

Investigation and Analysis of the UK Scientific and Technical Report System—The Policy Environment Supporting the Storage and Dissemination of Scientific and Technical Reports

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Abstract

[Purpose/Significance] Libraries serve as the core driving force in implementing the storage and dissemination of scientific and technical reports. To explore the implementation details of good practices, this study investigates relevant management measures for scientific and technical reports abroad. [Method/Process] This paper investigates and analyzes UK laws and regulations, as well as relevant policies of research funding agencies and research/educational institutions, and reviews policy elements through a literature review. [Results/Conclusion] Survey results indicate that an effective policy environment for promoting the storage and dissemination of scientific and technical reports includes the following elements: protecting contributors' rights of attribution and property rights, realizing the public's right to know and right to use, implementing funders' prior rights and review rights regarding storage and sharing requirements, clarifying managers' role positioning and accountability mechanisms, etc. Libraries should pay attention to balancing the rights and interests of all stakeholders during the implementation process.

Full Text

Preamble

Investigation and Analysis of the British Scientific and Technical Report System: The Policy Environment Supporting the Storage and Dissemination of Scientific and Technical Reports

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Abstract: [Purpose/Significance] Libraries serve as the core institutional force driving the storage and dissemination of scientific and technical reports. To explore the implementation details of best practices, this study investigates relevant management measures for scientific and technical reports abroad. [Method/Process] This paper analyzes British laws and regulations, as well as policies from research funding agencies and research institutions, sorting out policy elements through literature review. [Result/Conclusion] The findings reveal that an effective policy environment for promoting the storage and dissemination of scientific and technical reports includes the following elements: guaranteeing contributors' rights of authorship and property, realizing the public's right to know and use, implementing funders' prior rights and review authority regarding storage and sharing requirements, and clarifying the role positioning and accountability mechanisms of administrators. Libraries should pay attention to balancing the interests of all parties during implementation.

Keywords: scientific and technical reports; scientific and technical information policy; library copyright

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1. The Scientific and Technical Report System as a Fundamental Guarantee for the National Innovation System

The submission of scientific and technical reports helps improve the reproducibility and accountability of research project outcomes. Meanwhile, standardized management systems and processes can enhance the efficiency and effectiveness of scientific research planning, design, execution, publication, announcement, and sharing. The United States established its scientific and technical report management system shortly after World War II, including legislation such as the National Technical Information Act and the American Technology Excellence Act [1]. As a scientific and technological powerhouse, the US built its system early and accumulated extensive experience, which Chinese scholars have examined in depth [2]. Since the 1980s, Chinese researchers have conducted comprehensive studies on retrieval methods, characteristics, storage, and utilization of American scientific and technical reports [3-6]. In the 21st century, research has gradually shifted toward exploring the American scientific and technical report system as a foundation for proposing possible frameworks for implementing a Chinese system [7-10]. In response, the Chinese government has explicitly called for accelerating the establishment of a unified scientific and technical report system [11-13]. Premier Li Keqiang also proposed implementing a national innovation survey and scientific and technical report system in the 2014 Government Work Report [14]. The Ministry of Science and Technology subsequently issued management measures [15] and relevant guiding opinions [16]. These policies demonstrate national support for the open sharing of scientific and technical reports to promote social innovation development.

Libraries serve as platforms for knowledge exchange and knowledge manage-

ment, constituting important knowledge service bases that support the dissemination, storage, and discovery of various types of literature and information. In recent years, China's scientific community, publishing industry, and library sector have jointly committed to supporting and advancing open access development both domestically and globally [15-17]. On May 15, 2014, the Chinese Academy of Sciences [18] and the National Natural Science Foundation of China [19] simultaneously released their open access policies. On May 27, 2014, Premier Li Keqiang stated in his speech at the Global Research Council 2014 Beijing Conference that China pursues a mutually beneficial global open access development strategy [20]. The scientific and technical report system can promote knowledge innovation and reuse, and China's library community has actively responded to and supported the submission, storage, management, and even open sharing of scientific and technical reports.

