open

Annual Review by the ZBW

Topic:
SOCIO-TECHNOLOGICAL INFRASTRUCTURES:

The ZBW shapes Open Access in the globally Networked Science System. **p. 22**

ZBW
Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Dear readers,

2024 was a year of visible progress and successful implementation for the ZBW: many of the decisions taken in recent years have now taken concrete form – in new services, structural developments and the strong positioning of the ZBW as a digitally active information infrastructure for the economic sciences.

The strategic orientation along the four priorities of classifying, researching, shaping and enabling digitalisation continues to demonstrate its effectiveness. In 2024, key projects and initiatives were driven forward that will sustainably strengthen the ZBW's transformation into a digital, research-oriented infrastructure. Particularly noteworthy is the very positive evaluation by a group of experts from the Leibniz Association, which once again confirmed the ZBW's consistently high library, infrastructural and academic standards.

This recognition is the result of the great commitment and high level of identification of all employees with the goals of the ZBW. The successful participation in the German library landscape, the National Research Data Infrastructure, the expansion of open publication formats and the active research on digital transformation, particularly in the economic sciences, are an expression of this joint achievement.

A particular milestone in 2024 was the successful anchoring of artificial intelligence in numerous areas of work at the ZBW. Whether in the automated subject indexing of publications or the further development of user-centered services – the targeted use of AI technologies at the ZBW shows how technological innovation can be effectively transferred into practice.

In addition, 2024 was characterised by further networking with national and international partners, whether through science policy committees, networking with the international library community or through strategic cooperation with international research-related infrastructure facilities. Internal development, such as the digitalisation of administration and the award of the "Shaping Diversity" certificate, also strengthens the future viability of the ZBW.

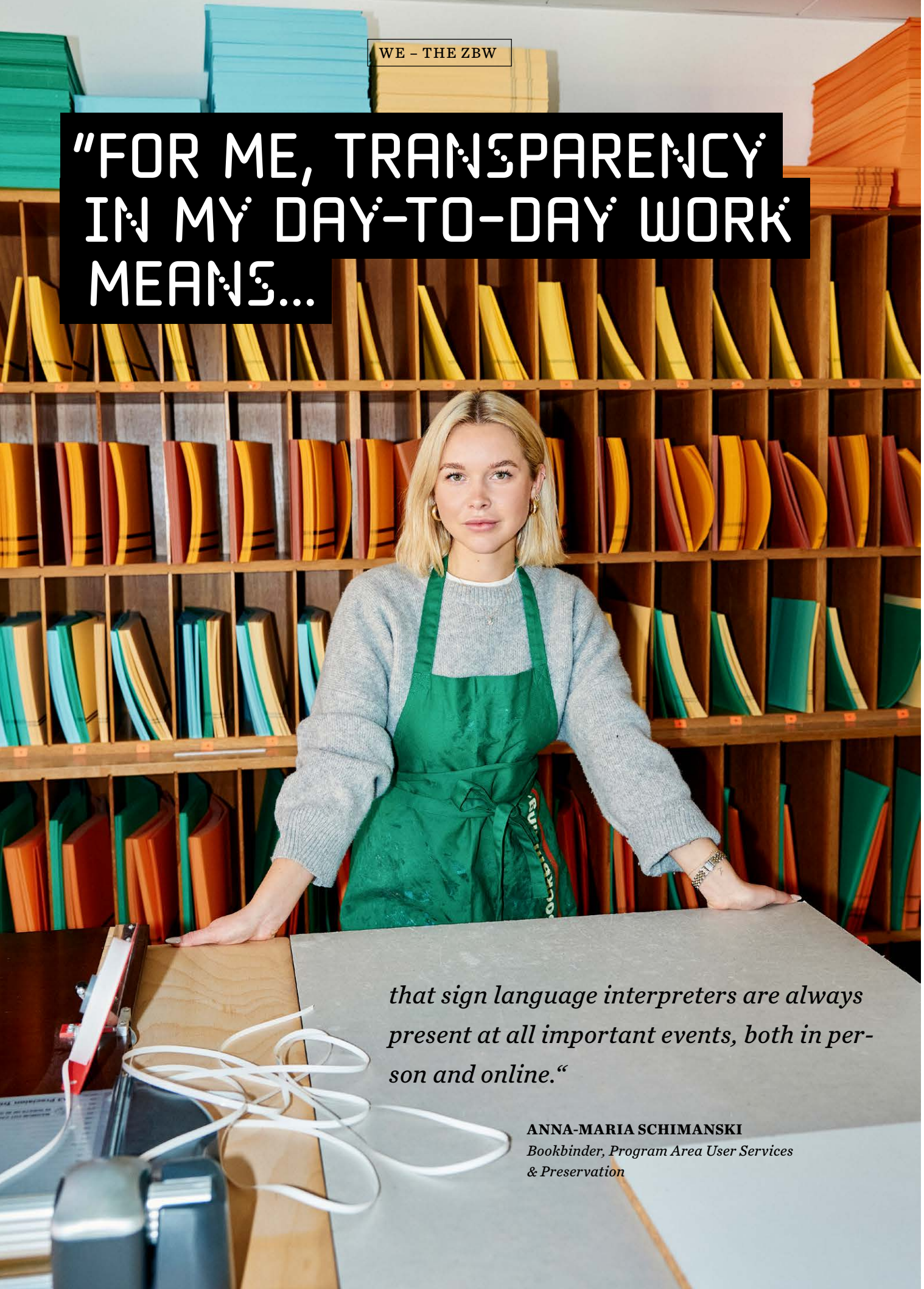
Our special thanks go to the Board of Trustees and the Advisory Board of the ZBW for their continuous support and quality-orientated guidance. And, of course, we would like to thank all ZBW employees for their expertise, their ongoing commitment and their enthusiasm for innovation.

We hope you enjoy reading this annual report and gaining an insight into an exciting 2024 for the ZBW.

Klaus Tochtermann - Thorsten Meyer - Axinia Braunisch

*“**A particular milestone in 2024** was the successful anchoring of artificial intelligence in numerous areas of work at the ZBW. Whether in the automated subject indexing of publications or the further development of user-centered services”*

"FOR ME, TRANSPARENCY IN MY DAY-TO-DAY WORK MEANS...

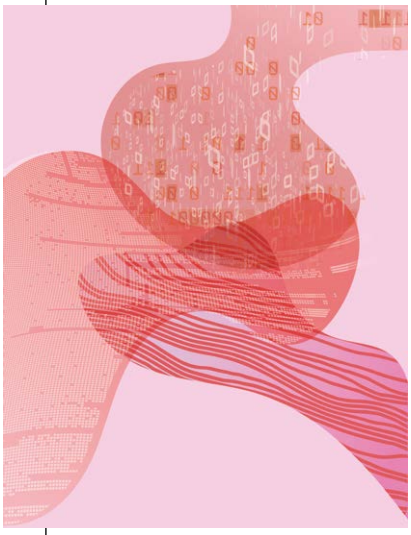


that sign language interpreters are always present at all important events, both in person and online."

ANNA-MARIA SCHIMANSKI
Bookbinder, Program Area User Services & Preservation

Content

26 With a wide range of events, information platforms and networking initiatives, the ZBW aims to support the scientific community.



41 How Unverified Health Information Circulates

VISION

The ZBW sets national and international standards for modern information provision in economics.

MISSION

The ZBW collects and catalogues economic literature published worldwide. It offers comprehensive services that enable the efficient, effective and sustainable use of specialised economic information. It is a user-orientated scientific information infrastructure institution that is committed to modern and innovative requirements of information dissemination.

251 employees from 11 nation
funds EUR 26,490,000 basic
loads of digital full texts, tota
(total) 12,731,675 references
EconBiz 608,843 long-term a
cooperations with national a
ties and research institution
ed projects 25,062 current p
of which are digital 46 scient
ZBW 5,089 participants at s

ns EUR 2,189,474 third-party
funding 20,679,989 down-
al 5,269,799 virtual visitors
in the specialised portal
archived media (total) 3,184
nd international universi-
s 16 ongoing externally fund-
eriodicals (total), 91 per cent
tific events organised by the
cientific events

ZBW 2024 in figures

High level and trustworthiness of ZBW long-term archiving confirmed and certified

At the end of November, the ZBW's digital long-term archive was awarded with the international nestor seal for trustworthy digital long-term archives for the second time, underlining the reliability and importance of the ZBW as a partner for science. Back in 2017, the ZBW was the third institution in Europe to receive this prestigious award. The certification was based on a comprehensive evaluation process in 2024, in which a total of 34 criteria were examined. In order for older scientific publications to be analysed from today's perspective, they must be permanently accessible. In addition to storage, this involves technical readability and interpretability of content. This requires permanent updating and maintenance of the archived data.

ZBW receives third-party funding for project on reproducibility testing in economic research

The ZBW has successfully acquired third-party funding for the project "Piloting an Open and Reusable Service of Reproducibility Checks". The Volkswagen Foundation is funding the project headed by Professor Marianne Saam, which is being implemented in collaboration with the RWI – Leibniz Institute for Economic Research. The aim of the three-year project is to develop a pilot service for checking the reproducibility of research work, which is linked to the ZBW's Journal Data Archive. This service is intended to enable economics journals to carry out reproducibility checks efficiently without having to bear the full development and operating costs themselves. With this third-party funded project, the ZBW is strengthening its commitment to Open Science and scientific transparency in economic research.

ZBW participates in setting up the national service centre for Diamond Open Access (SeDOA)

Under the leadership of the University and State Library Darmstadt, the establishment of a national service centre for Diamond Open Access in Germany – SeDOA for short – will begin in January 2025. The project, funded by the German Research Foundation (DFG), is intended to become a central national contact point for publishing in the Diamond Open Access model. The national service centre is aimed at publishers of Diamond Open Access publication initiatives, institutional publication services, specialist societies and FIDs – across all disciplines. In addition to the University and State Library Darmstadt, 15 other institutions are involved. The ZBW is responsible for the development of community support services within SeDOA. Based on an initial needs assessment, these community support services will include counselling services, workshops and a knowledge base. Legal opinions on key issues will also be obtained. Among other things, SeDOA will offer publication services, counselling and training, set up a registry for journals and promote new developments in the field of open access with an innovation lab. As a Diamond Capacity Centre, the service centre will be part of a European network and strengthen international cooperation.

EOSC Coffee Lectures: Knowledge transfer to the European Open Science Cloud

In January, the ZBW launched the EOSC Coffee Lectures, which provided information about the European Open Science Cloud (EOSC), its objectives, current developments and opportunities for participation. In the four-part webinar series, Professor Klaus Tochtermann, member of the Board of Directors of the EOSC Association, addressed his lectures to researchers and experts who work with research data or are active in data infrastructures. The topics covered the basics of the EOSC, the current status and future prospects as well as specific opportunities for participation. The fourth lecture focussed on the launch of the EOSC EU Node and the next steps for integrating further infrastructures.

The series of events attracted over 1,200 participants in total and emphasised the relevance and dynamism of the EOSC for the European research landscape.

