developed, its ethical implications led to it not being recommended for future REFs.

Equity in the global science system

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Abstract

Science is an increasingly global activity, as demonstrated through the exchange of knowledge, resources, and people across national borders. Exchanges, however, can often be asymmetrical, leading to concentrations within science. Using bibliometric data, this presentation will explore the scientific product space of nations, how these develop, and the impact of scientific mobility, global funding, and collaboration on national science portfolios. The presentation will discuss threats to an equitable global science system (e.g., helicopter science and isolationism), challenges (e.g., language barriers and the monopoly of a lingua franca), and opportunities (e.g., science diplomacy and collective infrastructure). The presentation will close by a review of relevant global science policies and recommendations for the use of bibliometrics in generating and evaluating national and international science policy.

Pre-workshops

Impact beyond academia

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Abstract

Many steps have been taken to develop and implement broader approaches to assessing research and knowledge exchange, as exemplified by the EU's Reform of Research Impact Assessment and the worldwide Open Science movement. In line with CoARA (Coalition for Advancing Research Assessment) recommendations, how can research intelligence approaches capture a diversity of contribution to science and society? What are the challenges and gaps? What are the opportunities? We will discuss how SciVal combines a wider range of indicators and insights with peer review and expert knowledge to provide a broader view of research and its impact.

Sponsored event by Elsevier.

Nordic network for advanced bibliometrics

Ivar Ternsell Torgersen[1] and **Gustaf Nelhans**[2]

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Abstract

We propose an establishment of a Nordic Network for Advanced Bibliometrics that will promote the development and application of innovative bibliometric techniques among researchers and practitioners in the Nordic countries. By leveraging algorithmic classification, machine learning, citation context analysis, linked data, APIs, and visualization techniques, the network aims to enhance the understanding of scholarly communication, research impact, and knowledge dynamics. The network will foster a community of researchers and professionals working towards advancing bibliometrics in the Nordic region and beyond through collaboration, training, and research projects. In this workshop, we will showcase a number of cases by colleagues and then stage a panel discussion about how to set up such a network in the best way. We propose to develop training activities, hackathons, as well as online activities A dedicated communication platform based on Teams will be established to facilitate communication, knowledge sharing, and resource dissemination among network members. Regular updates, newsletters, and mailing lists will inform the network about ongoing activities and opportunities. The network will be open to both researchers and professionals working in bibliometrics and research policy. It will focus on open, transparent scholarly practices in line with the current state of knowledge in the field and ongoing policy discussions.

Rankings and the future of research assessment

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Abstract

University rankings guide many aspects of universities operations including students' and faculty recruitment, securing funding, finding collaborators and more. At the heart of any ranking is the idea of capturing research excellence and impact which is frequently focused on the number of publications and received citations. However, in the past decade there is an increasing demand to capture a university's impact and excellence beyond the traditional paradigm of scientific output. These include societal and economical impact, support and mentorship for successful career paths for trainees, equity, inclusion and diversity and more. In this presentation we would discuss the power of using various datasets and sources to capture the multi-faceted nature of the university and how these novel impact indicators might be used in a ranking exercise.

Sponsored event by Clarivate.

20 years of performance-based research funding in Flanders, Belgium

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Abstract

In 2003 the Flemish Government introduced performance-based research funding for universities in Flanders (Debackere & Glänzel, 2004; Engels & Guns, 2018; Luwel, 2021). Every five years the government procures a consulting team and panels of international experts to evaluate the effects and the effectiveness of these research and innovation subsidies to the universities. During the workshop we will share and discuss our observations regarding the gradual changes of the Flemish PRFSs since 2003, the possible effects of these PRFSs (including on support offices at universities), and the feasibility in terms of complexity of data collection, curation, transparency and validation.

References

Debackere, K., & Glänzel, W. (2004). Using a bibliometric approach to support research policy making: The case of the Flemish BOF-key. *Scientometrics*, *59*(2), 253–276.

Engels, T. C. E., & Guns, R. (2018). The Flemish performance-based research funding system: A unique variant of the Norwegian model. *Journal of Data and Information Science*, *3*(4), 45–60. https://doi.org/10.2478/jdis-2018-0020

Luwel, M. (2021). Performance-based Institutional Research Funding in Flanders, Belgium. *Scholarly Assessment Reports*, *3*(1), Article 1. https://doi.org/10.29024/sar.29

Oral presentations

Metrics, research quality and the research process. an exploration of their interrelations

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Abstract

A recurrent topic in the bibliometric literature is what influence the citation rate of articles. Various factors have been shown to be influential or covary with citation counts, such as the number of authors and international co-authorship. However, most of the literature has focused on dimensions that can be analyzed using bibliometric data only.

In this presentation, we aim to provide a fresh perspective on this issue by exploring whether specific procedural features of the research process play a role. By doing so, we hope to shed new light on the factors that influence how much an article is cited and how the authors consider the quality of their papers.

We examine the following features, drawing on the authors own assessments of their papers: the time spent to produce the article; the use of facilities, research infrastructure, and scientific equipment; the collection of new data or observations; the interdisciplinarity of the research; and the potential presentation of unambiguous results or findings. Furthermore, in our analysis, we also incorporate various bibliometric measures that have been previously identified as influential. By including these measures, we can control for their effects and isolate the independent contributions of the procedural features of the research process on citation scores and quality dimensions of the research.

The presentation is based on a survey sent out to 1,250 researchers, with a response rate of 47%, and the final sample consisting of 592 individuals, each with three publications included.

Keywords: research quality, citation indicators, metrics.

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A cross national comparison of evolution of co-authorship practices in Social Sciences and Humanities

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Abstract

Co-authorship in the Social Sciences and Humanities (SSH) is much less common then in other fields of science. Rapid increases in the number of co-authors and phenomena such as hyper-authorship are rare in the SSH. In a publish or perish culture, however, increasing co-authorship might be adopted as a strategy to strengthen one's portfolio. Evolving research methodologies and orientations and interdisciplinary collaboration may moreover induce more co-authorship over time (see e.g., Arhiliuc and Guns, 2023). So far, however, no cross-national analysis of SSH co-authorship trends based on comprehensive publication data has been conducted.

With this study, we intend to fill this gap and analyze the results in terms of research orientation and possible contextual influences of performance-based funding systems. Data for this study originate from the Flemish VABB (publication data for the period 2000-2021, i.e., 22 years), and the Polish PBN (publication data for the period 2013-2021, i.e., 9 years). We will invite other colleagues to join this study with comprehensive publication data from other countries, e.g., for the Czech Republic, Finland, Norway, and Slovenia relevant data are probably available. During NBW2023 Gothenburg we will present preliminary results of this cross-national comparison of SSH co-authorship trends of journal articles.

Keywords: co-authorship, humanities, social sciences, collaboration, performance-based research funding.

Reference

Arhiliuc, C., Guns, R. (2023). Disciplinary collaboration rates in the social sciences and humanities: what is the influence of classification type? Scientometrics 128, 3419–3436. https://doi.org/10.1007/s11192-023-04719-0

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Recovering from the guillotine: hydra-based construction of a new institution-level performance-based development framework for Aalborg University

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Abstract

Without warning or further thought, the so-called BFI indicator that served national and internal performance-based resource allocation in Denmark was terminated on December 3rd, 2021. For Aalborg University (AAU) this was particularly disruptive as the BFI indicator played a key role in the direct distribution of block funding to faculties and departments. A fast-acting committee was appointed to propose a new institutional-level framework at AAU with the aim to deliver data, statistics, and indicators to support internal strategic development, research assessment, and resource allocation. With this submission, we report on the resultant new AAU Indicator for the benefit of the NWB-RP community: In particular, we were proud to incorporate central ARRA and DORA elements seeking to "induce a research culture that recognises collaboration, openness, and engagement with society" by recognizing "the diverse outputs, practices and activities that maximise the quality and impact of research". To accommodate for recognizable research assessment indicators as well as striving to create a forward-looking indicator, the AAU Indicator contains two parts. In Part A, classic bibliometrics are a pplied by awarding points based on publication types and citations. To incorporate ideas of responsible metrics, citations are used with a field weighted citation impact. Simultaneously, points for publications outside Scopus are not adjusted, accommodating non-journal-based fields of research. Part B incorporates Open Science perspectives and aligns with ARRA by emphasizing societal interaction through collaboration with society, visibility in society, and open research practices. The result is an indicator that recognizes responsible bibliometrics in research assessment and adheres to new ideas in research evaluation and societal impact.