However, during the implementation of the scientific and technical report system, researchers often have several concerns. To facilitate policy implementation, it is necessary to sort out and propose rights protection methods and interest balance mechanisms for all stakeholders. Currently, the Ministry of Science and Technology has issued report guidelines [15-16] to guide administrative departments at all levels in formulating relevant measures. During implementation, libraries also need to consider actual conditions, develop supporting measures, and vigorously promote related work based on specific circumstances.

Questions arising from preliminary research, such as "If I submit unpublished research results (scientific and technical reports), will someone else publish them as their own work?", "Will only a few people (potential academic competitors) see these reports, or will everyone have access?", "Is it necessary to record and submit all research processes?", and "We work as a team, so who can share others' research records?", can be transformed into researchable and analyzable questions. This transformation facilitates investigation of foreign policy elements for scientific and technical reports and supports future policy recommendations and positive interpretation of China's scientific and technical report system policies. The research framework designed by the authors is shown in Table 1 .

2. Research Framework for the British Scientific and Technical Report System

Effective management of scientific and technological achievements forms the foundation for establishing a scientific and technical report system. As an internal management system, scientific and technical report systems primarily involve storage specifications and formats, such as classification, titles, preparation dates, writing formats, and metadata content. However, under the current trend and momentum of open access, institutions must also consider issues related to stakeholders when sharing scientific and technical reports, including the scientific and technological competitive advantages of institutions and authors within certain timeframes, protection of the public's right to access knowledge

and information, and intellectual property protection. Therefore, a panoramic perspective constitutes the core of the research framework design.

Scientific and technical reports, as a form of scientific and technological achievement, belong to the broader category of scientific and technological achievement management systems. While achievement management systems emphasize preservation and management, scientific and technical report systems lean more toward dissemination and exchange. Currently, foreign institutions increasingly advocate public access to research outcomes, causing these two systems to converge to some extent.

In June 1945, the US government established the Office of Science and Technology Publication Board by presidential order [21], where the original English expression for scientific and technical reports was “Science and Technology Publication,” not the later commonly used “Scientific and Technical Report.” The broad connotation of scientific and technical reports includes all reports related to science and technology, potentially encompassing scholarly records, scientific records, scientific and technical reports [22], government publications [23], research achievements [24], technical reports [25], and scientific and technical achievement reports [26]. While scientific and technical report systems focus on the concept of scientific and technical reports, they often also cover parts of research funding reports, government publications, and scientific records.

On the other hand, during implementation, people have various concerns, such as whether submitting unpublished research results might lead to misappropriation, whether reports will be seen by competitors or by everyone, whether recording all research processes is necessary, and who in a team can share others’ research records. Transforming these concerns from preliminary research into investigable and analyzable questions facilitates examination of foreign scientific and technical report policy elements and supports future policy recommendations. The research framework is designed as shown in Table 1 .

Table 1. Research Framework Design

Policy Observation Content	Specific Questions
How does the scientific and technical report system protect the rights of authors and the public?	What rights of authors should be protected? What rights of the public should be protected?
Scientific and technical report intellectual property rights	When should scientific and technical reports be stored after project completion? Who owns the intellectual property rights of scientific and technical reports?

Policy Observation Content	Specific Questions
Management measures during scientific and technical report submission	Who is responsible for implementing the submission system? What is the storage duration for scientific and technical reports? Where are scientific and technical reports stored? How can scientific and technical reports be accessed?

Through investigation of British laws and regulations, as well as policies from research funding agencies and educational institutions, this study extracts and filters relevant laws, regulations, and policies that explicitly stipulate scientific and technical report content, selecting them as research objects, as shown in Table 2 .

Based on the investigation of the research objects in Table 2, this paper explores the research questions listed in Table 1, organizing the findings into Sections 3, 4, and 5, and extracting core content for reference regarding scientific and technical report system policy implementation details in Section 6.1.