ZBW Coffee Lectures on Open Science Education successfully launched

In October, the ZBW launched the new online series ZBW Coffee Lectures on Open Science Education with a kick-off lecture by Lars Vilhuber (Cornell University). The event series creates a platform for dialogue on Open Science in business and economics higher education. As a facilitator for Open Science in economic research, the ZBW enables researchers, teachers and students to familiarise themselves with current methods as well as tools and strategies for integrating Open Science into academic curricula. The format not only offers access to practical insights and best practices, but also strengthens networking and dialogue on the opportunities and challenges of Open Science in economic research.

New series of events in the Leibniz Strategy Forum Open Science

The Leibniz Strategy Forum Open Science, in cooperation with the ZBW, initiated the virtual event series "Towards Open Science Strategies". The aim is to promote dialogue within the Leibniz Association on the development and implementation of Open Science strategies. The series is primarily aimed at people who develop and implement Open Science Policies, but is also open to all other interested parties within the Leibniz Association. With this format, the Strategy Forum supports the transfer of knowledge between the institutes and contributes to the structural integration of Open Science into everyday research at the Leibniz Association.

ZBW at BiblioCon: Diverse impulses for the library community

Under the motto "open.local.global." more than 4,000 librarians and information professionals from 30 countries met in Hamburg from 4 to 7 June for the 112th BiblioCon2024 to discuss trends, industry news and products. The ZBW was represented with twelve programme items and focused on OLEKonsort, the library consortium for non-commercial Diamond Open Access in economics. In a well-attended session, Dr Juliane Finger presented the consortium; in addition, interested visitors to the ZBW stand took the opportunity to network with OLE-Konsort members from German-speaking countries.

Several ZBW presentations also focussed on work culture and personnel development in an open, dynamic and rapidly changing digital information landscape - a topic that was the focus of several sessions at BiblioCon. The ZBW also introduced other key topics: The "WEITER WISSEN" campaign it co-initiated, for example, was dedicated to the visibility of academic libraries in the context of fake news and anti-democratic tendencies. The digital transformation was addressed with the SAVE infrastructure ("Systematic Archiving of E-media"), which presented strategies for safeguarding digital specialised information. The topics of consortial offerings and digital long-term archiving, Open Science and the social responsibility of libraries to combat disinformation were also discussed.

SWIB24: Online conference on semantic technologies and linked open data

The 16th International Conference on Semantic Technologies in Libraries SWIB24 was an online event and reached 448 registered users who exchanged ideas virtually from 25 to 27 November. The conference opened with a keynote speech by Dr Denny Vrandečić on the changes that knowledge representation is undergoing in the age of large language models. Dr Argie Kasprzik and Ghulam Mustafa Majal from the ZBW organised the workshop "Introduction to Annif automated indexing tool" on the indexing tool Annif in cooperation with their colleagues from the National Library of Finland. The following two days focussed on vocabularies, metadata extraction, data interoperability and a wide range of other use cases around Linked Open Data, from automated metadata extraction and

conversion to the indexing of opera and lute music to the exploration of concepts and relationships in LGBTQ+ related vocabularies.

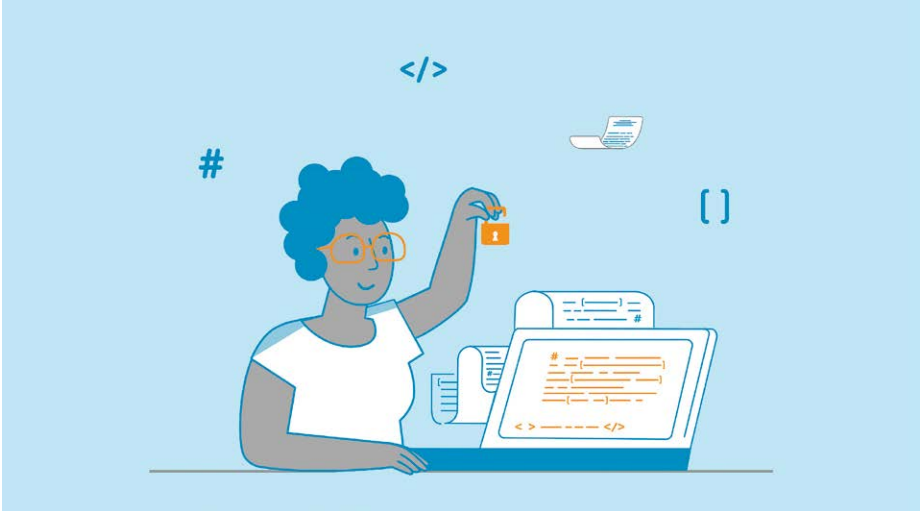
University of Strathclyde new partner in the EconBiz network

The University of Strathclyde (UK) has been an official member of the EconBiz Partner Network since 2024. The renowned Scottish university based in Glasgow is one of the country's leading technology universities and is actively committed to open research. With over 30,000 students from 140 countries, Strathclyde offers an international and research-intensive environment. The cooperation with business, industry and politics underlines its commitment to application-oriented research and innovation. As a member of the international EconBiz partner network, the university strengthens the international transfer of knowledge in the economic and social sciences.

7th NFDI Symposium of the Leibniz Research Network "LeibnizData"

The 7th NFDI Symposium of the Leibniz Research Network "LeibnizData" took place on 12 December under the title "Positioning Leibniz within NFDI". With Klaus Tochtermann, the ZBW not only provided the spokesperson for LeibnizData, but was also significantly involved in the content and organisation of the programme. With over 60 Leibniz institutes active in various consortia of the National Research Data Infrastructure (NFDI), the symposium focussed on the strategic role of research data for the Leibniz Association. Key topics included research data as a strategic focus of the Leibniz Association, legal challenges when sharing data and the continuation of the consortia in a second funding phase. The symposium provided a platform for exchange between science, infrastructure and politics and emphasised the importance of Leibniz Institutes in the NFDI.

Open Economics Guide expanded its support for open research in 2024



The ZBW's Open Economics Guide was further expanded to provide economic researchers with even more targeted support in the application of Open Science. The three key developments that characterised the past year were the introduction of the new Open Code topic area, the expansion of the Open Science toolkit to 140 applications that accompany researchers throughout their entire scientific workflow, and the provision of materials to support economics teachers in teaching Open Science. With these measures, the Open Economics Guide provided important impetus for transparency, reproducibility and knowledge transfer in economic research. See also p. 38

Federal Forum 2024 discusses the prosperity implications of fiscal federalism

Under the title "Fiscal federalism for greater prosperity - reform options from a German and international perspective", the Federal Forum brought together representatives from politics, administration and academia on 10 October. The event organised by the Federal Ministry of Finance provided valuable insights into current academic and international perspectives on fiscal federalism issues. Dr Nicole Waidlein, editor-in-chief of the journals Wirtschaftsdienst and Intereconomics, moderated the concluding panel discussion with representatives from the federal government, federal states and municipalities. The contributions to the forum have been published in "Wirtschaftsdienst".

YES! national final: creative solutions honoured

At the national final of the "YES! – Young Economic Solutions" school competition, 13 school teams presented their ideas in Hamburg from 17 to 19 September. INSALCO School Santiago de Chile won the competition with its financial education game "CAPITAL MASTERS", which also received the Best Scientific Analysis Award. Second place went to

Annette-Kolb-Gymnasium Traunstein for the "Nursing Day" initiative, which gives pupils a realistic insight into the nursing profession. Marianne Saam, Head of the Open Economics programme area at the ZBW, emphasised the relevance of this knowledge transfer between the school teams and the participating research institutes. This exchange creates a bridge between students and researchers from which both sides benefit.

Open Science Magazine

Since 2020, the ZBW has published the online Open Science Magazine focussing on the specific experiences of business researchers in the areas of open access, open data, open source, open educational resources and Open Science communication. This magazine has established itself as an effective dialogue tool for knowledge transfer. Communication about NFDI developments in the economic science consortia is also an important aspect. The focus in 2024 was on the topic of Open Science education. Over 70 interviews with economic researchers, podcast episodes of "The Future is Open Science" and background reports show the diverse opportunities and best practices in the field of Open Science education.

8th EconStor Workshop: Exchange on Open Access and developments at Leibniz institutions

The 8th EconStor workshop for Leibniz institutions took place in Hamburg at the end of June. The two-day event provided a platform for dialogue on current developments in EconStor and the institutes. A central topic was the Open Access transformation, which was discussed in detail. In addition to the latest developments in the field of Open Science, news from the participating institutions was also on the agenda. The workshop emphasised the importance of networking and knowledge transfer within the Leibniz Association.

EconStor survey 2024: High satisfaction and potential for further development

EconStor, the ZBW's disciplinary open access repository for economics, has made more than 280,000 publications from over 750 research institutions and around 1,000 individual authors worldwide freely and permanently available since its foundation in 2009. With an average of 10 million downloads per year, EconStor makes a significant contribution to the supply of scientific information. The ZBW conducts regular user surveys to determine the satisfaction of the scientific community and identify potential for improvement. The results of the 2024 survey show a high level of user satisfaction with EconStor. At the same time, there is a need for clearer information on how it works. Most respondents have been using EconStor for some time and discovered it via Google or recommendations.

Automatically generated keywords at EconBiz

Since July 2021, the ZBW has been using the AI service AutoSE to automatically add keywords from the STW Thesaurus for Economics to publications in the EconBiz subject portal. New titles are supplemented with suitable terms within a very short time. In 2024, AutoSE was able to retrofit numerous older publications with improved or first-time STW keywords. Around 200,000 titles were indexed for the first time. Since the introduction of AutoSE, over 1.9 million publications have been processed - this corresponds to 30 per cent of all ZBW holdings and more than 50 per cent of English-language titles. For users, this means that the economic literature resources indexed by the ZBW will continue to be comprehensively catalogued thematically in the future and can therefore also be found in exploratory subject searches.enschaftliche Arbeiten unterstützen.

EconBiz helps with scientific work

The EconBiz topic "Working academically" was given a new look in October and addresses students and young researchers in a target group-specific way. For students, the biggest challenge is often finding suitable literature and assessing the quality of the sources. Young researchers, on the other hand, are often faced with the task of managing their research data effectively. The ZBW offers helpful learning paths for both target groups. These include tips, videos, infographics and training courses in German and English - also for international students, which provide targeted support for questions relating to academic work.

New version of the STW Thesaurus for Economics published

The ZBW published version 9.18 of the STW Thesaurus for Economics in November. For the first time, new descriptors were included that were proposed with the help of language models. The integration of modern AI methods marks an important step in the further development of specialised terminology.

JCRE Journal appoints new international Advisory Board

JCRE Journal of Comments and Replications in Economics

The Journal of Comments and Replications in Economics (JCRE) has appointed a new Advisory Board. The

new international Advisory Board of the JCRE is made up of renowned scientists. They include: Professor David H. Autor (Massachusetts Institute of Technology, USA), Professor Anna Dreber Almenberg (Stockholm School of Economics, Sweden), Professor Edward E. Leamer, Ph.D. (University of California, Los Angeles, USA), David Roodman (Open Philanthropy, USA), and Professor Jeffrey M. Wooldridge, Ph.D. (Michigan State University, USA). These researchers provide feedback on current developments in the Journal of Comments and Replications in Economics and promote the journal's visibility.