Keywords: bibliometric indicators, performance-based funding, responsible use of metrics. ARRA, DORA.

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Assessing the research competitiveness of Nordic countries

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Abstract

This work assesses the world scientific standing of the Nordic countries, overall and in 222 subject categories (SCs), in the 2015-2019 period, along four dimensions: i) the contribution to global scientific advancement; ii) the researchers' productivity; iii) the scientific specialization indexes; and iv) the efficiency in resource allocation across fields. The analyses concern individual-level data, thanks to an unsupervised author name disambiguation algorithm applied to Web of Science data. We classify each researcher in the prevalent SC of their publications and, differently from previous literature, we use SC-normalized impact-to-input indicators, thus avoiding distortions due to different intensities of publication across SCs. The five Nordic countries account for 3.03% of disambiguated world authors, and 3.29% of global scientific advancement in the time window considered. The contribution of each Nordic country to scientific advancement reflects the research size of each, but the impact-to-input ratios vary across countries due to different labour productivity. Among 100 countries with at least 500 researchers, Denmark ranks 4 by productivity at the overall level, followed by Sweden (16), Finland (24), Norway (25) e Iceland (29). Denmark shows the highest specialization indexes in "Physiology" and "Public Administration"; Sweden and Iceland in "Women's Studies" and, respectively, "Nursing" and "Ethnic Studies"; Norway in "Engineering, Petroleum" and "Engineering, Ocean"; Finland in "Materials Science, Paper & Wood" and "Regional & Urban Planning". Denmark presents the least dispersion in terms of specialization indexes and appears to invest more in the SCs where it excels (highest fund allocation efficiency), while the opposite is true for Iceland.

Keywords: scientific benchmarking; competitive positioning; research performance evaluation; research productivity; evaluative scientometrics; FSS; Nordic countries.

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The use of patent analysis in foresight, insights and assessments of methods and approaches

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Abstract

The analysis of patent data is an ongoing challenge. During the last 20 years, the digitalization of patents has enabled researchers and intellectual property professionals to search and evaluate patents and patent portfolios more efficiently and the field of patentometrics emerged. Since patents also reflect technological advances and the advent of possible applications, they are an important source for data driven foresight, the scientific field of gathering insight into the future by analysing data (publications, patents, social media etc.). So far, either qualitative or quantitative reviews on the use of patent data for foresight have been carried out. In this research I will present a combination of both types of analysis to determine which methods are used and how they can be evaluated. To do so, a set of scientific publications which was established in (Martini and John, 2022), will be analysed regarding the use case, method and data field used. This results in a structured overview. Additionally, the results will be enriched by adding the publications metadata. Since it is often missed out on the assessment and comparison of scientific methods, the goal will be to close this research gap for the aforementioned research topic and to deliver a base on which new methods can be assessed. To do so, bibliometric properties of the respective work will be combined with the thematic classification. This approach, which can be seen as a use case-driven, bibliometric-enhanced, systematic review, can then also be transferred to other research fields.

Keywords: research evaluation, patent analysis, bibliometric indicators, structured review, technology foresight.

Reference

Martini, M., John, M. (2022). The use of patent analysis in foresight. A data-driven review. Nordic Workshop on Bibliometrics and Research Policy 2022.

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Universities accelerate the use of knowledge in technological development for patenting

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Abstract

This study aims to provide an indication of universities' functions to knowledge utilization for technological development, by examining their roles as both the source of academic literature cited by patents (referred to as Scientific Non-Patent References, or SNPR) and in rare cases, patent applicants themselves. Specifically, we consider the differences in the engagement with the scholarly literature for patents with applicants from different sectors (academic and/or corporate). We investigate the time lag (or age) between a SNPR's publication year and the patent filing year and the presence of the university applicant in the SNPR affiliations. We collected patent data published in EPO during 2001-2022, extracted their SNPRs and linked them with Scopus publication records. We found that patents with academic owners cited more SNPRs than those owned by corporates, and a greater volume of more recent publications. The median age of SNPRs from patents owned by corporations is approximately 40% higher than those owned by universities, and the trend remains stable in the recent 10 years. When university-owned patents cite SNPRs affiliated to their own university, we found that even more recent SNPRs were cited. If we consider SNPRs a signal of knowledge transfer, these results indicate universities' roles in promoting faster utilization of pre-existing knowledge. We suggest that a possible reason is that universities generally have greater awareness and easier access to the scholarly literature than corporations. Our findings in this study may facilitate policies and strategies in promoting university-industry collaborations.

Keywords: research evaluation, citation analysis, patent, university-industry collaboration, economic impact.

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Who funds Nordic research?

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Abstract

Funding is imperative for academic research and can be provided by, among others, governments and private companies. Here, using a dataset of ~245,000 research articles sourced from the Web of Science and Incites Benchmarking & Analytics over the period 2016 to 2021 inclusive, funding for Nordic-authored research is analysed. The dominant funding source (~80% of all articles) is from countries within the European Union (EU). However, on a continent level, only funding from Asia, specifically China, increases in terms of percentage share over the period (14% to 19%). Within the EU, the main funding source (30% of all articles) is the European Commission, as well as countries' own research councils or academies (particularly Sweden, Norway and Finland). Outside the EU, funding from US government health bodies (e.g., National Institute of Health - NIH) is prominent but has decreased (12% to 9.5%). Funding from UK Research and Innovation (UKRI) has also declined (10.5% to 7.5%) over the period, possibly a consequence of Brexit. Notably, the impact of Nordic research declines over the period - all top 10 funders (by publication count) saw their Category Normalised Citation Impact (CNCI) stagnate or decrease, particularly UKRI and NIH whose values halved from above 6 to around 3. Using Citation Topics to define research areas, forty percent of funded research covers Clinical and Life Sciences. This is the most funded area for all 10 largest funders, bar the National Natural Science Foundation of China and National Science Foundation where Physics is the most funded area.

Keywords: brexit, China, CNCI, funding, Nordic, research areas.

Bibliographic coupling as a sleeping beauty: recent developments around the original similarity measure

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Abstract

As one of the first techniques invented in the 1960s to leverage citation indexes, Bibliometric Coupling has long been a basic operation offered by bibliometric tools. Despite being commonplace, there has been a surge of interest in this fundamental technique in recent years such that publication and citation trends on this topic exhibit a Sleeping Beauty pattern. Why would a 60-year-old form of citation analysis have recaptured the interest of information scientists? This presentation will provide an overview of the concept of Bibliometric Coupling, highlighting significant papers that have examined its usefulness over the decades, clarifying the (confusing) similarities with statistical measures such as Salton's cosine and Jaccard similarity, and culminating in the details of two new R packages for calculating Bibliometric Coupling. An exploration of the recent publications about Bibliometric Coupling will seek to explain the resurgence of interest in this form of citation analysis. On a more practical level, a case study will showcase how Bibliometric Coupling can be easily applied in a visualization that enables non-specialists to identify potential collaborators at other universities. Finally, a more programmatic approach to perform large-scale coupling will be demonstrated. Documentation for performing these analyses will be shared with participants as an R script.

Keywords: bibliographic coupling, collaborations, sleeping beauties, visualization, R programming language, VOSviewer.

