Enhancing Public Research Performance Through Good Governance Principles

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Abstract

This study aims to create a framework to improve public research performance by applying good governance principles. The principles are derived from a literature review. The selected six relevant documents on research funding processes were integrated to form a comprehensive framework outlining twelve general areas applicable to all research funding regulators. The framework includes 55 guiding questions for evaluating governance structures. The report suggests guiding issues for each area, aligning with diverse research funding requirements. Using the Thailand Science Research and Innovation Institution as a case study, governance challenges were identified through in-depth interviews. Organizational management and operations are evaluated using Curtin's "Approach-Deploy-Result-Improve (ADRI) framework," with scores categorized into six levels. Scores below 5 indicate opportunities for organizational enhancement.

Keywords: Public Research Institution, Research Governance, Research Funding, R&D Activities
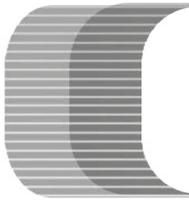
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การใช้หลักธรรมาภิบาลเพิ่มประสิทธิภาพ
ในการจัดสรรทุนวิจัยของประเทศ

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บทคัดย่อ

บทความนี้มีวัตถุประสงค์เพื่อสร้างกรอบการบริหารจัดการเพื่อปรับปรุงประสิทธิผลของงานวิจัย
สาธารณะโดยใช้หลักธรรมาภิบาล ตัวแบบที่สร้างขึ้นได้จากการทบทวนวรรณกรรม และคัดเลือกเอกสาร
ที่เกี่ยวกับกระบวนการให้ทุนสนับสนุนการวิจัยจำนวน 6 ฉบับ ในการสร้างกรอบการบริหารจัดการกระบวนการ
ให้ทุนสนับสนุนการวิจัยสำหรับหน่วยงานที่ใช้เงินทุนรัฐบาลจัดสรรทุนวิจัย งานวิจัยนี้ได้บูรณาการกรอบแนวคิด
และสรุปได้ 12 ประเด็น ประกอบด้วยคำถามและหลักการชี้แนะเพื่อเป็นแนวทางการบริหารจัดการ 55 ข้อ
สำหรับการประเมินโครงสร้างการบริหารจัดการ โดยใช้สำนักงานคณะกรรมการส่งเสริมวิทยาศาสตร์
วิจัยและนวัตกรรม (สกสว.) ประเทศไทย เป็นกรณีศึกษา ระดับการจัดการและการดำเนินงานขององค์กร
ได้รับการประเมินโดยใช้กรอบงาน "แนวทาง-ปรับใช้-ผลลัพธ์-ปรับปรุง (ADRI)" ของ Curtin โดยมีคะแนน
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Introduction

In recent years, many countries, including OECD and ASEAN nations, have increased public investment in R&D despite budget constraints. OECD countries have experienced a 6.4% annual growth in government R&D spending since 2001, outpacing GDP. ASEAN countries, characterized by varying levels of economic development, face challenges in R&D investment.

Governments play a crucial role in funding R&D activities across various sectors, including business and higher education. They also allocate resources for their own R&D initiatives. Additionally, governments indirectly support business R&D through the implementation of tax incentives, even though the financial impact of these tax credits on government revenue typically does not feature as direct R&D support within official budgets (Fumikazu (2020); Government of Ireland (2022); Government of Netherlands (2021).

The demand for evaluation in Science and Technology (S&T) is rising, focusing on assessing the outcomes and impact of public R&D. There is an increasing interest in evaluating entire research systems and portfolios for priority setting. As countries aim to boost competitiveness, the need for evaluation tools in publicly funded S&T research is growing rapidly. These tools aid decision-making, prioritize accountability, and inform the design of research programs, contributing to economic and social development.

Nevertheless, the focus on evaluation poses conceptual and methodological challenges. Implementing good governance principles in public research funding institutions is essential for effectiveness, sustainability, and societal impact. This approach builds trust and enhances research quality, secures funding, promotes effective collaboration, and adapts to changing research landscapes. The incorporation of good governance principles is seen as essential for the success of publicly funded research initiatives, ensuring their impact on society, and fostering a conducive research environment.

Objectives

The primary goal of improving governance within public research funding organizations is to emphasize both efficiency in achieving results and the credibility of public funding institutions. Our objectives include identifying key actionable governance functions for public

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funding institutions. The content of evaluation tools is designed to address the demand for accountability among various stakeholders and to consider the public value of such research, thereby assisting funding institution managers and government officials responsible for public research development. This framework applies to all research under the purview of funding institutions.