3. Protection of Author and Public Rights in the Scientific and Technical Report System

3.1. Protection of Author Rights

Scientific and technical reports represent one of the research outputs produced by researchers under the facilities, environment, and personnel provided by research institutions and commissioned by research funding projects. Regardless of whether research results are published, researchers' contributions must first be acknowledged. Authorship both recognizes researchers' work and represents their accountability for that work. While researchers already have clear understanding of author rights protection for formal publications such as academic monographs and journal articles, and certain intellectual property protection measures exist for patents, data, and computer software, grey literature (grey literature) scientific and technical reports containing substantive content of the aforementioned document types can be protected through two measures: first, by following existing laws and regulations for intellectual property protection of literature resources, and second, by formulating relevant management systems based on actual circumstances.

The British Copyright, Designs and Patents Act 1988 [27-28] explicitly defines authors' rights, including moral rights and performance rights. Moral rights include authors' rights to be identified as authors of literary, dramatic, musical, and artistic works. These rights are non-transferable but may be waived. For

works of joint authorship, each author has independent moral rights. Additionally, the Data Protection Act 1998 [30] states that even if data or information is not copyrighted, it should be protected as part of a website or publication. If reuse requires copying copyrighted material, authorization from the copyright holder is necessary.

Moral rights include the right to be identified, the right to object to derogatory treatment, and the right to attribution. Authors of scientific and technical reports enjoy moral rights, which confirm their identity through attribution. As a right, authors may exercise or waive moral rights, but cannot transfer them. Moreover, moral rights are personal rights with unlimited protection periods. China's Copyright Law also contains relevant provisions that could be incorporated into scientific and technical report system policies within relevant management systems, enabling researchers to recognize that their rights are protected.

3.2. Protection of Public Rights

As taxpayers and citizens, the public should have convenient access to scientific and technological achievements funded by public research funds when they need and want relevant information. In fact, protecting public rights constitutes one of the core justifications for scientific and technical report submission and sharing. It is important to note that public and author rights are not opposed—researchers are also members of society and should have and defend public rights.

The UK Copyright (Public Administration) Regulations 2014 embodies the core principle of disclosing useful information to the public to the greatest extent possible, providing open sharing without violating business interests or protecting reasonable commercial innovation interests. The renowned UK Freedom of Information Act 2000 [29] builds upon two earlier acts: the Public Records Act (Northern Ireland) 1923 and the Public Records Act 1958, which aimed to guarantee public institutions' information sharing and citizens' participation rights. To meet the needs of the networked, digital, open science, and open innovation era, the UK government established the UK Government Licensing Framework, similar to Creative Commons licenses, whose core essence is that public sector information holders have obligations to make information available and reusable, requiring reusers to attribute the information provider and source.

The spirit and principles of such legislation hold the following significance for scientific and technical report systems: they establish that the public has the right to know about scientific and technical reports, and relevant institutions should provide open access within reasonable scope. That is, while appropriately protecting state secrets and commercial innovation, public right to know should be maximally guaranteed. On the other hand, they also regulate how the public may use this information.

China's scientific and technical report system is supported not only by laws

and regulations but also by explicit statements in government work reports and documents. These discussions of public rights protection measures provide the basis and favorable conditions for implementing and executing scientific and technical report submission systems. When providing services, they can be incorporated into policy statements to protect both author and public rights.

4. Intellectual Property Rights of Scientific and Technical Reports

4.1. Submission Timeline

As intellectual property assets, scientific and technical reports are constrained by funding agency policies. To maximize public open sharing while considering implementation feasibility, research funding agencies have established corresponding requirements for storage and sharing timelines.

Section GC18 of the RCUK Research Grant Terms and Conditions on research implementation and results reporting states that when research councils require research institutions to submit project management and results reports, the submission deadline is within three months after project funding ends. For special reasons preventing timely submission, written applications for deadline extensions must be submitted before the due date. The AHRC Research Funding Guide follows RCUK's Research Grant Terms and Conditions, also stipulating a three-month deadline for required project management and results reports. The ESRC Research Funding Guide's final report section requires that key research reports must be completed on the Researchfish platform within three months after project funding ends.