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Policy citing science: a study of references in Swedish governmental reports (SOUs)

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Abstract

This study analyses references in Swedish governmental reports, known as Statens offentliga utredningar (SOUs). We suggest that tracing references to scholarly publications may be a potential method for studying the policy impact of research. Combining a manual analysis with machine reading of documents, we offer a first systematic study of citation patterns in Swedish governmental reports. The analysis shows that a large share of the references cited in the policy reports are written in Swedish, and many could be described as being part of the "gray literature". This indicates that scholars seeking to influence policy may need to explore alternative publication channels beyond peer-reviewed articles in English-language journals. Moreover, some government areas are prone to use scholarly literature extensively, while scholarliness is a less salient characteristic in others. Overall, the method of studying references in policy documents appears promising. Yet, the lack of an agreed-upon format of references (reference lists or footnotes) is a significant concern when applying our approach on a larger scale. Further implications of our findings are discussed concerning recent ideas on knowledge brokering as a theoretical concept for understanding how research is taken up in a policy sphere.

Keywords: policy impact, governmental reports, references, knowledge brokering.

*Corresponding author

An Investigation of policy citations to Nordic scientific publications

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Abstract

This research investigates sources of policy citations to Nordic scientific publications within the Overton platform. Various non-academic entities, such as government bodies, international organizations, healthcare institutions, statistical agencies, and news agencies, produce a wide range of grey literature, i.e., scientific literature produced by organizations outside of traditional academic publishing. These documents often aim to apply scientific findings to real-life practices. However, not all grey literature citing scientific papers are used by policy makers or integrated into policy-making processes. The primary objective of this paper is to identify and categorize the sources and contexts of the citing documents identified in Overton. Furthermore, this study seeks to determine the prevalence of policy citations to scientific publications published in the Nordic countries. To achieve these goals, a dataset of 93,378 Scopus publications with DOIs, affiliated with the five Nordic countries, i.e., Sweden, Finland, Denmark, Norway, and Iceland, and the autonomous territories of Faroe island and Greenland, and the autonomous region of Åland, will be examined. Preliminary findings indicate that approximately 10% of scientific publications in Finland and up to 23% in Greenland have at least one policy citation in Overton. A sample of policy citations, covering publications from different areas, will be manually categorized to investigate the evidence of policy application. This research will increase our understanding of the use of scientific research in policy-making processes within the Nordic region. The findings will contribute to a deeper understanding of the dynamics between academic publications and policy-relevance in non-academic grey literature, thereby facilitating evidence-informed decision-making.

Keywords: altmetrics, policy citations, research impact, grey literature.

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Mapping the research-policy ecosystem: who does what, when, where and why?

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Abstract

Policy organisations in the Nordics can draw evidence from a variety of sources, including academic research, government reports, surveys, case studies and stakeholder consultations. This paper's main contribution will be to map the Swedish research-policy interface, using a bibliometric analysis of Swedish public policy documents. We will use novel techniques to identify patterns of collaboration and knowledge exchange within the ecosystem, characterising the space and to start identifying what factors may shape those dynamics.

We'll draw from Overton, the world's largest searchable index of over 8 million public policy documents from around the world in addition to data from a major citation database. We'll explore: Who are the main 'players' in the Swedish research-policy interface? Which organisations publish the most public policy documents and in which subject areas? Is there an identifiable trend amongst highly cited pieces of research within academia vs those which are cited highly in public policy documents? What are the main publication and policy citation trends for Swedish-led research, both nationally and internationally over the last ten years? Which subject areas are of greatest interest to decision-makers, and does this vary by time or location? How is Swedish research generally used to shape Swedish public policies and in which contexts?

Our findings will be of relevance to researchers, research leaders, funders and other stakeholders seeking to enhance the relevance and visibility of their research within policy and practice. This paper will be of particular interest to those seeking to influence public policy within the Nordic region.

Keywords: research, policy, research assessment, impact, bibliometric indicators.

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Why do we still know so little about the total landscape of scholarly journals? Leveraging public data for building a common foundation

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Abstract

Despite the scholarly journal publishing space being largely digital today, there is a surprising lack of inclusive indexing of content and content providers. The most commonly used bibliometric databases contain only partial or skewed perspectives on the global landscape of scholarly journals. A large number of journals are currently invisible to most bibliometric research. Change in the space of journal publishing is constant, yet comprehensive knowledge about the dynamics still lacks a lot of scope and depth.

We identify the untapped potential that could be unlocked by having a more comprehensive and inclusive dataset available that could be freely used, edited, and shared among researchers and service providers. To illustrate one potential approach at creating such an initial dataset we identify some public data sources from where information could be drawn and aggregated to create the foundation for a dataset more comprehensive than anything else available so far.

Our preliminary dataset is aggregated from five local and global information sources including a total of 152,644 unique journals matched with bibliographic metadata records from the International ISSN Centre (see table below). Through our ongoing research we hope to spark a discussion in the community about how to move from concept to reality in creating a better data environment for future research in the bibliometrics space.

Source	1 source	2 sources	3 sources	4 sources	5 sources	Journals
JUFO	3296	2783	14127	3483	720	24409
Scopus	8693	8690	17820	4615	720	40538
PKP	13278	9124	20068	2176	720	45366
Bielefeld	16678	24728	24606	4797	720	71529
Crossref	28276	31979	37529	4933	720	103437
Total	70221	38652	38050	5001	720	152644

Keywords: indexing, scholarly journals, visibility.

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Systematic development and documentation of cross-disciplinary bibliometric search queries

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Abstract

Bibliometric analyses of cross-disciplinary research areas are often performed based on search queries developed specifically for the research area in question. If the research area is large, vaguely defined and/or covers many different scientific disciplines, it is a time-consuming process to develop search queries. Moreover, the development of bibliometric search queries is not an exact science, but a result of an iterative process. Therefore, it is important that the search queries are consolidated and well-documented. This study presents a systematic way of developing large cross-disciplinary bibliometric search queries based on the work on green research by the Danish Agency for Higher Education and Science. The study considers how to design new search queries as well as how to develop existing search queries by including experts, scientific papers and policy documents to define the search terms or combinations with which to start developing the search query. A systematic way of choosing, judging and documenting the single search terms – both selected and deselected – is presented based on specific search queries for green research developed for the Scopus database. The green search query consists of more than 70 sub-search queries of varying length that are combined to one single search query. It is also considered when to use Boolean and when to use proximity operators in a search as well as which textual context of the search that returns the most precise publication sets. As a result, a template for developing and documenting advanced bibliometric search queries is presented.

Keywords: bibliometric analyses, search query, cross-disciplinary research areas, green research, methodology, template.

The ripple effect of scientific misconduct on an author's career

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Abstract

Scientific community is hinged upon trust and the growth of the retraction database raises a severe concern to the scientific community. Although scientific collaborations increase research productivity by using an individual's knowledge and research skill set; however, a wrong collaboration can create distrust among peers. The present study aims to (i) analyze the impact of scientific misconduct on collaboration networks computed from the author's entire career. (ii) Whether scientific misconduct reduces collaboration of misconducting authors as opposed to those who never faced allegations of scientific misconduct. From Web of Science database, we extracted and analyzed 24209 unique authors from 5972 retracted papers from 1990 to 2020. In the collaboration network, the authors tagged as "Got Retraction" if they received at least one retraction in their career else "Never Retracted". For each year, we computed the average degree and average clustering coefficient of all retracted and non-retracted authors. We further computed the difference between the last and current retraction for each author. Interestingly, we observe that the average degree of authors with at least one retraction keeps increasing with the publication year and is significantly higher than authors with no retractions. A similar trend is observed through local clustering coefficient too. Our preliminary results suggest that perhaps "stigmatization through mere association" doesn't affect the collaborative links of authors who indulge in scientific misconduct. Ongoing research aims to study the power and significance of potential factors which could explain the above findings.