Data portal for unstructured data in economics online in the productive version

As part of the BERD@NFDI consortium, the ZBW has developed a data portal, the first version of which went online in March. The portal is a central measure to support researchers in the economic and social sciences when working with unstructured data. In future, it will provide reliable access to unstructured data such as texts, images, scans, algorithms, audio and video files and support researchers in publishing their research data. As an infrastructure facility, the ZBW is committed to scientific standards and has orientated itself significantly towards the principles of sustainability and FAIR practices in its development. The BERD@NFDI consortium's services are the result of a collaboration between the universities of Mannheim, Munich, Cologne and Hamburg, the GESIS – Leibniz Institute for the Social Sciences, the University Library Mannheim and the ZBW.

Conflicts of interest in the publication market: ROARA analyses effects on research evaluation

Since January, the ZBW has been leading the international research project "Repercussions of Open Access on Research Assessment" (ROARA) under the leadership of Professor Dr Isabella Peters, head of the Web Science department. The project is investigating how publication behavior, which is increasingly focused on Open Access, affects the assessment of research performance. The Volkswagen Foundation is funding the project for four years from January. The ZBW Web Science research team is cooperating with a team from Bielefeld University led by Dr Niels Taubert (Bibliometrics working group and Institute for Interdisciplinary Studies of Science) and a team from University of Ottawa (Canada) led by Stefanie Haustein, professor at the School of Information Studies and co-director of the ScholCommLab.

Inaugural lecture by Professor Ralf Krestel for the ZBW professorship

On 28 June, Professor Ralf Krestel gave his inaugural lecture as part of the Faculty Colloquium at Kiel University. Under the title "Generating, processing and making knowledge findable", he presented current developments and research findings in the field of language models, knowledge graphs and artificial intelligence. In his lecture, Ralf Krestel addressed the challenges and opportunities arising from the use of large language models for the processing and provision of knowledge. A particular focus was on linking machine learning with structured knowledge representations, such as knowledge graphs, in order to make information efficiently retrievable.

Gamification Reloaded: ZBW organises international web science workshop

Dr Athanasios Mazarakis, postdoc in the ZBW Web Science research group, led the organisation of the 7th International Workshop Gam-R – Gamification Reloaded. As part of the "Humans and Computers" conference, the workshop highlighted current developments in gamification research and promoted dialogue between academia and industry.

Leibniz Association Libraries Working Group focuses on AI and New Work

The annual meeting of the Leibniz Association's Libraries and Information Centres working group in mid-November focused on the future topics of library construction, green libraries, research assessment reform and AI in science. Axinia Braunisch, Administrative Manager of the ZBW, explained the participation process for library design at the virtual event. The ZBW is

integrating the concept of New Work by adapting working environments to the needs of employees. The planned move of the Hamburg branch within Hamburg and vacant premises in Kiel will enable a reorganisation. The best practice topic "AI in research-related services" followed on from the discussion on "AI in science". Existing applications, potential and necessary competences were discussed. The desire for a more in-depth discussion next year shows the relevance of the topic.

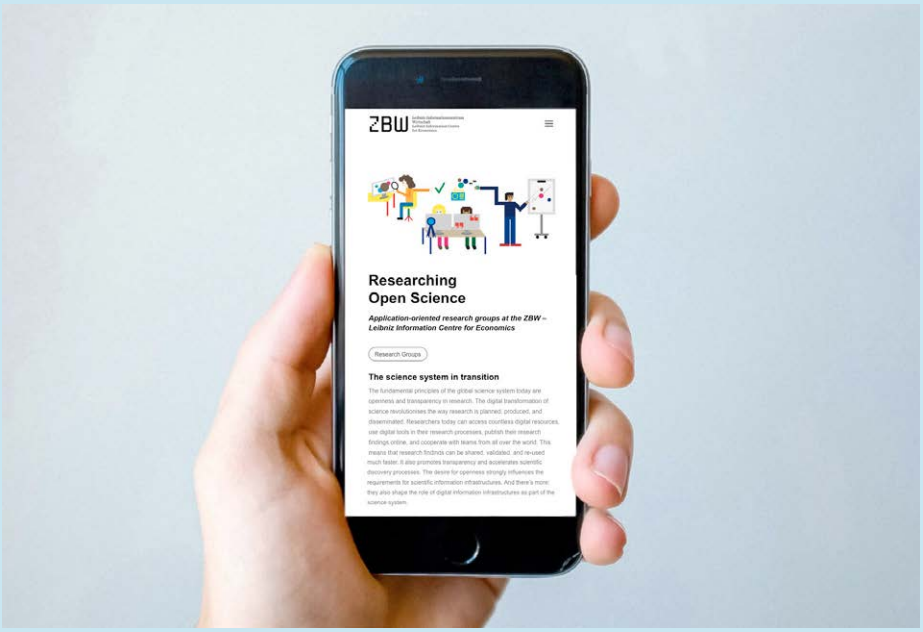
Takeover of lead function in the journal database by the ZBW

In 2024, the ZBW took over the lead function in the journal database (ZDB) for the Helmholtz Centre for Ocean Research Kiel (GEOMAR), the Central University Library Flensburg and the EBS University of Business and Law, Oestrich-Winkel site. This strategic decision relieves the burden on the GBV's Central Library and shifts responsibility to high-performance network libraries, thereby strengthening the decentralised structure and improving the efficiency of bibliographic data maintenance. A joint meeting at the end of September enabled an exchange between the participating libraries and the ZDB team at the ZBW. The co-operation was coordinated and the next steps were prepared. The implementation of this measure will help to sustainably optimise work processes and consolidate networking within the GBV Common Library Network.

New procedure facilitates the management of electronic journals

In collaboration with the ZBW, the Electronic Journals Library (EZB) has developed a new function that simplifies the management of digital journals. Thanks to this innovation, data on journal packages can be transferred directly from the Global Open Knowledge Base (GOKB) to the EZB. This means that libraries no longer have to maintain this package information in several systems. The ZBW was the first library to utilise this function in practical operation during the test phase. This makes it much easier to process large journal packages. At a user meeting of the Global Open Knowledge Base, the ZBW was able to demonstrate that this process works and offers many advantages. It was thus able to encourage other libraries to integrate this automated solution into their work processes as well.

New landing page "Exploring Open Science" offers a compact overview



The new landing page "Researching Open Science" was launched in January to provide a compact and clear presentation of the ZBW's scientific work. The clear structure and the bundled presentation of the research areas make it clear how the ZBW conducts interdisciplinary research on the topic of Open Science and digital infrastructures. Such a central point of contact in German and English is particularly valuable for researchers, science policy, partner institutions and the interested public, as it enables a quick overview and provides targeted further content. The landing page also promotes the transparency of scientific work, facilitates networking with other stakeholders in the research environment and makes the ZBW's thematic priorities visible at a glance. URL: https://exploring-open-science.zbw.eu

ZBW event: Focus on publishing on Open Journal Systems

The Leibniz Association's sixth Journal Management Workshop on 19 and 20 June offered an interdisciplinary exchange on current developments in scientific publishing. Organised by Dr Kristin Biesenbender (ZBW) and Dr Thomas Jung (German Institute for Adult Education – Leibniz Centre for Lifelong Learning), the event took place in June at the Leibniz Association's office in Berlin. The focus was on publishing on Open Journal Systems (OJS), consortium models for Diamond Open Access journals and working conditions in editorial offices. Practical examples from various journals were also presented. The participants discussed publication models and reflected on cross-disciplinary experiences. The workshop was organised by the Leibniz Association's Open Access and Publication Management working group and the Open Access Practice Network working grous.

ZBW

International AI Trends and the ZBW's Strategic Response

Artificial intelligence as an opportunity and challenge for information infrastructures

The digital transformation has fundamentally changed the way libraries and information infrastructure organisations around the world work. With the increasing spread of the latest generation of artificial intelligence (AI) methods, a further paradigm shift is taking place. Current developments in AI are revolutionising the way we work just as dynamically as the advent of desktop PCs in the late 1980s or the emergence of the World Wide Web in the 1990s. Each further wave of this fundamental change enables a more efficient organisation of information resources, more targeted support for users and the implementation of further innovative services. At the same time, the rapid development and increasing availability of AI technologies brings with it new challenges, particularly from a technical, ethical and legal perspective.

Trends and Challenges of AI Applications in Libraries

Automation and increased efficiency
Artificial intelligence methods are increasingly being used to automate repetitive tasks in libraries. These include the cataloguing of media, the maintenance of metadata and automated indexing. By using machine learning (ML) methods for natural language processing (NLP) purposes, AI-based systems can understand, analyse and process texts more efficiently. This saves time and resources that can be invested in other tasks.

Personalised services for users
With the help of AI tools, libraries can offer their users personalised recommendations for literature, study materials or other resources. Algorithms that analyse user behavior enable tailored suggestions, similar to what platforms such as Netflix or Spotify do in the entertainment sector. Such tools can increase user satisfaction and promote the use of library services.

Expansion through digital assistants
Smart assistants based on large language models (LLMs) such as GPT* or Gemini are increasingly being used in libraries for the first time. These technologies can potentially provide answers to research questions, support navigation through digital collections, facilitate access to scientific literature and assist in the processing of scientific texts.

Extended and barrier-free accessibility
AI-based applications can help to break down barriers to accessing information. For example, automated translations, text-to-speech functions and visual search technologies can make it easier for various target groups to use libraries.

Innovative research support
Libraries are increasingly becoming active partners in research. AI tools for literature summaries, plagiarism detection or data-driven analyses support scientists in the efficient implementation of their projects and increase the reproducibility of the results obtained.

Ethical and legal challenges
However, the integration of AI methods in libraries and information infrastructures raises numerous ethical and legal issues that need to be critically reflected upon and actively addressed. Key issues include the protection of personal data, compliance with copyright law and the consideration of exploitation rights, as well as the transparency and traceability of the algorithms used. In addition, the ecological and social impact must be carefully considered.

When it comes to data protection, the question arises as to how the processing of usage data - both during training and subsequently when using AI models - can be organised in order to guarantee the privacy of users. Many cloud-based

AI tools imply access to externally operated models, which increases the risk of data misuse or unwanted data leaks. Libraries must ensure that their AI applications meet the requirements of the General Data Protection Regulation (GDPR) and similar regulations. This includes carefully reviewing data flows, minimising personal data collected and implementing robust security measures.

Copyright is another key issue. AI applications that analyse, summarise or reproduce content often operate in a legal grey area. It is important to ensure that such systems respect copyrighted works and do not use them without authorisation. At the same time, issues such as the authorship of AI-generated content and responsibility for its use need to be clarified.