Background Information

1) *What Activities does a Research Funding Institution Engage in?*

A research funding agency is an entity that provides financial support for research activities, promoting scientific knowledge, technological development, and innovation. These agencies can be non-profit, private foundations, or government offices with specific focus areas. Researchers apply for grants, and upon approval, funds can be used for various research expenses.

A research fund regulator oversees and regulates the allocation and management of research funds, ensuring transparency, ethical conduct, and efficiency. Key functions include fund allocation, compliance enforcement, transparency promotion, review and evaluation, conflict of interest management, regulation of funding sources, policy development, fraud prevention, stakeholder communication, regulatory guidance, and risk management. Good governance management is essential for achieving these objectives (OECD, 2024).

2) *Why Good Governance is Significant for Public Research Funding Organizations?*

In 1993, the World Bank defined governance as the utilization of authority to oversee a nation's political, economic, and social assets for development. The term gained widespread recognition, leading to the creation of various governance indicators. The World Bank and UNDP define good governance, emphasizing its role in poverty reduction, public institution strengthening, and peacebuilding. Good governance extends beyond government institutions to NGOs, corporations, and others today. It serves as a framework guiding decision-making and resource management for responsible, ethical, and societal benefit. The OECD emphasizes ethical principles for good governance, creating frameworks for oversight at different levels.

Various institutions offer governance definitions, including the OECD, the World Bank, ADB, the Baldrige Performance Excellence Program, RAND Corporation, and others, each providing conceptual frameworks tailored to different contexts. Governance principles are also applied to research fund allocation and knowledge transfer. Assessment of governance often relies on data from expert evaluations, surveys, and inquiries but lacks standardized methodologies (OECD, 2017a; UNDP, 1997; Kaurfman, Daniel, et al., 1999).

Previous studies have shown that ethical governance dimensions remain consistent across standards, with a growing consensus on key principles: Social Accountability, Transparency and Disclosure, Participation, and Inclusivity and Engagement. Recent developments highlight an increased emphasis on information transparency and a broader understanding of participation. Effective governance within this framework is deemed crucial and should not be underestimated.

3) *What is Good Governance?*

Governance encompasses the system and processes for decision-making, policy-setting, and overall management within organizations, communities, or governments. It involves the structures, rules, and practices that facilitate effective entity operation. Good governance entails the principles and practices that guide decision-making and resource management in a responsible and ethical manner. This concept is not exclusive to government institutions but extends to NGOs, corporations, national and local governance, and various entities, serving as a framework to ensure the responsible and ethical use of power and resources for the betterment of society. Here are some key aspects and principles related to governance, including accountability, transparency, rule of law, participation, efficiency and effectiveness, equity and inclusiveness, sustainability, and flexibility as follow:

Accountability: Governance involves mechanisms to hold individuals or institutions responsible for their actions and decisions. This often includes transparency and reporting to relevant stakeholders.

Transparency: Transparency in governance means that information and decision-making processes are open and accessible to those affected by the decisions. It helps build trust and reduces the likelihood of corruption.

Rule of Law: A key principle in governance is that decisions and actions are based on established laws and regulations. This ensures fairness and consistency.

Participation: In democratic governance, participation from stakeholders is encouraged. This can involve citizens in a democracy, company employees, or non-profit organization members.
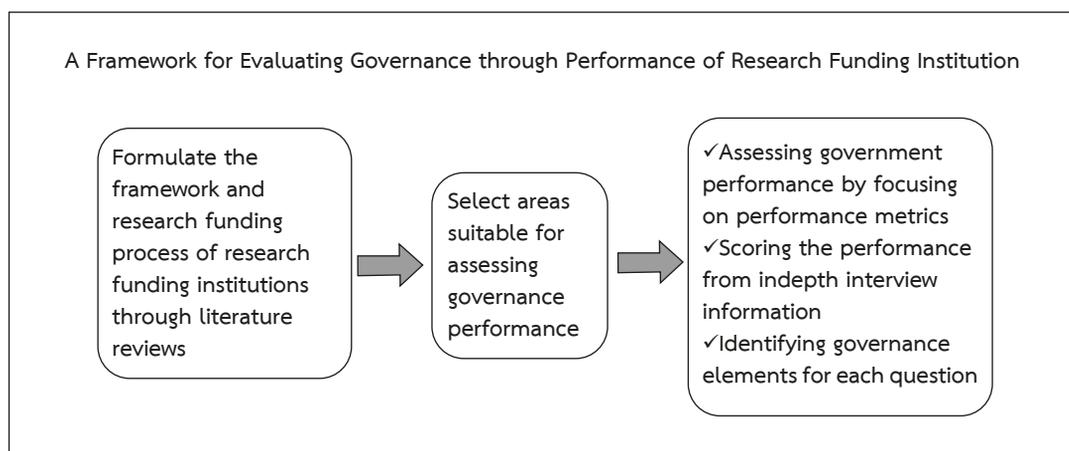
Efficiency and Effectiveness: Effective governance aims to achieve its objectives efficiently. This involves making the most of available resources and achieving desired outcomes.