Keywords: scientific misconduct, retraction, author's career, scientific collaboration, collaboration network.

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Narrowing the gap between demand and supply of peer review

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Abstract

In 2021 a group of Hungarian psychologists estimated that in 2020, at least 4.7 million articles were published and indexed in Dimensions. Assuming that only 55 % of submitted are published, adding up the ones accepted by three reviewers and the ones rejected by only two, and if it takes 6 hours to perform a peer review, this will amount to more than 130 million working hours or just about the annual workload of 45.000 researchers. At the same time, we are facing a "peer reviewer crisis" as journal editors struggle to identify qualified and willing peer reviewers. Adding to this issue, the newly drafted European Agreement on Reforming Research Assessment suggests that future assessments of research quality should rely more on qualitative assessment. As a result, there may be a growing mismatch between the supply and demand of peer review, and the gap between the demand and the supply will widen further. In our presentation, we will illustrate this gap and seek to identify means of narrowing it. We will discuss the strengths and weaknesses of open peer and the extent to which AI can help narrow the gap.

Keywords: peer review, workload, crisis, supply and demand, AI.

*Corresponding author

Trade press as pathways to impact

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Abstract

In many technical areas, university research advances knowledge while professionals practice in the community, often not in daily contact with universities. To advance both the profession and scientific field, research needs to inform practice and practice needs to inform research. Advancing science and practice depends on the ability to effectively transfer credible knowledge between the research and practitioner communities, and examining their literatures can provide insight into this process.

We start by analysing referencing in trade journals and magazines, media that circulates widely in the professional community and are extensively read. In prior work (Dobre, Herbert, Hicks, 2022), we have demonstrated that over a third of trade journals contain articles with references and 38% of these references are to documents in peer-reviewed journals. As such, we can demonstrate that trade journals engage with and draw up scholarly knowledge. In this oral presentation, we present the findings from our survey of professionals where we explore the extent to which trade journals influence engineers, clinicians, architects and others in their professional activity. We investigate the extent to which professionals read, engage with, trust and are influenced by trade journals.

Through our research we have established that the trade press, even consumer magazines, does reference academic literature. The rich dataset that we have built revealed important information about research that reaches application in professional work. Through the survey work, we aim to demonstrate the extent to which knowledge transfer equates to societal impact.

Keywords: trade press, citations, altmetrics, policy, social impact, professionals.

Reference

Dobre, S., Herbert, R. & Hicks, D. (2022) The connection between professional magazines and the research literature. 26th International Conference on Science, Technology and Innovation Indicators (STI 2022). DOI: 10.5281/zenodo.6951484

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Detection of (non-)existing participation in contested academic discourses

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Abstract

This research-in-progress paper explores the potential external interference in academic freedom. Due to its large scientific output, China is taken as a case study. In some fields such as Taiwan, Tiananmen and Tibet, it is assumed that the academic freedom in regard to teaching, doing research and publishing is restricted. As yet, no study has assessed academic freedom with bibliometric data alone. This study aims to fill this gap, by proposing a bibliometric approach that indicates in how far Chinese publications differ from international publications in regard to the co-occurrence of terms related to contested topics. The three topics tested in this proof-of-concept study are Tiananmen, Tibet, and Uyghur. Results show that papers exclusively published by Chinese scientists on these topics lack terms that can be conceived as sensitive, whereas other nations than China use sensitive terms. The findings suggest that the bibliometric method is capable of indicating potential external interference in academic freedom to some degree. However, it cannot distinguish between censorship and self-censorship or genuine lack of national interest in a topic.

Keywords: academic freedom, term co-occurrence, bibliometric pilot study.

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Exploring the thematic landscape of the circular economy: a comparative study of publication and Wikipedia data

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Abstract

The transition towards a sustainable society is one of the most relevant topics in recent studies of all sciences. Here, the thematic landscape around the topic circular economy (CE) is of great importance for researchers and policy actors. In our approach, we strive to represent this landscape based on a publication and Wikipedia dataset. Concerning the first, we retrieve scientific publications related to CE from the Dimensions database with the help of a suitable search query. With regard to the latter, we build on the hyperlinks of the Wikipedia page of CE to build up a database of CE related Wikipedia pages. We cluster both datasets separately with an approach that combines BERT embeddings and noun phrases of the publications' abstracts and the page content of each Wikipedia page. Our preliminary results based on manual comparison and evaluation of the cluster results of both datasets show that for the case of CE publication data and Wikipedia data match each other on established topics. Moreover, there are topics to be found in both datasets that are unique, which may represent niche, declining or emerging topics. This methodology attempts to contribute to the scientific discourse by 1) evaluating the potential of Wikipedia for bibliometric analyses compared to publication data, 2) illustrating the thematic landscape of both data resources with the example of circular economy and 3) identifying emerging topics or recent trends that are not commonly represented, highlighting the complementary power of Wikipedia data for bibliometric studies.

Keywords: circular economy, clustering, text mining, Wikipedia, Dimensions.

*Corresponding author

Evaluating the diversity of scientific discourse on twenty-one multilingual Wikipedias using citation analysis

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Abstract

Scientific research is often cited in Wikipedia pages, however little is known about these citations across different Wikipedia languages and the range of research being used only in non-English Wikipedias. This study aimed to investigate the scale of research citation across twenty non-English Wikipedias and the degree to which they cite a different set of research.

We analyzed Wikipedia citations of over 4 million publications in 21 different Wikipedia languages, including over 1 million journal papers and 2 million books. A minimum of 80,000 citations was required for a language to be included in the analysis. The study analyzed the percentage of publications cited in English Wikipedia compared to non-English Wikipedia, as well as the percentage of publications cited in a single non-English Wikipedia compared to multiple non-English Wikipedias.

The study found that approximately 40% of publications were only cited in non-English Wikipedia, either in a single Wikipedia language or in multiple non-English Wikipedias. There were significant differences between the number/percentage of publications shared in English vs non-English Wikipedia, but no significant differences between non-English Wikipedia in a single language compared to those cited in multiple non-English Wikipedias. The study also found that the percentage of books cited in non-English Wikipedia was higher than that of journal publications.

The study concluded that non-English Wikipedia provides a unique voice for research literature and that there is a significant amount of unique publications being solely cited in non-English Wikipedia. These findings suggest that each Wikipedia makes a unique contribution to the representation of knowledge within its stakeholder groups, and underscores the importance of multilingualism in knowledge sharing.

Keywords: multilingualism, Wikipedia, bibliometrics, diversity, publications, books.

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Field affinity

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Abstract

Often, studies of interdisciplinarity in publishing using reference patterns assume homogeneous relations between scientific fields. A typical definition of interdisciplinarity in reference practices is the share of references going to publications in fields other than the publishing field (See e.g., Lariviere & Gingras 2010). While this provides a rough estimate of the interplay between fields, it does not consider the general proclivity of the citing field to reference the cited field, information which provides additional information about what might be called the cognitive distance between fields. Including this information in analyses of interdisciplinarity could to a larger degree help determine whether a publication exhibits interdisciplinary citation practices or is merely drawing on intellectually proximate fields.

In this study, we present a field affinity measure that can be calculated for every combination of citing and cited field, and how this can be used to determine the degree of interdisciplinarity in the references of any given publication. The measure as defined is asymmetric between fields, meaning it is possible to determine which fields exert disproportionate intellectual influence over other fields. We will demonstrate some field affinity analyses, both on field and publication level using the Web of Science field classification scheme, although the method can be used for any field classification scheme with any degree of granularity or hierarchical class structure.

Keywords: interdisciplinarity, field affinity, reference practices, research field classification.