The transparency of algorithms poses fundamental ethical questions for libraries. AI systems make decisions – be it in literature searches, the evaluation of information or data categorisation – whose functioning is often incomprehensible to users. This "black box problem" – especially in applications based on neural networks – harbours the risk of bias and discrimination. Libraries must ensure that the systems used are fair and unbiased and that the results are explainable. This requires a careful selection of technologies and their continuous review and adaptation.

In addition, there is growing social pressure to develop and implement ethical guidelines for dealing with AI. Libraries play an important role here, as they have to fulfil high credibility requirements as neutral institutions. They must formulate guidelines for the responsible use of AI technologies that can serve as a guide for users and employees.

Overcoming these ethical and legal challenges requires a comprehensive strategy. This includes working with legal and ethical experts, training employees and actively participating in international discussions. In this way, libraries can not only fulfil their responsibility towards users and society, but also contribute to the development of a global framework for the ethical use of AI.

The ZBW's Response to current AI Trends

The ZBW is proactively responding to the challenges and opportunities associated with the integration of AI technologies into scientific work and has already designed and driven forward several strategic measures. The focus here is on the use of modern AI technologies to sustainably improve the quality and efficient production of its services. In addition, the activities are also aimed at the in-house development and implementation of innovative infrastructures that are specifically tailored to the needs of the scientific community. In this context, the ZBW has identified several key fields of action that will be prioritised in the future.

Automated generation of keywords
Automated subject indexing has long been a focus of academic libraries worldwide and the ZBW – Leibniz Information Centre for Economics is an internationally networked player in this field. As part of its automated subject indexing ("AutoSE"), the ZBW has been utilising machine learning (ML) methods for the precise indexing of publications since 2019. To this end, various approaches were tested in a predecessor project ("AutoIndex", until 2018) and specifically evaluated for their suitability for practical use.

The AutoSE service for automated content indexing has been in productive use since 2021 and is integrated into the rest of the ZBW's metadata workflows. Particularly noteworthy is the close integration with the database of EconBiz, the ZBW's central research service. Around two million publications have already been enriched with keywords by AutoSE – this corresponds to over 30 per cent of the entire collection. Not only is keywording fully automated, but intellectual keyword assignment is also supported automatically. Librarians receive suggestions from the system and can adopt them directly if they are suitable, making the process more transparent and efficient.

In 2024, the focus was on integrating additional data sources such as abstracts or tables of contents. These provide additional contexts to further improve the quality of automatic content indexing. At the same time, experiments were conducted with large language models for classification, so-called transformer models, which have the potential to further increase performance and also cover languages other than English, which is particularly attractive for use in international libraries.

Dr Argie Kasprzik, Head of AutoSE, explains: "The automation of subject indexing is a major technological and organisational project. On the technical side, there are still no shelf-ready open source solutions that fully fulfil the requirements of complex library infrastructures and extremely heterogeneous metadata collections. Available ML models usually have to be retrained and supplemented with filters in order to deliver precise results. The processing of large amounts of data requires considerable computing resources, which makes long-term availability and continuously adaptable infrastructures necessary."

A central aspect is quality assurance, which is addressed on the one hand by additional machine control layers such as the ML-based "qualle" approach developed in-house and on the other hand by close cooperation between machine and human. The ZBW's "human-in-the-loop" concept ensures that indexing experts are closely involved by evaluating machine results and thus improving them in the long term. In addition to obtaining much-needed direct input, this is also essential for building trust in the technology and promoting the acceptance of new work processes.

The ZBW is not alone in its endeavours: libraries around the world are turning to automation to keep pace with the growing volume of scientific publications, particularly in the digital field. From the USA to Japan, research institutions are experimenting with AI technologies to optimise processes and offer personalised services. The use of machine learning and large language models (LLMs) is now a central component of this development.

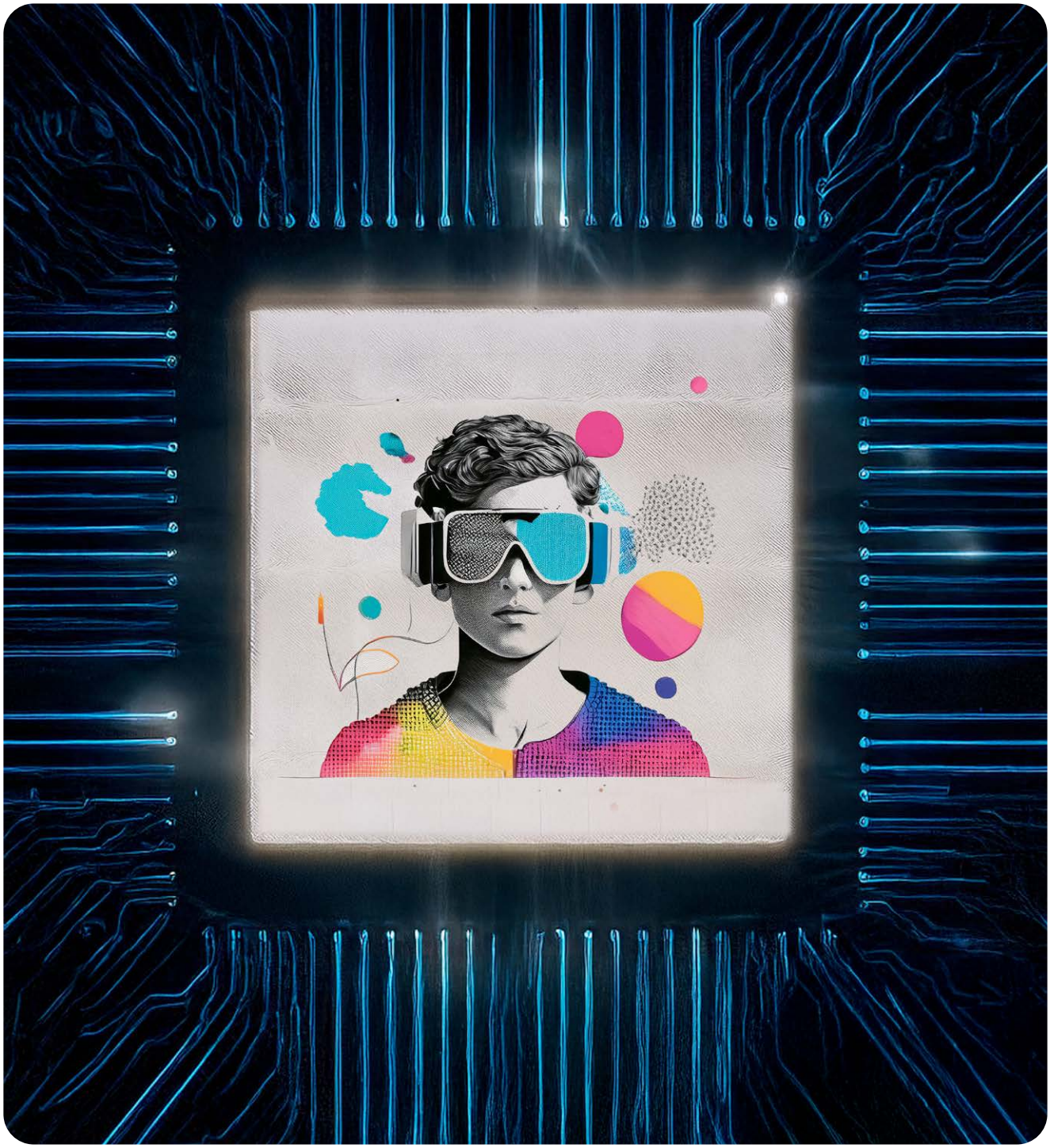
The focus is particularly on approaches that can open up publications in different languages - a decisive factor in an increasingly globalised scientific world. The ZBW works closely with other institutions, such as the National Library of Finland (NLF). The exchange promotes the development of common standards and drives the further development of open source tools such as the NLF's Annif toolkit for automated content indexing.

AI-supported chatbots

The ZBW is pursuing the goal of adapting pre-trained large language models (LLMs) to its document holdings in order to create AI-supported natural language reference systems that can provide precise answers to complex questions and thus make research more efficient. However, chatbot technologies based on generative AI often encounter challenges in the world of academic libraries, such as data protection, copyright and integration into existing processes. In addition, there is a specific quality requirement for chatbots as library information services: AI-based chatbots must be measured against the previous quality standards for user-orientated and individualised information provision.

In 2024, the ZBW developed and evaluated an initial version of a chatbot that complements the library's reference services and fulfils the highest standards in terms of data protection and quality. In productive operation, the chatbot will support the chat service ("EconDesk") for routine enquiries, be available outside working hours and interact seamlessly with the ticket system. External chat services and language models were excluded due to data protection guidelines.

For the development, 4,500 anonymised chat logs from 2009 to 2020 were analysed, also to take into account changing user behavior over time. The chatbot will be closely linked to local information sources and the ticket



system. Enquiries that it cannot resolve, such as frequent full-text enquiries in connection with document delivery, will be forwarded to staff from Manuela Bannick's User Services team in order to continue to fulfil user enquiries as fully as possible. The ZBW's service quality is always at the forefront here. With this chatbot, the ZBW wants to show how AI technologies can complement library services and improve the user experience - an important step in the digitalised world of science.

AI Guideline and further training for employees

The ZBW attaches great importance to preparing its employees specifically for the challenges and opportunities of AI technologies. The declared strategic goal is "Enabling digitalisation". The aim is to ensure that employees are not only able to use new technologies competently, but also to scrutinise them critically, develop them further and use them specifically to meet the requirements of the scientific community. To achieve this, the ZBW offers a comprehensive programme of internal exchange platforms, training courses and further education measures. These cover a broad spectrum, from technical basics and legal issues - such as data protection and copyright - to ethical aspects of dealing with AI. This targeted training ensures that employees acquire the in-depth knowledge and practical skills they need to act as experienced contacts for researchers and teachers.
An important milestone in this process is the development of a comprehensive AI guideline. This not only serves as an orientation aid for employees in dealing with the diverse and dynamically developing AI tools, but also as a guideline for their responsible use. The guideline sets out a clear framework for which technologies can be used, how data protection and ethical principles can be adhered to and which standards apply when using AI-based applications. It also encourages independent exploration of the constantly changing world of AI and encourages critical reflection on the impact of these technologies on work and science.

Strategic Networking and Cooperation for AI and Open Science

In view of the specific knowledge and profiles required for the development of AI-based infrastructures and services, the ZBW - apart from its own work, particularly within the framework of AutoSE - generally seeks to cooperate with the relevant scientific community, but also with industrial partners and start-ups where appropriate.

In order to promote exchange and cooperation, the ZBW actively participates in various events and organises its own formats. One example of this is its repeated participation in the Coding.Waterkant festival, where it specifically seeks dialogue with potential cooperation partners. In addition, the ZBW presents its current developments at national and international conferences and invites people to exchange ideas with experts. Planned events include the 8th Open Science Retreat on 11 and 12 March 2025 with a focus on "Artificial Intelligence and Open Science" and the international conference INCONECSS in May 2025, which is dedicated to the topic of "Research Support in an Age of AI".