Equity and Inclusiveness: Governance should strive to be fair and inclusive, ensuring that the interests and needs of all relevant stakeholders are considered.

Sustainability: In the context of environmental governance, sustainability is a key principle. It involves making decisions that do not harm the environment and allow for the long-term well-being of society.

Flexibility: Governance structures should be able to adapt to changing circumstances and needs. This is particularly important in the face of new challenges and opportunities.

The main goal of promoting ethics within a research funding organization is to emphasize the efficiency and credibility of units within the system. Success in supervising an organization's goals and results often requires collaboration between the government, research institutions, supervised units, and the community. The ethical principles used for supervision should promote progress rather than hinder or obstruct the organization's advancement (OECD, 2014a, p.15).

A Framework for Evaluating Governance through Performance of Research Funding Institution

Formulate the framework and research funding process of research funding institutions through literature reviews

Select areas suitable for assessing governance performance

✓Assessing government performance by focusing on performance metrics
✓Scoring the performance from indepth interview information
✓Identifying governance elements for each question

Figure 1: A Framework for Evaluating Governance through the Performance of Research Funding Institution

Conceptual Framework

This study aims to develop a framework for enhancing public research performance through the application of good governance principles. The framework is designed to provide guidance for evaluating existing governance structures, enabling research funding institutions to achieve their objectives by outlining general principles that could apply to all regulatory bodies. These principles can also serve as a roadmap for developing governance structures for any prospective new regulators.

We formulated these principles by reviewing existing frameworks found in the grey works of literature. From these sources, we selected only relevant documents related to the research funding processes within research funding institutions and the governance principles pertinent to public research performance. We then integrated these components to create a comprehensive framework that allows us to assess the governance performance of research funding institutions.

Methodology

To create a framework for improving public research through good governance, follow these four steps: *First*, review the relevant works of literature and select six key documents on governance principles related to research funding and public research organizations. Then, identify both common and specific components of governance principles that are applicable to public research performance. Second, develop an integrated framework based on these documents and organize them into twelve areas for research management with good governance. *Third*, propose guiding questions and principles by drawing on the practices of national research organizations from ten countries and conducting in-depth interviews with executives, using the Thailand Institute of Science, Research, and Innovation as a case study. *Fourth*, suggest scoring criteria for evaluating the level of implementation of the guiding questions. Based on the assessment scale used by other Financial Stability Board (FSB) standard setters and the World Bank, organizational management and operations were assessed using Curtin's ADRI Quality Cycle (Curtin University, 2002).

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An Overview of Previous Research on Best Practices

Existing literature from Google's search engine and Google Scholar showed that the specific principles and practices of governance can vary significantly based on the context, cultural norms, and the nature of the organization or entity in question. The effectiveness of governance frequently proves pivotal in determining an organization's success and its capacity to cater to the interests of its stakeholders.

Organizations and entities may develop customized governance structures and practices to meet their unique requirements and goals. It is important to acknowledge that governance is a flexible concept capable of adapting over time to address evolving circumstances and challenges (Bevir, 2012).

Each source recommends the application of ethical principles tailored to the nature of the overseeing organization. These sources may suggest various components, principles, indicators, or guidelines. In this research, we have selected six supervisory frameworks deemed suitable for research funding organizations as follows:

1.1) *OECD (2014a): The Governance of Regulators, OECD Best Practice Principles for Regulatory Policy*

The framework, outlined in a 2014 OECD report, provides general principles applicable to diverse regulatory agencies overseeing businesses, professions, and nonprofit organizations. Regulatory design and delivery principles guide governments and regulators in establishing, evaluating, and improving regulatory agencies. The goal is to enable effective regulation in a complex environment, meeting societal, environmental, and economic expectations. The seven key areas for the good governance of regulators include role clarity preventing undue influence, decision-making structures for independent regulators, accountability, transparency, engagement, funding, and performance evaluation. These principles emphasize accountability, transparency, efficiency, effectiveness, participation, responsiveness, the rule of law, and equity.