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Locally relevant, globally visible? Geographic orientation of social sciences and humanities

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Abstract

Several disciplines in the social sciences and humanities (SSH) are characterized by a high degree of local language use, coupled with comparatively less international visibility (e.g., greater usage of local journals). This is, according to the most common explanation, because of their orientation toward a local or national context: if research is mainly relevant for a particular country or region, it makes sense to publish its results in the local language and in local venues. In this contribution, we empirically test this explanation by analysing the geographic orientation of publications in the comprehensive VABB database of Flemish SSH publications. To this end, we extract geographic words or phrases in titles and abstracts of English- and Dutch-language publications (Dutch being the local language used in Flanders). We apply geocoding and named entity recognition (NER) with geotext and spaCy. According to our preliminary analysis, about 30% of abstracts of SSH publications mention a country, city, or state. In the next step, we will relate the geographic orientation of publication contents to publication characteristics like language, author nationality, field, and journal 'internationality'. All in all, we expect the results to contribute to a better understanding of disciplinary differences regarding language use and (inter)national orientation. These insights may in turn help to attune research (assessment) policies to the specifics of the SSH.

Keywords: publication language, geographic orientation, social sciences, humanities, content analysis.

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Geopolitical influences on global collaboration patterns in science and how they affect the Nordic countries

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Abstract

Recent years have seen increasing tensions between science policies advocating openness and globalization on the one hand, and foreign policies much more focused on competition, trade sanctions, self-containment, and security and defence on the other. The deteriorating relation between China and the USA, the two largest science-producing countries, is creating new configurations in global collaboration patterns with internal Asian collaboration on the rise. Russia's invasion of Ukraine has changed European collaboration patterns. So far, global collaboration in science has not followed the borders of defence alliances, but this is changing. The aim of this contribution is to present the trends in global scientific collaboration as a context for a closer look at the Nordic countries' international collaboration until recently. The analysis will be based on data from Web of Science updated until September 2023. I will partly use an indicator of the Relative Intensity of Collaboration presented by Fuchs, Sivertsen & Rousseau in *Scientometrics*, 2021, which is an improvement of the widely used indicator presented by Luukkonen, Persson & Sivertsen in *Science, Technology & Human Values* in 1992.

Keywords: international collaboration, globalization, security policy, USA, China, Russia, European Union, Nordic Countries.

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Researchers' mobility in Nordic countries

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Abstract

Using publication data between 2012 and 2021, this work examines the institutional and geographic mobility of researchers initially affiliated with a Nordic institution in 2012. Data are retrieved from the Web of Science (WoS) and contain information for more than 70,000 researchers. More than four fifths (84%) of these authors have multiple institutional affiliations, while more than half (56%) added a new institution to their initial affiliation list. Roughly 37% of Nordic authors have more than one affiliated country, while 29% added new a country affiliation after 2012. Furthermore, researchers from all Nordic countries tend to gradually leave their initial affiliated country as their career progresses. Iceland has the greatest drain of researchers. It is the only Nordic country where less than 70% of its authors remained affiliated with an Icelandic institution in 2021. USA, UK and Germany are in the top tier of foreign affiliated countries of Nordic researchers. At the same time, many Nordic researchers are affiliated with other Nordic countries. Sweden stands out as an important mobility destination for authors from other Nordic countries. Sweden is in the top three mobility destinations for all other Nordic countries except for Denmark. In terms of institution affiliation types (i.e., academic, government, corporate), there were no significant shifts of authors from one affiliation type to another when comparing distributions in 2012 and 2021.

Keywords: researcher mobility, institutional mobility, geographic mobility, Nordic countries.

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A preliminary exploration on the dynamics of international scientific mobility

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Abstract

International scientific mobility is the most important feature of the globalization of modern science. In the last few decades, the changes in technological conditions and contemporary culture have profoundly reshaped disciplinary development in various countries as well as the pattern of international mobility. With the help of large-scale datasets to capture longitudinal, country-level patterns of migrations in science, this paper outlines the evolution of scientific mobility over the past 100 years. There has been a dramatic growth in scientific mobility both at the global and regional levels. As one of the manifestations of multi-polarization in science, the disparity in the attractiveness of countries for scientists is decreasing, and this is partly attributable to stronger relations among higher- and lower-income countries in mobility networks. Another interesting finding was that scientists from high-income countries now have a lower probability of returning to their original countries than those from lower-income countries, unlike the trend that was observed in the 1990s. Additionally, we examined the factors that might affect the number of scientific immigrants, and highlighted the importance of social capital connections between countries and "pull" factors like economic and scientific strength of countries. This paper reviewed the dynamics of scientific mobility from different aspects and shed light on the studies of evolution of science.

Keywords: international mobility; research policy; scientometrics; bibliometrics; science of science.

*Corresponding author

Cocreating open science ecosystem to foster the reform of research and researchers assessment

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Abstract

Open Science (OS) is valued in academic environments, but the actual adoption of OS practices lags behind. While some practices, such as OA publishing, have reached levels of adoption that allow them to be viewed as the standard way of producing scientific knowledge, others are not close to being mainstream. In Finland, the Ministry of Education and Culture has recognised the importance of OS for high-quality research and innovation. Therefore, the cocreation of an Open Science ecosystem in national level requires a roadmap: what services need to be in place for the ecosystem to work and what actors are to take the responsibility for providing these services. Now, Finnish Open Science and Research (OScaR) Coordination is using the enterprise architecture method for developing such a roadmap, and for instance, for identifying the essential business capabilities and services required by the open science ecosystem. The national roadmap can work as a launching pad for an international discussion on implementing OS.

A shift towards a culture more favorable of OS is an interplay between multiple factors, including provision of necessary and easy-to-use infrastructure to make the OS practices feasible in the first place, normalization of OS practices, introduction of incentives for researchers to adopt OS practices, and imposition of policies to further consolidate their application. The aim of the presentation is to show the strengths and weaknesses of the OScaR architecture in developing knowledge-based management, administrative services and processes to support information systems and also practices, capabilities and indicators for responsible evaluation.

Keywords: open science, responsible research assessment, reference architecture, knowledge-based management, metrics and indicators, capabilities, ecosystem.

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An analysis of publication trends by income level in the Directory of Open Access Journals 1987–2020

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Abstract

The growing prevalence of the gold open access model can exacerbate the monoculture of research and inequality in knowledge production. This study examines publication trends in the Directory of Open Access Journals (DOAJ) journals by countries' income level from 1987 to 2020. By combining article metadata from journals listed in the DOAJ with World Bank country income data, this analysis examines the trends visible in plots of historical open access publication data. In 2020, the number of articles published in DOAJ journals by authors affiliated with high-income countries exceeds the sum of the other income categories. Article processing charge waivers seem to have more impact on high- and low-income countries than middle-income countries. The results show that the gold open access model has not been able to improve the extremely low number of open access articles from low-income regions. In addition, authors in middle-income countries publish in gold open access DOAJ journals at lower rates than authors based in other economic regions. The gold open access model is disadvantageous to researchers outside of high-income countries, highlighting the importance of supporting the diamond open access model as a potential means of improving global equity and epistemic diversity in knowledge production.

Keywords: open access; article processing charge, DOAJ, epistemic diversity, OpenAlex.

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The Open access citation advantage in the context of scholarly publishing at a higher education institution

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Abstract

In our study, the Open Access Citation Advantage effect is measured in publications authored by researchers at Malmö University within a five-year period. We explore the effect in the context of scholarly publishing at higher education institutions. Slight OACA was measured in the full dataset, despite higher average JIFs of the non-OA journals. The strength of the effect was field specific. Within highly specialized disciplines, researchers tend to publish in a limited set of journals, prompting libraries to acquire access so that citation potential within the field can be achieved despite paywalls. Coverage in repositories such as SciHub or ResearchGate, possibly weakening the effect, might, too, be field specific. The effect was strongest for the green OA variant, followed by hybrid, bronze and gold. These results may inform the development of publishing strategies. Researchers do not have to compromise between OA publishing or achieving citation impact, indicating that citation-based evaluation does not necessarily hinder progress toward open science. Publishing in journals with limited or no OA options might prevent publications from achieving their citation potential, however, this appears to apply for the gold OA variant as well, probably due to the relatively young average age of fully OA journals. Importantly, green OA can provide at least as high of a citation advantage as paid OA in hybrid journals, offering researchers a no-cost option for increasing their impact. We may see changes in the effect as OA publishing becomes increasingly more widespread and fully OA journals establish their reputation.