With this strategic networking, the ZBW ensures that it has access to the latest findings and trends on the one hand and can actively provide impetus for further development in the field of AI and Open Science on the other. ▬

READING TIP:

AI research at the ZBW for intelligent information processing and analysis
The *Information Profiling and Retrieval* research group headed by Professor Dr Ralf Krestel uses artificial intelligence methods to find, analyse and make information comprehensible. From text mining and knowledge graphs to recommender systems - the work of the international research group aims to semantically analyse large amounts of data and make it available in a targeted manner.

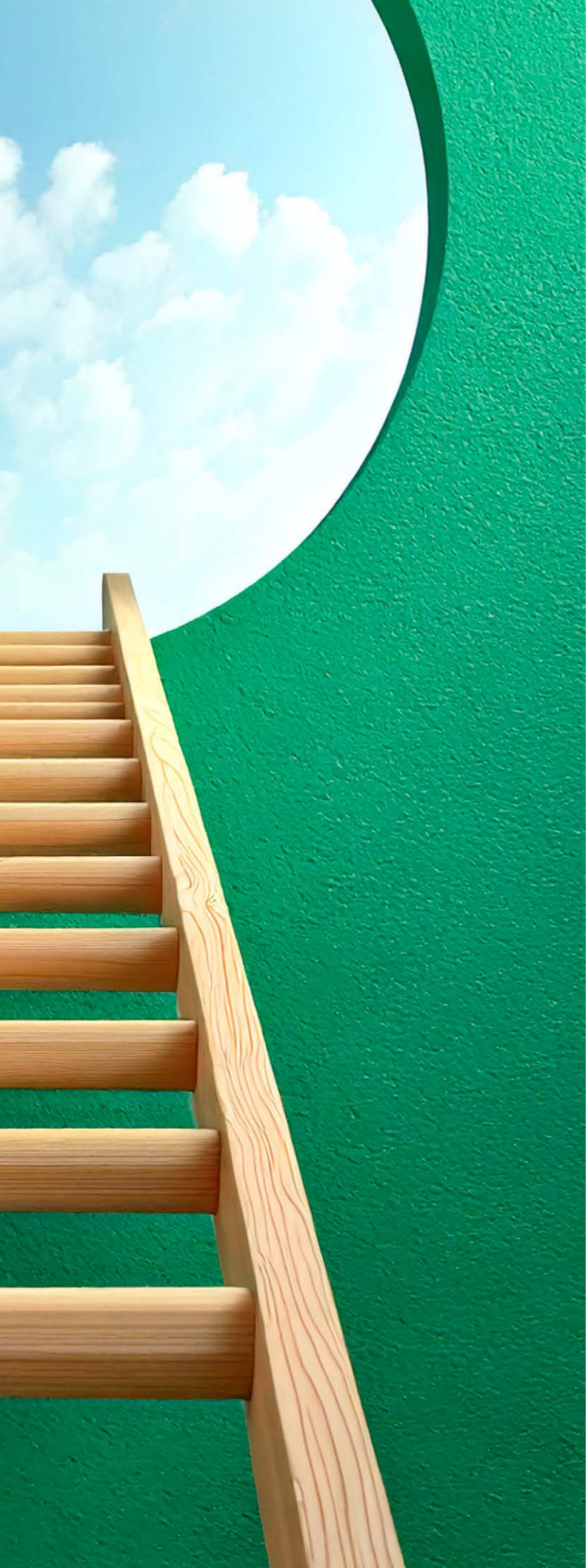
If you want to delve deeper, please continue reading online. URL: https://zbw.to/JnSZQ

ZBW

The ZBW – Leibniz Information Centre for Economics plays a central role in the open access transformation of the economics publication market. As a consortium and negotiation leader, the ZBW not only acts as a mediator between research institutions and publishers, but also actively shapes the framework conditions for the future publication landscape. This is particularly evident in connection with the complex negotiations and transformation agreements, such as the agreement with the academic publisher Taylor & Francis.

Open Access international: ***THE FUTURE OF SCIENCE***

The ZBW shapes Open Access in the globally Networked Science System



The Importance of Transformation

For decades, the world of publishing has been characterised by subscription models in which institutions have acquired access to research results at great expense. For many institutions, these costs were hardly affordable, which restricted access to scientific findings. Even scientists often did not have free access to their own work. This situation hindered scientific exchange and contradicted the principle of Open Science.

Thanks to massive pressure and commitment from the scientific community, libraries and infrastructure facilities, science policy committees and research funding organisations and, ultimately, the legal framework at European level, this situation has now changed significantly. Open Access makes publications freely accessible – regardless of geographical, institutional or financial barriers. This promotes scientific discourse, makes research more visible and, as a result, increases its benefit to society.

A key change concerns the publishers' business model: instead of selling subscriptions, publishers are paid for their services – such as organising peer reviews, publication and quality assurance. "We are talking about the transformation of an entire market to a different financing model," explained Jens Lazarus, Head of Inventory and Licence Management at the ZBW.

This change requires adjustments in the financing of science. While previous models concentrated the costs on access, publishing itself is now being financed. Institutions that publish a lot need more funding, while others have to pay less. The introduction of new distribution models is therefore complex and fraught with conflict. Lazarus emphasises the need for long-term perspectives: "We need patience to establish these new structures."

The Role of the ZBW as Negotiator

The ZBW – Leibniz Information Centre for Economics plays a leading role in the Open Access transformation of the scientific publication market. This task includes not only the coordination of consortia of academic libraries, but also the active design and negotiation of framework conditions that meet the needs of the various academic institutions.

As a negotiator, the ZBW enters into direct dialogue with publishers and works with partners to develop innovative contract models that promote open access. One example of the successful realisation of this role is the contract with Taylor & Francis. After lengthy negotiations, it was possible to establish a sustainable model that enables open access without placing an additional financial burden on the institutions involved. The aim of the contract was to create a fair balance between the interests of the publishers and the needs of the academic

institutions. This allowed the scientists to benefit from the advantages of open publication, while the publisher received a stable basis for its business model. In 2024, 1,377 publications from participating institutions were published in open access under this agreement; that is around two thirds of all publications from Germany at Taylor & Francis.

However, the negotiations revealed the complexity of the transformation process. Differing publication figures between the participating institutions, hybrid models in which articles in a journal are published both in open access and behind a paywall, and uncertainties about future developments made it difficult to establish long-term agreements. "We had to realise that a long-term contract with a resilient model is currently not feasible," explained Jens Lazarus, Head of Collection and Licence Management at the ZBW. Instead, a contract with a shorter term was concluded in order to retain flexibility for future adjustments.

The experience from the negotiations with Taylor & Francis underlines how important it is to have realistic expectations of the transformation and at the same time to strengthen the dialogue between publishers and academic institutions. The ZBW is focussing on transparency and cooperation in order to find viable long-term solutions.

International Cooperation is Key

The Open Access transformation can only succeed in an international context. Academic publishers operate on a global scale, and isolated national initiatives often allow them to preserve existing business models by exploiting regional differences. Europe and North America are currently pioneers in the implementation of Open Access. European research funders in particular have taken clear positions in favour of Open Access at an early stage, thereby providing an important impetus.

Asia, as a growing market for scientific publications, is also playing an increasingly important role. Although different market dynamics prevail there, it is also seeing increasing acceptance of open access. Jens Lazarus emphasises the importance of this global networking: "Only through close international coordination can we ensure that open access becomes the standard worldwide."

These international co-operations also make it possible to achieve greater leverage vis-à-vis publishers. Consortia that go beyond national borders can act more strongly and thus negotiate better conditions for scientific institutions.

Artificial Intelligence and Scientific Publishing

The development of artificial intelligence has also created new challenges and opportunities in the field of scientific publishing. AI systems require large amounts of data in order to function efficiently, and scientific publications are a valuable resource for this.

The use of publications for AI applications raises legal and licensing issues, particularly in the area of conflict between scientific institutions and publishers. While the former invoke the copyright limitation rules in order to be able to train AI models with publication data, many publishers take a defensive stance with restrictive clauses to protect their business models.

As there is still no conclusive legal clarification in this area, many questions remain unanswered which still have to be decided by the courts and answered accordingly in order to clearly define the possibilities of use. The Licensing and Legal Department of the ZBW is dealing with this topic in order to support the handling of its own challenges within the existing legal framework and to adequately take into account the needs of the ZBW as a scientific institution as well as the interests of publishers.

At the same time, the integration of AI harbours potential: it can speed up the review process, facilitate the analysis of large amounts of data and promote new findings. However, Jens Lazarus from the ZBW warns that without clear rules and fair licensing models, innovation could bypass publicly funded science. The scientific community is therefore faced with the task of finding a way to open up the benefits of AI without infringing on the rights of authors and the interests of publishers. Open and legally secure handling of publication data for AI could become a new milestone in science communication - provided that the legal and economic framework conditions are jointly designed. ▬

"FOR ME, TRANSPARENCY IN MY DAY-TO-DAY WORK MEANS...

...being able to track all work steps at all times and rarely needing to do so."

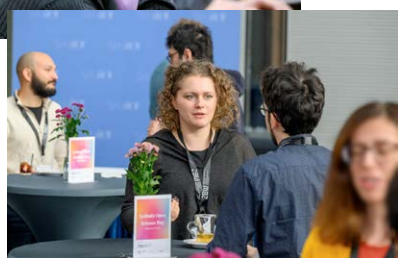
JANA HENTSCHKE
Subject Coordination Electronic Resource Management, Program Area Inventory Development & Metadata

ZBW

The ZBW as an Open Science FACILITATOR

Strengthening Networking and Transparency in Research

The ZBW – Leibniz Information Centre for Economics plays a central role in the promotion of Open Science in economics. With a wide range of events, information platforms and networking initiatives, the ZBW aims to support the scientific community, make research more transparent and strengthen the exchange of Open Science practices among researchers. In 2024, the focus was primarily on networking events.



First Leibniz Open Science Day 2024

One of the central events in 2024 was the first Leibniz Open Science Day, which was organised under the theme "Meta Perspectives in Social Sciences". Organised jointly with the Berlin Social Science Center (WZB) and the RWI – Leibniz Institute for Economic Research, the event offered space for scientific exchange and discussions on meta-research in the social and economic sciences. The scientific organising committee consisted of Professor Marianne Saam (ZBW), Professor Jörg Ankel-Peters (RWI) as well as Dr Levent Neyse and Professor Macartan Humphreys, Ph.D. (both WZB).

The Leibniz Open Science Day focussed on transparency and traceability, not purely internal scientific aspects, but core elements of the social relevance of science. Topics such as the validity of research through preregistration, the role of political statements by scientists on social media platforms and the development of standardised protocols for meta-studies were discussed. The lively participation in the discussions showed the great interest in these issues. It became clear that meta-science plays an important role in strengthening the transparency and traceability of economic research.