China currently does not have such strict submission regulations. At research institution management departments, similar practices could be referenced, with scientific and technical reports uniformly submitted to national platforms within 3-6 months or before annual summaries.

4.2. Intellectual Property Ownership

As an important component of research achievements, scientific and technical reports may involve new products, technologies, methods, tools, and knowledge with competitive advantages. These may be transformed into commercially useful industrial products or formally published works for research and education purposes, thus involving property rights issues such as ownership, transfer, transformation, development, and utilization. Generally, to encourage researchers to engage in scientific and technological innovation, publicly funded research projects often require knowledge achievements to be shared as openly as possible, but typically do not constrain intellectual property rights.

The MRC's Intellectual Property Policy states that except for research belonging to MRC institutions and units, MRC does not retain intellectual property

rights for funded research; intellectual property belongs to researchers and universities conducting the work. The EPSRC Funding Guide's research results section similarly states that EPSRC does not claim intellectual property rights for funded research.

China's Law on the Transformation of Scientific and Technological Achievements embodies a similar spirit—intellectual property rights for funded research achievements are not restricted unless otherwise specified in commercial contracts. Consideration could be given to stipulating that intellectual property rights for scientific and technical reports belong to the funded individuals or institutions (i.e., the researchers or research institutions conducting the work), with funding agencies making no intellectual property claims over funded research results, and researchers or institutions having full authority over intellectual property management.

5. Management Measures for Scientific and Technical Reports

5.1. Responsible Persons for Implementation

As components of research records, scientific and technical reports document the implementation process and results of scientific and technological activities, providing reference value for research peers or the public to understand the work of institutions and teams. Research institutions have supervisory and management responsibilities for information content released or published in their name and therefore need to conduct content review and management. Scientific and technical reports are important content that should be incorporated into management systems and further extended to norms for submission and dissemination, with responsible persons clearly identified.

The JISC Guidance on Managing Research Records states that responsibility for managing research records should be clearly defined. The Principal Investigator (PI) is responsible for the accuracy, completeness, and security of research records generated throughout the research project. The PI may also delegate research record management to other project team members and inform other team members. The University of London's Records Management Guidance states that responsibility for research project records should be clarified at project initiation. City, University of London's Research Records policy mentions that PIs are responsible for the accuracy, completeness, and security of relevant records. The University of Glasgow's Guidance on Managing Research Records states that while PIs bear ultimate responsibility for research records, all personnel involved in the research also share responsibility for ensuring accuracy, completeness, and security, including graduate students, supervisors, and formal staff. The University of Sheffield's Policy on Good Research and Innovation Practices states that depending on disciplinary characteristics, PIs regularly review, sign, and date records to confirm their accuracy and completeness.

The direct responsible person for scientific and technical reports is the PI, with all relevant project personnel jointly responsible for accuracy, completeness, and security. In special circumstances where the PI cannot directly assume responsibility, other project team members should be delegated to manage scientific and technical reports. Relevant responsible persons should be clarified at project initiation to prevent report loss due to unclear responsibilities.

5.2. Storage Duration

One major purpose of scientific and technical report open sharing is to facilitate research peers and public access to relevant progress, identify potential collaborators or commissioned research teams, and utilize these new results for other inventions and creations. Another major purpose is to ensure research results are verifiable, validatable, reproducible, and accountable. Therefore, long-term preservation and permanent availability of scientific and technical reports require establishing a minimum storage duration: how many years they should be preserved and maintained.

King's College London's Records and Data Retention Schedule for Research Records divides retention periods into: less than 3 years, 3-7 years, and more than 7 years. Records beyond the retention period should be destroyed. The University of London's Records Management Guidance and JISC's Guidance on Managing Research Records stipulate that specific storage after project completion should follow funding agencies' requirements. If funding agencies do not specify requirements, the general recommended principle for scientific and technical reports is permanent preservation.