Keywords: open access citation advantage, higher education institutions, publishing strategies, research support, citation-based evaluation, open science.

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Panel discussion

Responsible research assessment – with or without the Nordic bibliometric indicator

Panel moderator: **Janne Pölönen**, Federation of Finnish Learned Societies, Finland.

The panel comprises experts in research assessment and bibliometrics from five Nordic countries:

Denmark	:	**Marianne Gauffriau,** IT University of Copenhagen.
Finland	:	**Laura Niemi,** University of Turku.
Iceland	:	**Baldvin Zarioh Deildarstjóri,** University of Iceland.
Norway	:	**Gunnar Sivertsen,** NIFU – Nordic Institute for Studies in Innovation, Research and Education.
Sweden	:	**Björn Hammarfelt,** University of Borås.

Abstract

Responsible research assessment (RRA) entails balancing qualitative and quantitative methods, recognizing diversity of academic work and fields, and rewarding open science practices. CoARA agreement for Reforming Research Assessment reinforces the DORA (The San Francisco Declaration on Research Assessment) recommendation against inappropriate uses of journal- and publication-based metrics (especially JIF and h-index). While the European Council supports the RRA agenda, it recently invited member states to address the issue of predatory publishing practices.

The Nordic bibliometric indicator relies on evaluation of journals and book publishers by national field-specific panels of experts. Since 2005, the indicator has been adapted in some form at national or institutional level in all Nordic countries but now its uses are reconsidered. Denmark and Norway have decided to stop using the indicator in the performance-based funding of universities, and Finland is reconsidering its funding model. Many Swedish universities use the Norwegian list for internal funding allocations, and Iceland uses the Finnish list in the new evaluation system for universities.

The panel discusses the following three questions from the national and/or their institution's perspective:

1. What are the most important recent changes in the use of the Nordic bibliometric indicator in your country/institution?

2. What have been the main concerns about the use of the indicator with respect to the RRA agenda and the CoARA Agreement?

3. What is the role of journal evaluation (by citation metrics or experts) in addressing predatory, questionable, deceptive and low-quality publishing practices?

Poster presentations

Broadening the conception of 'what counts' – example of a narrative CV in a university alliance

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Abstract

Research assessment is currently under reform. There has been criticism towards the over-emphasis of metrics in assessment. There are also needs to recognise the diversification of academic careers and contributions in academic work. This presentation introduces one practical example of how universities aim at responding to the changes in their institutional environments. The YUFERING portfolio has been developed in the YUFERING project of the European university alliance YUFE. The development of this researcher-driven narrative CV was based on global and national initiatives, policy reports, and practical tools related to research assessment as well as interviews on YUFE universities' recognition and reward structures. The emphasis in the portfolio is on the content and significance of the researcher's contributions, expertise, contributions in Open Science, and future vision for his/her career. While the portfolio gives researchers a possibility to bring forward their individual strengths and skills, the arguments need to be supported with evidence. The YUFERING portfolio makes visible the researcher's contributions in different spheres of academic work: research; teaching and supervision; community engagement and societal interaction; and teamwork, management, and leadership, all including the viewpoint of Open Science. The portfolio as a generic document considers different national and organisational contexts and allows for flexibility, local adaptations, and tailoring for individual assessment case. Each university may specify the national/local databases to be used to show the evidence of the achievements.

Keywords: research assessment, research evaluation, narrative CVs, open science, universities, university alliances.

*Corresponding author

Researcher mobility in Sweden: bibliometric analysis using a newly developed model and a customizable research tool

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Abstract

Researcher mobility is an integral part of the way research is conducted and of a researcher's career. Its effects on collaboration networks, research impact and knowledge flows drive countries and institutions to quantify and understand this activity.

This poster presents a researcher mobility model which was developed and prototyped as a customisable research tool to provide a unified perspective on mobility at macro (national), meso (institutional) and micro (individual) levels. The approach includes multidimensional perspectives, temporal, geographical, sectoral, and directional mobility.

The model quantifies research mobility volumes and qualifies additional researcher characteristics and productivity indicators in Sweden's higher education sector, observing researcher mobility patterns (1992-2021). Results show a high degree of variability in researcher mobility patterns across institutions, especially when considered by career age. We present a view of Sweden's mobility patterns relative to comparator countries, as well as a granular view of mobility for the largest universities. The analysis includes the scholarly output and research impact trends among different cohorts of researchers, identified by their mobility types and career age, as well as an exploration of the destination countries of researchers leaving Swedish universities.

By developing a model that encompasses all these elements, we present a detailed picture of mobility in Sweden and demonstrate the power of a customisable tool. This model is relevant and translatable to other countries and could be a useful tool for the analysis of researcher mobility, with direct applicability for the colleagues attending NWB2023 from the Nordic countries or further afield.

Keywords: researcher mobility, bibliometrics, scientific mobility, scientific performance.

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Predicting the future of the research trends – on examples of OSH publications from 2010-22

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Abstract

This research aimed to predict the research trends on occupational safety and health (OSH) on the example of Poland. To obtain a representative data set selected OSH scientific journals indexed in Web of Science CC (WoS CC). Downloaded data include record set from WoS CC - articles affiliated with Polish scientific institutions. For that analysis were used in two ways. In the first approach sets of metadata (e.g., keywords) of publications indexed in WoS CC from 2010-2022, especially for each year of that period (2010, 2015, 2020, 2022) was used. The second approach used the same dataset and separate categorization using parent categories representing working environment: physical, chemical, biochemical, psychosocial hazards, personal protective equipment and ergonomic as part of OSH. That will provide information on the representation and volatility of publication topics over the years.

While working on the poster, the authors will try to answer the following questions:

RQ.1. What are the main topics for research on OSH for 2010-22 in Poland?
RQ.2. How changed the main topics for OSH? Which topics were and which are the most important for research in Poland now?
RQ.3. Is it possible to predict the topics of research on OSH for the future based on data on already indexed publications?
RQ.4. The WoS CC does not index all OSH achievements for Poland – does it make sense to use these databases to predict research trends? Is possible any other solution?

It is a preliminary study. The authors plan to broaden its scope.

Keywords: research trends, occupational safety and health (OSH), Web of Science, Poland, scientific publications, data analysis.

This paper is published and based on the results of a research task carried out within the scope of the sixth stage of the National Programme "Governmental Programme for Improvement of Safety and Working Conditions" supported within the scope of state services by the Ministry of Family and Social Policy. task no. 7.ZS.06. entitled *Scientific communication (regarding the safe functioning of humans in the working environment) for increasing the effectiveness of research works*. The Central Institute for Labour Protection – National Research Institute is the Programme's main co-ordinator.

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The SDGs and publications of University of Helsinki: tracking contributions responsibly?

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Abstract

The United Nations 2030 Agenda for Sustainable Development launched in 2015 introduced 17 Sustainable Development Goals (SDGs). Ever since then, Universities have been interested in evaluating how their research relates to these goals. In University of Helsinki, for example, we are developing ways of monitoring and analysing the share of publications related to sustainable development. Several analytical tools for tracking SDG contributions have cropped up in recent years. Major citation databases such as Scopus, Web of Science and Dimensions now come with SDG-information. However, SDGs are very general in scope and consequently their interpretation at the level of publications can often be ambiguous. Major databases tend to use different methods for relating publications under various SDGs. For example, SciVal uses AI enhanced keyword searches whereas InCites uses citation-based clusters (Citation Topics). We wanted to find out how these differences in methodology are reflected in the resulting SDG distributions for our university. We gathered all peer-reviewed University of Helsinki publications between the years 2020-2022 with a DOI-identifier (22563 publications in total) and analysed their SDG distributions in InCites and SciVal. We compared the distributions and looked at their overlaps.The results were that there were significant differences in SDG attributions with up to quadruple amounts of publications for certain SDGs depending on the database used. More problematic, however, was that the overlaps in publications tended to be very small (4.7% to 37.5% for InCites in SciVal and 5.5% to 80.3% for SciVal in InCites). Some implications were considered.