For the first time in Germany, the event brought together an active, but previously rather small meta-science community from the economic sciences and related disciplines that deals with quantitative approaches in science studies. Speakers from Germany and abroad found an opportunity to exchange ideas and develop common perspectives. Event formats focussing on meta-sciences are rather rare in economics in German-speaking countries.

The invited keynote speaker was the internationally renowned Professor of Social Sciences Harry Collins, Ph.D., from Cardiff University. From the perspective of the standard methodology of much economic research, his view of Open Science was unconventional and challenging. Among other things, he argued in favour of not overestimating the advantages of digitally designed transparency over trust and tacit knowledge in personally connected scientific communities.

The organising committee looked back positively on the premiere of this event. Marianne Saam (ZBW) emphasised that the day was particularly characterised by the discussion of key questions, such as standardisation in the context of Open Science: "Should we also preregister our research beyond laboratory experiments in order to increase its validity? What relevance do critical replication studies have if, in the end, no consensus can be reached between the original study and the replication? These questions were so exciting that nobody wanted to go into the lunch break - everyone wanted to continue the discussion." In addition to the focus on content, Professor Marianne Saam emphasised: "There are not so many specialised events with a metascience focus within economics.

Panel at the Annual Conference of the Verein für Socialpolitik (German Economic Association)

One of the highlights of 2024 was the ZBW panel on "Open Access Transformation in Economic Research", which took place as part of the annual conference of the Verein für Socialpolitik (VfS) from 15 to 18 September 2024 at the Technical University of Berlin. Moderated by Professor Marianne Saam, the panel provided a target group-specific platform to discuss current developments, challenges and solutions in the open access movement in economics.

The participants were Professor Klaus Schmidt (Ludwig Maximilian University of Munich), Professor Hanna Hottenrott (ZEW – Leibniz Centre for European Economic Research and Technical University of Munich), Dr Benedikt Schmal (Technical University of Ilmenau) and Dr Juliane Finger (ZBW). Together they discussed the current developments, opportunities and challenges of the Open Access movement in economic research.

The ZBW panel focussed on the limited competition on the publication market and the role of science-led open access journals. The participants criticised the market dominance of large publishers, the difficulties faced by new journals and the free use of scientific work in the peer review process. A few days earlier, the antitrust lawsuit brought by neuroscientist Lucina Uddin and other researchers against the publishing group Elsevier had become public and provided topical material for discussion. False incentives such as the growth of "predatory journals" through publication fees and bundling contracts were also discussed. The discussion emphasised the need for sustainable funding and support from professional societies in order to secure open access publications and regain control over scientific publications.

ZBW Coffee Lectures: Open Science Education

In 2024, the ZBW launched the ZBW Coffee Lectures on Open Science Education. These short, practical online seminars are aimed at researchers and students from the economic sciences who want to learn more about the principles of Open Science and how to teach them in higher education. The focus will be on topics such as open data, legal aspects of publication and strategies for science communication. The aim is to demonstrate that knowledge and skills of an accessible, transparent and comprehensible scientific approach can be taught in teaching formats.

The ZBW Coffee Lectures on Open Science Education started on 15 October 2024 with Lars Vilhuber, Director of the Labor Dynamics Institute at Cornell University and Data Editor of the American Economic Association (AEA). In his work for the AEA, Lars Vilhuber has been working for years with a training concept for student assistants who, after a short familiarisation period, assist the data editor in checking the reproducibility of journal submissions. Lars Vilhuber has now reported on the expansion of this training and assistance programme to include interns from some cooperating universities. Interns acquire knowledge in data management, empirical analysis processes and writing replication reports. They work on real-life research projects in a practical setting and on an equal footing with authors from leading international journals. Following the ZBW Coffee Lectures on Open Science Education, the participants discussed the practical implementation of replication courses, the integration of Open Science principles into existing curricula and the challenges of promoting transparency and reproducibility in economic research.

Further Offers and Platforms

In addition to its events, the ZBW supports researchers from economics and related disciplines with a wide range of other programmes to implement transparency and openness in their research and to share and discuss best practices in this area.

The Open Economics Guide serves as a central resource that offers practical instructions, tips and tools for integrating Open Science practices into everyday research. From planning an open access publication to dealing with open data and legal issues, researchers will find a wealth of information here.

In addition, the ZBW publishes the Open Science Magazine every month, which publishes specialised information, practical tips and field reports from economic researchers online. It focuses on topics such as replication studies, open access, open data and their application in economic research. For those who want to delve deeper into the experiences of individual researchers with Open Science and science communication, the podcast "The Future is Open Science" offers a variety of insights. Each episode features experts who share their experiences and perspectives on Open Science. The podcast highlights current developments and shows how Open Science is being implemented in various disciplines and contexts. With this comprehensive offering, the ZBW is positioning itself as a central point of contact for business researchers who want to actively promote and shape the openness and accessibility of science. ▬

FURTHER INFORMATION:

To the Open Economics Guide: https://openeconomics.zbw.eu/en/

To the Open Science Magazine: https://open-science-future.zbw.eu/en/

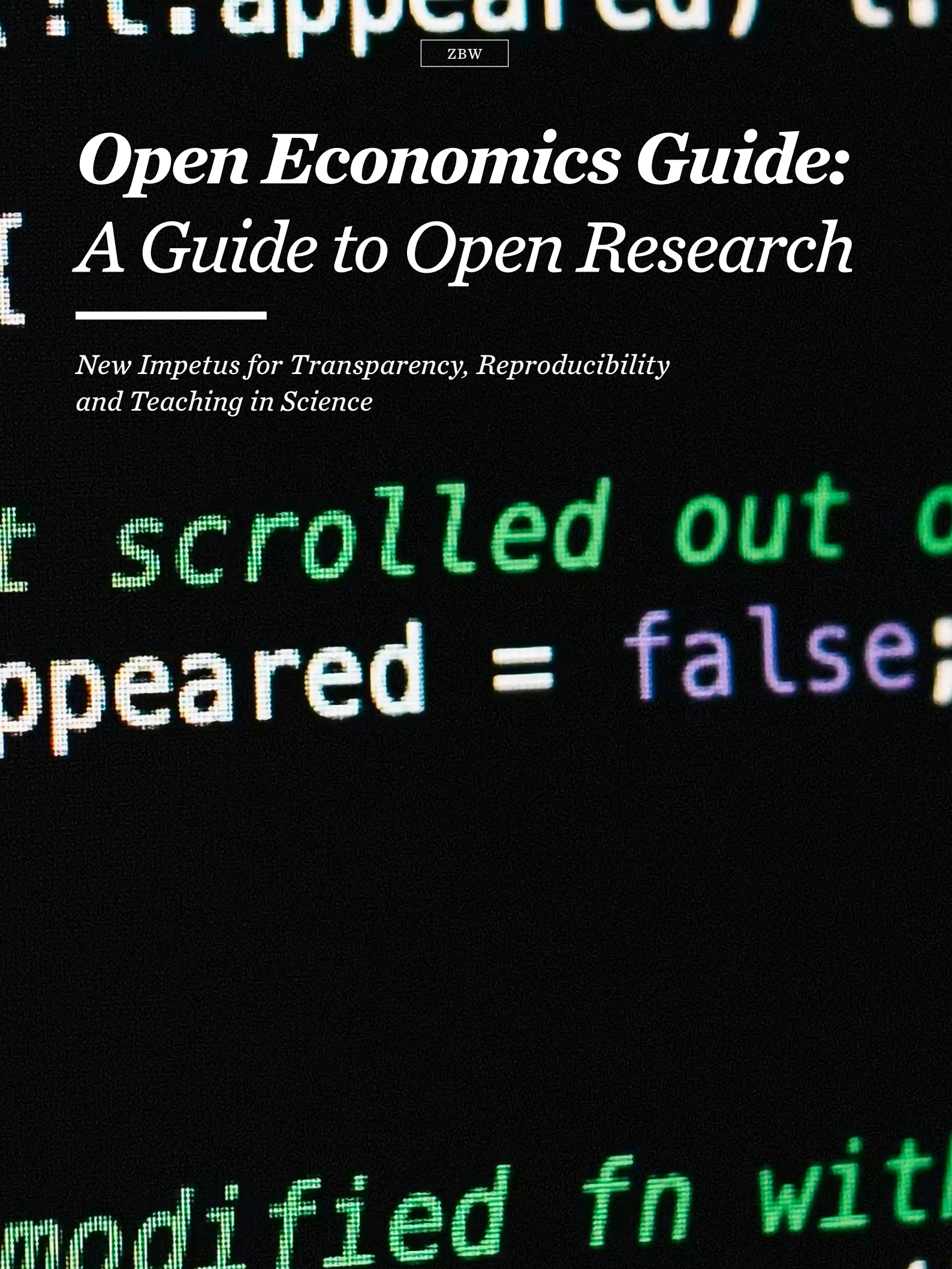
To the podcast "The Future is Open Science" (German) : https://podcast.zbw.eu/fos/


17:45 ZBW Panel
THE WORLD'S KNOWLEDGE IN ECONOMICS

ZBW

Open Economics Guide: *A Guide to Open Research*

New Impetus for Transparency, Reproducibility and Teaching in Science



The ZBW's Open Economics Guide offers researchers in economics practical support for integrating Open Science into their work. With a new topic area Open Code, the expansion of the Open Science toolkit and the provision of teaching materials, practice-oriented offers were created in 2024 that promote transparency, reproducibility and knowledge transfer. The following highlights provide an overview of the most important developments of the past year.

Promoting Reproducibility through Open Code

In 2024, the Open Economics Guide was expanded to include the topic area "Open Code" in order to provide economic researchers with targeted support in the creation and use of open source code. The new section offers a comprehensive introduction to the practice of open code as an important building block for a central concern of transparent science: the reproducibility of research results.

Open code refers to source texts that are created for scientific work, such as data analyses, statistical models or simulations, and are publicly accessible. Appropriate open source licences ensure that third parties can use, further develop and share the code. This not only promotes the exchange of knowledge, but also strengthens the transparency of scientific methods and results. Researchers can learn from each other, verify existing approaches and build on them.

The new section of the Open Economics Guide offers practical assistance for all aspects of open code. This includes instructions on how to identify and reuse existing open code, strategies for creating and publishing your own source code and information on suitable licences. Questions such as: How do I recognise high-quality open code? What steps do I need to take to create my own code and make it publicly available? Or: How can I cite open code and integrate it into my work?

With this practice-orientated content, the Open Economics Guide provides a low-threshold approach to the topic and

makes it easier for researchers to use open code in their scientific workflow. The added value goes beyond mere reproducibility: openly accessible code can intensify collaboration between researchers, provide innovative impetus and minimise redundancies in research.

With the introduction of Open Code, the Open Economics Guide is responding to the growing relevance of openness in science. This is in line with the requirements of many scientific journals, which increasingly demand the provision of the underlying code (and data) as a standard for publications. The Open Economics Guide thus helps to sustainably improve the quality, traceability and credibility of scientific work and to strengthen the foundations of good scientific practice.