When formulating management policies, institutions could consider that scientific and technical report storage duration should first follow project funding agencies' regulations. When funding agencies have not made provisions, research institutions may independently determine storage duration based on specific project circumstances. Since scientific and technical reports often involve significant research results and have important research implications, permanent storage is generally recommended.

5.3. Storage Location

Scientific and technical report storage locations must first ensure adequate space to store all reports. Second, storage locations should have appropriate measures to guarantee security. Finally, they should provide interfaces enabling users to mine and process report content through relevant software.

JISC policy states that research records should be stored in equipment ("hard copy" records) or electronic systems (electronic records), with storage locations requiring adequate space to ensure all generated records can be stored. Scientific and technical report storage locations should have appropriate security measures to control record access and provide suitable environmental conditions

for using software to process records. The University of Glasgow's policy similarly states that after project completion, selected research records and data storage locations should provide adequate space in a secure, suitable environment with appropriate access controls and technical measures to ensure record security. City, University of London's policy states that after research project completion, relevant records should be stored in a secure environment ensuring continuous availability of research records.

China has advantages in promoting scientific and technical report storage: first, a national submission platform already exists; second, various research institutions have practical experience with institutional repositories; third, the concept and practice of open access have gained recognition. These infrastructures and services can be fully utilized.

5.4. Report Access

It is important to protect the relative competitive advantages of research institutions and teams. Once scientific and technical reports are made public, they can be easily imitated and utilized. While maximizing public service provision, the rights and interests of authors and institutions must also be balanced and protected. Therefore, dissemination and access pathways should have conditional restrictions on time, scope, and degree of open sharing.

King's College London's policy divides information dissemination scope into three categories: external information—for the broadest possible audience; internal information—for staff and students; and restricted information—for authorized internal users. Access permissions are provided according to dissemination scope. JISC and the University of London's policies state that research record access is controlled, prohibiting unauthorized access and use. The University of Edinburgh's repository has internal and external versions. City, University of London provides different repositories for different user groups, with Edinburgh Research Archive (ERA) offering open access to the public. The University of Glasgow similarly prohibits unauthorized access to prevent record damage and misuse. Cardiff University states that record access is restricted, prohibiting unauthorized use, removal, destruction, or public disclosure without author authorization.

If scientific and technical reports contain confidential information, open sharing must be restricted. If they involve knowledge transfer and transformation, limited open sharing is required. Different research projects require different degrees of openness. While ensuring author rights, public right to know should be maximally guaranteed.

6. Conclusion and Recommendations

This investigation and analysis is based on surveys of British laws and regulations, research funding agencies, and research and education institutions' policies related to the scientific and technical report system. The current best

practice implementation details are summarized in Figure 1 [Figure 1: see original paper].

Figure 1 [Figure 1: see original paper]. Policy Elements of the Scientific and Technical Report System

China's Copyright Law protects authors' moral rights and intellectual property rights, while government information disclosure acts also require government information to be made public, and citizens may request disclosure of information that should be public but has not been disclosed. In promoting scientific and technical report submission and sharing, we can reference relevant measures from UK Research Councils and research institutions, such as clarifying implementation subjects' rights and responsibilities, accountability systems, and cooperative division of labor models.

Scientific and technical report system construction covers wide areas, involves numerous stakeholders, and presents comprehensive coordination challenges. Substantial work remains in organizational management, standards and norms, policies and regulations, and sharing services [51]. Libraries, as knowledge exchange and knowledge management platforms and important knowledge service bases supporting the dissemination, storage, and discovery of various literature and information, must further combine practical processes, summarize opinions and experiences from all parties, consider implementation conditions, formulate supporting measures, and vigorously promote related work to advance the storage, dissemination, and sustainable development of scientific and technical reports.

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Author Contributions

Wu Rong: Literature review and initial draft writing

Gu Liping: Research design and paper revision

Zeng Yan: Policy analysis

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