Keywords: sustainable development goals, research evaluation. InCites, SciVal, responsible evaluation.

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Interdisciplinary research classification based on a combined conceptual-empirical framework

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Abstract

Measuring interdisciplinarity is a significant but challenging task in science quantitative studies. Various indicators have been proposed for measurement, but recent studies showed the majority of these indicators are unsatisfactory and that some even produce contradicting results. This problem is largely due to the fact that interdisciplinarity is a complex and multifaceted concept, and it is difficult for indicators to capture this complexity. Therefore, in this study, we argue for classifying interdisciplinary research (IDR) rather than measuring it directly. A combined conceptual-empirical framework is proposed to classify IDR. Specifically, at the conceptual level, four ideal types of IDR—Synthetic, Discovery, Diffusion, and Background—are provided in terms of their knowledge integration patterns; at the empirical level, bibliometrics based on full-text are used to extract citation features (e.g., citation mentioned, shared, length, and function features) of categories from IMR&D structure to characterize different knowledge integration patterns. Finally, these elected features are fed into deep learning classifiers (e.g., CNN and RNN) to achieve the final result of IDR classification. Our result shows that the number of articles of Discovery and Diffusion types accounted for the largest proportion of the total. The proportion of articles of Synthetic type that well-satisfy the core definition of IDR is slightly lower. The Background type accounted for the lowest. We therefore argue that classifying IDR using a well-designed framework is a feasible and reasonable solution to the current "measurement trap" and may offer the opportunity and foundation for subsequent measurement research of different IDR types.

Keywords: interdisciplinary research, interdisciplinarity, classification, bibliometrics, citation feature.

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Collecting author affiliation data for Flemish non-Web of Science SSH publications: process, results and lessons learned

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Abstract

In 2019, a parameter measuring international collaboration was added to the Flemish performance-based research funding system. Its implementation required author affiliation data for co-authored publications from the Flemish Academic Bibliography for the Social Sciences and Humanities (VABB-SHW). However, affiliations were not available in the database, leading to the launch of an extensive data collection operation. Because half of VABB-SHW publications are not included in the Web of Science, a multifaceted data retrieval approach was required as no single affiliation data source was available for this subset of more than 23.000 publications.

Apart from the consultation of other databases like Scopus or Crossref, almost 85% of the data had to be retrieved manually, applying a step-by-step methodology. Multiple issues were encountered; not only about the findability and accessibility of publication metadata, but also on the level of the availability of identifiers for coding all affiliated organizations. However, the process delivered a template as well as the infrastructure to collect and code affiliation data in a multidimensional way. It will ultimately not only lead to the activation of the internationalization parameter and the addition of affiliation metadata, but also to a more detailed insight in international academic collaboration making use of publications outside a major citation database.

During the presentation, we will describe the process, results and lessons learned, as well as briefly zoom in on an extended organization database that was generated by the project.

Keywords: scholarly metadata, author affiliation data, organization database, international collaboration, data management.

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More Than Our Rank: a preliminary analysis of signatories' narratives

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Abstract

More Than Our Rank (MTOR) was launched October 2022 in response to the problematic effects of global university rankings. MTOR encourages academic institutions—whether ranked top 10 or yet to place—to join like-minded institutions and publish narratives that highlight the many ways they serve the world. Ways that are not reflected in their ranking positions. By March 2023, twelve institutions have signed MTOR, and eight have published narratives on their websites. This study is a preliminary analysis of the narratives. It gives examples of what the eight universities are proud of that they do not see reflected in the rankings.

The analysis of the eight MTOR narratives applies four categories: Education, research, knowledge transfer, and other. In each category, we look for statements/success stories and indicators. For context, we also look for statements on global university rankings and MTOR in the narratives.

The narratives offer many different indicators, for example, number of medals in Olympic and Paralympic competitions. Many of the statements/success stories are about contributing to the region of the institution and to important international agendas, for example research integrity or climate change.

Two narratives do not mention ranking positions at all, four discuss their rank(s) without mentioning specific rankings, and two narratives mention their position in specific rankings.

The study shows that the eight institutions are much more than their rank. For example, regional contexts and international agendas on the future development of higher education are important. The diversity demonstrated in the narratives would be difficult to comprise in global university rankings in a meaningful way.

Keywords: more than our rank, global university rankings, responsible research assessment, narratives, success stories, indicators.

*Corresponding author

Introducing ReformScape: an online tool mapping the global research assessment reform landscape

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Abstract

Over the past decade, international efforts to reform how research is recognized and rewarded in academia have gathered substantial momentum. Animated by concerns that overly-narrow criteria and indicators of research quality are creating unsustainable and unequal career systems and narrowing knowledge production, various reform movements focusing on responsible metrics, research integrity, open research, Diversity, Equity and Inclusion have coalesced under the label of Responsible Research Assessment (RRA).

Reform of research assessment remains however a challenging process because it impacts established processes, cultures and norms. Despite the growing recognition of the need for change, organisations embarking on reforms may not always be sure where is the best place to start. ReformScape aims to help them overcome that hesitancy. ReformScape is an online tool for exploring how academic research institutions around the world have introduced and implemented new responsible research assessment practices. The tool enables more experienced institutions to share what they are doing with the wider world, while helping other institutions gain an overview of global developments in assessment reform. It's populated with policies, roadmaps and other documents from hundreds of institutions all over the world covering innovations in academic hiring, promotion and tenure assessments, together with expertly curated insights to help users discover and discuss what's possible.

This poster presentation will introduce ReformScape, describing its origins, the co-creation process behind it, current coverage and scope, and potential for further development. It will provide screenshots of the tool, as well as QR codes linking the NWB audience directly to the tool.

Keywords: responsible research assessment, open science, responsible metrics, reform, online tool.

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Extraction and analysis of citation data from student output in order to improve library instruction

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Abstract

At the Mid Sweden University (MiUN) students are expected to cite relevant and domain specific intellectual authorities when writing their papers and theses. To help students achieve this, the University Library at MiUN provides instruction. Here, a proposed approach of improving library instruction is to study the sources which students cite.

Extracting references manually is labour intensive and thus unrealistic to undertake systematically. We therefore present a method, using Open Source software (AnyStyle and R), that parses, extracts, and compiles citation data from theses stored in pdf format on an institutional repository, making it possible to perform source analysis and study co-citation patterns.

Output from researchers affiliated to the same institution and active within the same field of study as the students can act as a baseline by which comparisons can be performed. These researchers are frequently the students' teachers, and have therefore potentially played a part in assembling their required reading lists.

With this approach we propose that library instruction can be revised and improved using methods frequently employed within research evaluation. Findings can also be forwarded to teachers and course administrators, rendering the library an active partner in course development and assessment. In addition, providing information regarding inter-disciplinary influences that impact students' as well as revealing differences between research and educational output.

Keywords: bibliometrics, R, citation analysis, source analysis, student theses, student output analysis, library instruction, citation extraction.