140 Tools in the Open Science Tools Catalogue
The Open Science toolkit of the Open Economics Guide is growing: The collection now comprises around 140 tools that support economic researchers in effectively implementing Open Science in all phases of their scientific workflow. This broad selection offers solutions for a wide range of requirements, from data preparation and analysis to the publication of research results, collaboration and knowledge transfer.

The tools were selected according to clear criteria in order to best fulfil the needs of the economics community. Many of the tools can be used free of charge, offering a low-threshold entry point. Many of the tools are open source, which enables further development by the community and at the same time ensures transparency and long-term usability. In addition, some basic information about the operators of the tools is recorded. This allows users to quickly recognise whether a tool is in the hands of scientific institutions or communities, for example, and therefore has a non-profit approach.

The toolkit is geared towards the various phases of the scientific workflow and offers economists targeted support in areas such as data management, analysis and visualisation, publication and collaboration.

With 140 carefully selected tools, the toolkit not only contributes to increasing the efficiency of scientific work, but also supports the dissemination of good scientific practice. By constantly expanding the collection, the toolkit remains a dynamic resource that meets the changing needs of the economics community.

Support for Teaching through Open Science Slide Sets
An important milestone was reached in 2024: The Open Economics Guide responded to the explicit request of the community and published freely editable slide sets for the first time to introduce the basics of Open Science. This offer is aimed specifically at lecturers in economics who want to introduce students and doctoral candidates to the principles and methods of open research. The presentations are available under the open licence CC-BY 4.0 and offer maximum flexibility for individual adaptation to specific teaching contexts.

The slide sets in different formats (PPTX, ODP, PDF) cover the central aspects of transparent and collaborative research in Open Science, including open access, open data and open code. They have been developed to promote understanding of the benefits and opportunities of Open Science and to provide new impetus for research and teaching. The material is didactically structured in such a way that it is suitable for lectures as well as seminars and workshops.

Dr Guido Scherp, Head of the Open Science Transfer department, explained: "A central aim of this offer is to support teachers in sensitising researchers to the importance and practice of Open Science at an early stage. The slides are intended to help establish openness as an integral part of scientific work and prepare a new generation of researchers for future-oriented research. In addition to conveying specialised content, this will also raise awareness of the ethical and social aspects of Open Science."

This development is a direct result of the active involvement of the scientific community in the design of the Open Economics Guide. The demand for editable teaching material was repeatedly emphasised in surveys and feedback and this area will be further expanded in the future. By providing this service, the Open Economics Guide is strengthening its function as a practical partner for researchers and teachers alike. ▬

"FOR ME, TRANSPARENCY IN MY DAY-TO-DAY WORK IS...

... a key prerequisite for successful collaboration. Because in the development of research data infrastructures, as in science, we build on the knowledge and experience of others."

JANNE JENSEN
Software developer in the BERD@NFDI project, Program Area Digital Information Infrastructures


REPLICATIONS

JOURNAL OF COMMENTS AND REPLICATIONS IN ECONOMICS

Publication Opportunities Even at an Early Stage of the Doctorate

After a start-up phase, the Journal of Comments and Replications in Economics (JCRE) published by the ZBW is now experiencing a small but steady influx of international submissions. It is the only journal in the economic sciences that is dedicated exclusively to replications and commentaries.

The editorial team defines replications as reproductions of published papers in which it is checked whether the programme code can be executed or reprogrammed correctly and leads to the published results. However, it also includes replications in the broader sense, which check the results of the original paper with other data or other methods. Commentaries are - predominantly critical - discussions of a published result with regard to assumptions, methods or interpretations. The JCRE emerged from a German Research Foundation (DFG) project and is currently jointly funded by the Joachim Herz Foundation and the ZBW.

In 2024, nine articles could be published, including a response from original authors (i.e. the authors whose work was replicated) and a corrigendum from the editors. Original authors are always invited to publish a response to the replications and comments.

In 2024, the editor of the Journal of Comments and Replications in Economics, W. Robert Reed, wrote to several dozen econometrics lecturers in renowned international doctoral programmes. The aim is to attract more doctoral students to submit to JCRE. In economics, the aim is not usually to submit research papers to peer-reviewed journals very early on in the doctoral programme. Rather, it is essential for candidates aiming for an academic career to have several articles with good publication potential towards the end of their doctorate. Acceptance for publication is then usually only expected shortly before or during the postdoc phase. Due to the pronounced working paper culture, there are also other opportunities to disseminate one's own research results beforehand. However, this means that many doctoral students do not gain any early experience with journal submission processes. If they do submit, in many cases a co-author with more experience will manage the process.

In economics, papers are often replicated when learning research methods without the results of the replication being published. The Journal of Comments and Replications in Economics offers the opportunity to submit your own replication in the first or second year of a doctorate and to go through the entire publication process, including correspondence with editors, resubmitting and replying to referees, partial reactions from original authors and proofreading the galley proof.

At the same time, these publications make an important contribution to scientific discourse, as results are publicly scrutinised that would otherwise at best remain informal and unpublished. Articles that are replicated for JCRE are often very influential in economics. More than one original paper whose replication was published in 2024 had well over 1,000 citations on Google Scholar. Replications thus verify a knowledge base on which many other papers build.

The ZBW will publish its own graduate course on Research Transparency and Good Scientific Practice 2025 as an Open Educational Resource. Together with the Journal of Comments and Replications in Economics, this course is available to lecturers in Germany and abroad to enable their doctoral students to gain early publication experience and make an independent contribution to Open Science. ▬

COMMITMENT TO OPEN RESEARCH DATA

The ZBW in National and European Infrastructures

The ZBW – Leibniz Information Centre for Economics is actively involved in the design and development of national and European research data infrastructures. Through its involvement in the National Research Data Infrastructure (NFDI) and the European Open Science Cloud (EOSC), the ZBW makes significant contributions to the promotion of Open Science and the sustainable use of research data. With a focus on the economic sciences, its work is centered in particular on the BERD@NFDI and KonsortSWD consortia and on strategic developments in the field of European science policy.

Piloting the BERD@NFDI Platform for Business Administration

The NFDI consortium BERD@NFDI (Business, Economic and Related Data) is dedicated to developing research data infrastructures that make it possible to effectively manage and analyse unstructured data such as texts, images, videos and audio recordings. A central focus was on piloting the BERD platform, which is based on the open source framework InvenioRDM. The platform was specifically adapted to the requirements of the business administration specialist community and has been available to researchers since March 2024. It enables the structured management, easy retrieval and reuse of research data in accordance with the FAIR principles (Findable, Accessible, Interoperable, Reusable). The platform is designed to address the full range of unstructured data - from scientific texts to multimedia data - and support business researchers in managing it.

The ZBW was responsible for the technical development of the platform. The use of an external cloud environment ensures a scalable and reliable infrastructure that meets the specific needs of economic researchers. This is an important step towards sustainably supporting the digital research landscape and providing economists with a reliable tool.

Another highlight of 2024 was the adoption of an assessment methodology for the continuous review of FAIR compliance. This methodology, which is based on the RDA FAIR Data Maturity Model, enables an assessment of compliance with FAIR principles.

The ZBW's work in the BERD@NFDI consortium in 2024 illustrates the focus on providing a future-proof research data infrastructure. The platform and the accompanying services help to make unstructured data more efficiently usable and create new opportunities for economic research in an increasingly data-driven world.

Improved Findability of Research Data in KonsortSWD

A central focus of the ZBW's collaboration with the NFDI consortium KonsortSWD in 2024 was on improving the findability of research data. In collaboration with GESIS – Leibniz Institute for the Social Sciences, the ZBW developed a handout aimed at making research data more visible in general search engines such as Google. This initiative recognises the fact that many researchers start their research via web search engines rather than subject-specific data repositories. Around 60 per cent of researchers use general search engines for this purpose, while subject-specific repositories are initially only used by around 40 per cent.

The guideline contains practical recommendations and technical adjustments that enable research data centres to better index their data for search engines and thus increase their visibility. The results speak for themselves: centres that implemented the 2024 guidelines recorded an impressive 440 percent increase in access to their research data. This result underlines the importance of such measures for the accessibility and dissemination of research data and shows how targeted improvements can create sustainable added value.

Another ZBW milestone in 2024 was the development and evaluation of solutions for the standardised exchange of research data between different research data centres. These solutions address two key challenges: interoperability between different platforms and secure access to sensitive data. By introducing standardised interfaces and formats, existing data can be used more efficiently, which increases the number of users. At the same time, flexibility for researchers increases, as shorter travel times to the nearest research data centre make everyday research easier. Data security is also guaranteed.

The ZBW relied on close cooperation with other partners in the consortium in order to adapt the technical solutions to the specific requirements of the specialist disciplines. The evaluated infrastructure makes it possible to transfer data smoothly between different centres and thus further simplify access to research data. These advances will make a significant contribution to reducing fragmentation in the research data landscape and creating a more standardised, networked infrastructure.

Europe in View: The ZBW's Involvement in the European Open Science Cloud

At European level, the year 2024 was of great strategic importance for the ZBW and the European Open Science Cloud (EOSC). The EOSC, which aims to establish a Europe-wide, interoperable infrastructure for research data, offers researchers access to research data across countries and disciplines. The ZBW played a decisive role in the further development of this initiative, in particular through the involvement of ZBW Director Professor Klaus Tochtermann as an elected member of the Board of Directors of the EOSC Association.

A key milestone in 2024 was the launch of the productive version of the EOSC EU Node. This version forms the basis for the Europe-wide networking of research data infrastructures and makes it possible to seamlessly connect national, regional and topic-specific infrastructures to the EOSC. With this basic technical version, an important step has been taken to overcome the fragmented access to research data in Europe and to create a standardised platform that complies with the FAIR principles.

To promote understanding and use of the EOSC and the EOSC EU Node in particular, the ZBW 2024 initiated the "EOSC Coffee Lectures" event series. This series of online lectures with Professor Klaus Tochtermann offered over 1,200 participants a low-threshold opportunity to find out about the functionality, potential and strategic goals of the EOSC and the new EOSC EU node. The "EOSC Coffee Lectures" made a significant contribution to familiarising a broader scientific community in Germany with the EOSC and raising awareness of its benefits.

Another highlight was the EOSC Symposium 2024, which took place in Berlin from 21 to 23 October. With 1,355 participants from 64 countries, it was one of the most important events in the field of European research data infrastructure development. As project coordinator, the ZBW played a central role in the organisation of the three-day conference, which took place under the auspices of the Federal Ministry of Education and Research (BMBF). In addition to organisational responsibility, the ZBW also set the tone in terms of content. The Open Science Session, which was organised and moderated by Dr Guido Scherp, deserves special mention. This session highlighted the central importance of Open Science in the training of young researchers and offered an interactive world café format in which innovative approaches and strategies for promoting Open Science skills were discussed. Over 50 participants took the opportunity to exchange ideas on new approaches in keynote speeches and discussions. ▬

FURTHER INFORMATION:

New BERD platform: https://berd-platform.de/

Handout SEO for research data "Enhancing data findability: how scientists and repositories can improve their data visibility": https://doi.org/10.5281/zenodo.6760241

Report on the EOSC session "Open Science Education": https://doi.org/10.5281/zenodo.13982666

Understanding the Use of Information ***and Knowledge***

Research into User Behaviour in the Digital Information World

The "Web Science" research area, headed by Professor Isabella Peters, investigates user behaviour in digital environments and the interactions between science, media and digital technologies. The aim is to understand the dynamics of the digital information landscape and to improve the quality of science communication. From this broad spectrum of research topics, three research findings from 2024 are presented in detail below.

Ways to More Openness in Science

ZBW research group shows: Visual signals can strengthen open access readiness

Open access to knowledge is essential for research, but open access publications face challenges. Many researchers favour subscription journals with a high impact factor, while there is a lack of incentives for open access. A research group at the ZBW - Leibniz Information Centre for Economics has investigated how playful elements can be used to overcome these hurdles and motivate researchers for open access.

The experimental study with over 350 participants shows that the journal impact factor remains decisive for the choice of a journal and significantly influences the decisions of researchers. However, the research group also found that gamification, in particular concise badges that are displayed directly on articles, can have a significant influence on publication behaviour. Such playful incentives demonstrably increase the motivation to choose open access journals and thus supplement the established evaluation criteria with an innovative and tangible component.

In addition to badges, the study analysed other motivational approaches such as points and levels, which also offer potential for promoting open access. The results emphasise that playful elements can be an effective building block in a multi-layered incentive system to open up access to scientific knowledge and increase the acceptance of open access publications without replacing traditional evaluation measures such as the journal impact factor. ▬

ABOUT THE STUDY:

Mazarakis, A., Bräuer, S., & Dorsch, I. (2025). Evaluation of gamification as a tool for open access publishing among researchers: insights from a conjoint analysis. Scientometrics, 1-28.. https://doi.org/10.1007/s11192-024-05226-6

Multidisciplinary Research Project Shows: COVID-19 Pandemic has no Impact on Scientific Publication Behaviour

OASE study reveals: Scientific publication practices resistant to external shocks

The COVID-19 pandemic has fundamentally changed work processes worldwide: Working from home, flexible work locations, virtual meetings and digital collaboration platforms became the new norm from one day to the next. Against this backdrop, the question arose as to whether the publishing behaviour of researchers would react with similar volatility to these far-reaching changes.

The research project funded by the Federal Ministry of Education and Research (BMBF) "Open Access Effects" (OASE), carried out by the ZBW and the GESIS – Leibniz Institute for the Social Sciences, investigated this question. Under the direction of Professor Isabella Peters and Dr Philipp Mayr, the researchers investigated whether and how open access and preprints affect scientific impact and what role the COVID-19 pandemic played in publication decisions. Contrary to the assumption that the pandemic could have a significant impact on publication strategies, the results showed a different picture: publication practice in research is proving to be surprisingly resistant to external shocks and remains largely stable in the long term.

The results of the "Open Access Effects" (OASE) project make it clear that the disciplinary culture of scientific publishing is robust in the face of external changes. Nevertheless, it is clear that researchers are willing to adapt their publication strategies, especially if there are advantages such as faster dissemination of research results. ▬

How Unverified Health Information Circulates

Results of the DESIVE² research project

What actually motivates people to spread false information in a health context? And to what extent does a scientific phenomenon influence the credibility and dissemination of such content? These questions were the focus of the project "Understanding Disinformation Behaviour" (DESIVE²), funded by the Federal Ministry of Education and Research (BMBF). The research project was carried out by the ZBW under the direction of Professor Isabella Peters and Dr Maria Henkel, the association Grenzenlos Digital e.V. and the Humboldt University of Berlin.

The research project consisted of three methodological parts: a quantitative online survey, an app study and qualitative interviews. In the survey, 109 participants rated 12 social media posts with different scientific elements. This showed that the mere existence of scientific elements such as diagrams or references had no significant influence on perceived credibility. However, if several of these elements were combined and presented in a scientific context, credibility increased significantly.

The app study investigated what health information people receive and pass on every day via a wide variety of channels - realistically and without media disruption. After registering, participants took part in surveys and uploaded content - including screenshots, voice messages and digital diary entries. Push notifications reminded them to use the app regularly. A total of 150 people used the app and documented over 400 situations with health information. 68 participants provided detailed self-reports on 368 situations, supplemented by 290 completed surveys. Finally, the qualitative interviews were designed to capture individual assessments and motivations for sharing or withholding health information.

The research project "Understanding disinformation behaviour" (DESIVE²) makes it clear that health information is often passed on out of care, conviction or the desire for support - but often without reflection. Consciously reflecting on this behaviour could help to curb the spread of misinformation. At the same time, misleading health information is omnipresent and reaches people through personal contacts and media channels. As this content is not always clearly recognisable as false, training approaches should focus more on the differentiated assessment of such information and teach strategies for critical classification. ▬

READING TIP:

Henkel, M., Perrey, L., Jacob, A., Greifeneder, E., Dewitz, L., Hellmich, H., Stiller, J., & Trkulja, V. (2024, November 12). Verify, share, contradict or ignore? Dealing with false information. Zenodo. https://doi.org/10.5281/zenodo.14134359

The Search for Knowledge

Effective Discoverability of Research Results with AI Tools

The research area "Information Profiling and Retrieval", headed by Professor Ralf Krestel, focuses on the optimal findability and accessibility of research-relevant information, such as scientific publications. With the help of artificial intelligence methods, information is processed, analysed and presented in a form that is easy for users to understand. From this broad spectrum of research topics, three research results from the year 2024 are presented below.

Science Made Simple

Automatic text simplification in the test

Whether governments and authorities, companies, medical professionals, educational institutions or the judiciary - many stakeholders in society need access to scientific knowledge in order to make informed decisions. However, scientific publications are often difficult to understand. Complex technical terms and long, convoluted sentences make it difficult not only for laypeople but also for researchers from other disciplines to access important findings.

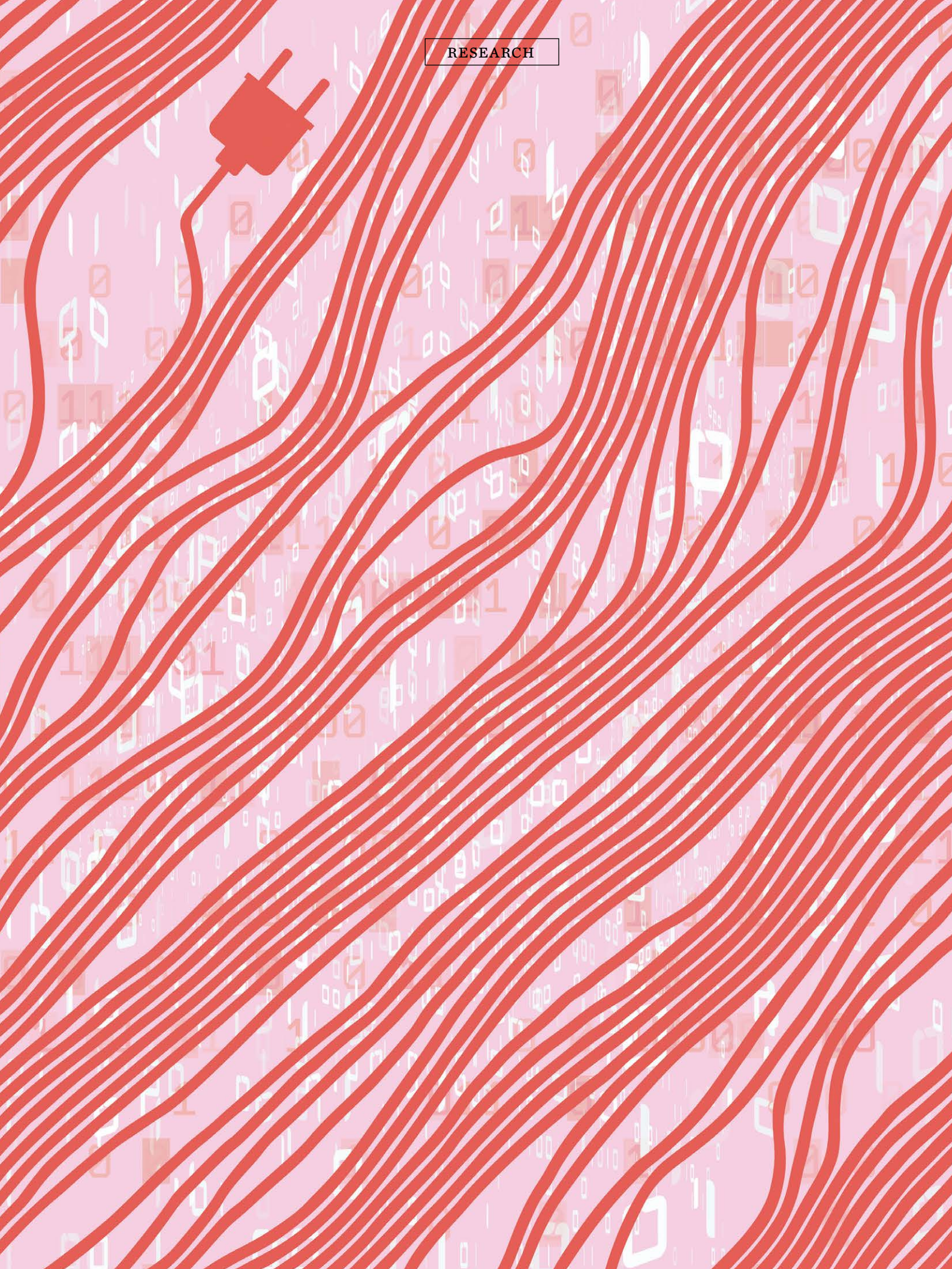
Automatic text simplification could break down this barrier by improving readability without distorting the accuracy of the content. But how well do these systems really work?

The research team led by Professor Ralf Krestel has been working on this question. They analysed various methods for evaluating text simplification. They found that existing evaluation methods are particularly unreliable for longer and scientific texts. Most automatic systems were developed for shorter, non-scientific texts and do not cope well with complex content. It is particularly difficult to maintain a balance between comprehensibility and accuracy of content. Another challenge is that many scoring systems work with so-called "hallucinations". This can result in inaccurate or incorrect simplifications that are nevertheless rated as good.

"The current systems for text simplification have reached their limits, especially when it comes to scientific texts. We need methods that guarantee comprehensibility and content precision in equal measure," explains Professor Ralf Krestel. The authors of the study therefore call for better evaluation methods that are specifically tailored to scientific texts. Future research should focus on developing systems that not only improve comprehensibility, but also preserve the accuracy of scientific content.

TO THE STUDY:

Davari, D., Ermakova, L., & Krestel, R. (2024). Comparative Analysis of Evaluation Measures for Scientific Text Simplification. In International Conference on Theory and Practice of Digital Libraries (ps. 76–91). Cham: Springer Nature Switzerland.



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