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Bibliometric analysis of traditional and emerging computational techniques for computer-aided design of TFOs

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Abstract

Research in life science generates massive and complex data which can be extracted and analyzed by different approaches based on ab-initio modelling, heuristic methods, machine learning techniques, or hybrid models. The Covid pandemic boosted the use of oligonucleotides (ONs) as therapeutic agents for vaccine development generating significant advances in the life science sector. This study aims to trace the production of scientific publications about the computer-aided design of ONs with the ability to form triplexes (TFOs) based on publications in the Scopus database from 1980 to 2023 using the software VOSviewer. We found 7653 scientific publications related to the computer-aided design of ONs. The bibliometric analysis only included 6154 original peer-reviewed articles and excluded 1499 publications corresponding to reviews, books, and methods. Peer-reviewed articles were analyzed using the VOSviewer software, which revealed 923 terms with 148106 total links distributed in two clusters i) Target genome sequence and ii) Computational tools. The bibliometric analysis showed that the molecular dynamic simulations (MDS) term had 272 occurrences. VOSviewer visualizations revealed that MDS is a computational technique widely utilized in the computer-aided design of TFOs. Moreover, the visualizations showed on-trend topics in co-occurrence with emerging trending terms such as cancer, gene, transcription, triplex target site, triplex formation, and silico prediction. This co-occurrence indicates that the topics are studied together and can often have strong correlations in the computer-aided design of ONs.

Keywords: bibliometric analysis, computer-aided design, life science, oligonucleotides, triplex forming, VOSviewer.

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Creating synergies in methods of review research and bibliometric analysis

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Abstract

The digitalization of information and increased access to scholarly literature has facilitated a rapid growth in research publications internationally over the last decades. Consequently, there is a growing need for "review research" across all disciplines, employing scientific methods (Kunisch et al., 2023), to keep track with the state-of-the-art. Governmental agencies in the Nordic countries are increasingly requesting reviews (White paper Meld.St.5 2022-23. Scoping reviews are one type of review research. They address broader questions than traditional systematic reviews, drawing on large datasets. Neither do they synthesis findings nor quality appraise single studies (Grant & Booth, 2009). Instead, scoping reviews aim to identify knowledge gaps and describe a topic with its conceptual and logistic boundaries (Sutton et al., 2019), and are in particularly useful when the literature is complex and heterogeneous, as well as for topics with emerging evidence. We argue that the combination of bibliometric analysis and scoping review-methodology stimulates synergies and efficiency. Both are methods of review research, address broad questions and apply large datasets such as the Web of Sciences (WoS) comprising bibliometric meta-data (Donthu et al., 2021). In this presentation, we show how combining bibliometric analyses and scoping review methods generate synergies, while keeping individual strengths of both methods. Drawing on case-studies of specific research topics (e.g., Nordic research on discrimination, harassment, and equality) we investigate how science mapping techniques and network analysis can be used at different review stages to facilitate the process and improve visualization. Software such as e.g., VOSViewer and Leximancer will be used.

Keywords: bibliometric analysis, review research, scoping review, science mapping, network analysis.

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The sex of Nordic cancer researchers who write international and domestic papers

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Abstract

The Nordic countries have been in the forefront of the struggle to enhance the careers of female researchers. However, they are usually less productive than their male colleagues, mainly because they tend to be more junior – graduate students rather than professors. They tend also to receive fewer citations, although it is difficult to evaluate this because most papers have both male and female authors. We downloaded from the Web of Science the details of all cancer research papers in 2017-19 from the five Nordic nations, and subdivided them into two groups: internationally co-authored papers and domestic ones (without international collaboration), and also determined their citation counts. We listed all the authors with affiliations in the Nordic nations and determined their sex, mostly from their given names. The percentage of females (of those who could be sexed) was over 50% for all five countries for their domestic papers, but below this level for their international papers (except for Finland). Female contributions (papers per person) were almost always less than for men, and much lower for domestic than for international papers. Some researchers reported affiliations in more than one country, and these men (but not the women) were still more productive. Those who had an affiliation in the USA were even more productive, and the increment was much larger for females. Since international papers are more than twice as often cited than domestic ones, one means to assist females to progress would be to facilitate their international conference attendance and other links.

Keywords: Nordic countries, sex of authors, cancer research, percentage of females, citations.

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On the performativity of SDG classifications in large bibliometric databases

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Abstract

Large bibliometric databases as digital infrastructures not only facilitate bibliometric analyses but are themselves performative. They are built upon a particular understanding of the science system and resulting attribution of worth, which affect the visibility of scientific outputs and impact measurement of participating entities like individual authors or institutions.

Initialised by science policy the contribution of the science system and its entities to the UN's SDGs has recently gained much attention in the bibliometric impact debate. Web of Science, Scopus and Dimensions have all provided a respective SDG classification of their indexed publications to facilitate a respective measurement. Given the performative character of the diverse bibliometric databases it was quickly noted that these classifications do not match (Armitage et al., 2020). Still the underlying reasons for the observed differences and hence an insight on how bibliometric classifications of publications are themselves performative are still investigated.

At the same time the recently developed technology of large language models (LLM) has been criticised for their missing objectivity carrying forward data biases into the generated answers. In this work-in-progress we propose to utilise this particular feature of LLM to learn about the "data bias" injected by the diverse SDG classifications into the bibliometric data. Hence we present a LLM of jointly indexed publications, which we separately fine-tune by the diverse SDG classifications. A qualitative text analyses of the generated answers shows the inscribed understanding of the varying SDG classification and can be applied to inform science policy on the diverse SDG classifications.

Keywords: classifications, SDG, bibliometric databases, large language models.

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Faculty perceptions of research assessment in Social Studies, Arts & Humanities: a case study from Chile

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Abstract

One of the main issues with research assessment lies in its overreliance on quantitative metrics, such as citation counts and journal impact factors. While these measures provide a convenient way to estimate research productivity, they fail to capture the true value and impact of scientific contributions, especially in disciplines related to the Social Sciences, Arts and Humanities. Important aspects, such as interdisciplinary research and societal impact are often overlooked. Worse yet, non-traditional research outputs are not considered by Chilean grant-funding institutions.

The present work-in-progress analyzes the perception that researchers from disciplines associated to Social Sciences, Arts and Humanities have regarding research assessment in Chile. This study was established within a context of redesign and implementation of new instruments to assess researchers. To achieve this, we conducted a survey that was sent to approximately 3,500 Chilean researchers that had published articles, between 2015-2019, on journals indexed by the Social Sciences Citation Index and the Arts & Humanities Citation Index. Key results from the 418 responses (11,9% response rate) include: a) their knowledge about bibliometric and altmetric indicators; b) the use of bibliometric indicators during academic promotions; and c) the use of bibliometric indicators during research assessment by the main Chilean grant-funding institution. Each of these results will be presented considering gender, age of the researchers, academic rank of the researchers, and research area of the researcher.

Keywords: research assessment, social sciences, arts & humanities, survey, indicators.

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Publishing by PhD candidates at the University of Bergen, Norway

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Abstract

This work examines quantitative trends in PhD publishing at a Nordic university, the University of Bergen between 2011-2022. We first looked at differences between publications with and without a PhD candidate author, for example, in open access, format, and language. Secondly, we looked at publishing patterns, for example, how many publications PhD candidates contribute to, how many co-authors they tend to have, and how this relates to gender and subject area.

We combined data from the Current Research Information System in Norway (Cristin) with data from the Division of Student Affairs at the University of Bergen. We found that PhD-candidates contribute to a substantial proportion of the university's publications, around 30 %, with the lowest level in 2022. A higher proportion of publications with a PhD candidate author are open access than those without. Most candidates publish at least one publication during their PhD-period, but this varies by field. Publishing PhD candidates' author 4 publications on average. Publishing as a single author is common for PhD candidates in humanities and law. There were clear differences between fields in the type of PhD thesis produced but works with PhD candidate authors are more often articles (vs. chapters or monographs) compared to those without a PhD candidate author, regardless of field.

For analysis and strategic use of publishing statistics, understanding PhD publishing is important. PhD candidates may be operating under different conditions than other publishing researchers; they also represent the next generation of scientists, perhaps providing an indication of future trends.

Keywords: PhD candidates, PhD publishing, PhD theses.

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Thank you!

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