1.2) *Health Research Policy and Systems (Smits & Champagne, 2020)*

The research conducted by Pernelle Smits and François Champagne in 2020, titled "Governance of Health Research Funding Institutions: An Integrated Conceptual Framework and Actionable Functions of Governance," focuses on the governance of national

health research funding institutions. The objective of the study is to provide a framework for governing these institutions and suggest potential governance strategies. The researchers reviewed existing frameworks in the grey literature, selected seven relevant documents, and developed an integrated framework by drawing insights from health research funding institutions in North America, Europe, and Asia. The resulting framework comprises 13 functions, categorized into 5 governance functions, 3 management functions, and 5 transversal logics that apply to both governance and management, addressing aspects such as ethics, transparency, capacity reinforcement, monitoring and evaluation, and public engagement.

1.3) *RAND Corporation (2018): Organizing for Excellence: An International Review of Good Practice in Organizational Design and Governance of Research Funding Bodies*

In 2015, Sir Paul Nurse evaluated the UK's research councils, leading to the creation of UK Research and Innovation (UKRI) outlined in the 2016 white paper "Success as a Knowledge Economy." The Department for Business, Energy, and Industrial Strategy initiated a research project in 2018, conducted by the RAND Corporation, to inform UKRI's structure and governance. The study examined global research funding bodies, focusing on organizational practices and models in seven countries. The findings revealed no universal organizational design but identified common governance principles: independence from political influence, flexibility, transparency, and societal relevance. The study emphasized efficiency, effectiveness, and transparency without specifying ethical components.

1.4) *OECD (2009): Enhancing Research Performance through Evaluation, Impact Assessment and Priority Setting*

The OECD Committee on Science and Technology Policy (CSTP) and its Working Party on Innovation and Technology Policy (TIP) have issued a report emphasizing the importance of enhancing public research performance through evaluation, impact assessment, and priority setting. The report highlights the increasing demand for evaluating the outcomes and impacts of public research and suggests a shift from traditional peer review methods. It emphasizes the need for stakeholder involvement in assessing social and economic impacts, effective communication with decision-makers, and a balance between scientific significance and real-world consequences. The evaluation of research funds is seen as crucial for prioritizing R&D and innovation funding, designing effective research projects, promoting public accountability, informing society, and recognizing

research contributions to economic and social development. The focus is expanding towards evaluating entire research systems and portfolios, reflecting a broader perspective beyond the national landscape.

1.5) *OECD (2017b): The Principles and Guidelines for Access to Research Data from Public Funding*

The OECD has developed 'The Principles and Guidelines for Access to Research Data from Public Funding' to provide international policy recommendations on research data access. Aimed at governmental science policy and funding bodies of member countries, these guidelines promote data sharing among researchers, institutions, and national agencies. The 13 principles, including Openness, Transparency, and Security, are designed to enhance the efficiency of the global science system without imposing undue regulations or costs on national science systems. The goal is to foster collaboration while respecting the diversity of national laws and policies.

1.6) *OECD (2013): Commercializing Public Research: New Trends and Strategies*

In OECD countries, the focus on transferring research and innovation knowledge for commercial gain has traditionally been measured by metrics like patents, licenses, and the establishment of businesses stemming from university research. However, advancements in ICT and increased collaboration between public research and business innovation have broadened the scope of evaluating success. The OECD now suggests considering indicators such as collaborative research projects, integrating students and faculty into the business sector, university professors acting as consultants, and developing entrepreneurial skills in students. Strong interpersonal relationships and workforce transfers are also viewed as alternative channels for commercially transferring knowledge.

Results

The study findings are organized into four sections. The first section displays the development of an integrated framework using information from selected documents in previous studies. The second section proposes guiding questions to assist in applying the principles in various contexts and meeting the diverse needs of research funding institutions. In the third section, we provide scoring criteria for assessing the level of implementation of the proposed guiding questions. Finally, the last section highlights how to conclude the quality of organizational management and operations using Curtin's approach criteria.

1) *Integrated Framework of Governance Principles for Public Research Performance*

This study explores and reviews the six documents on best practices in organizational design and governance for research and innovation funding bodies. From the six studies detailed earlier, it became evident that certain management principles overlapped. This research amalgamated these concepts to identify key factors for overseeing research funding operations, organizing them into 12 areas of evaluation, and classifying them based on their data sources. Effective governance structures that support these 12 areas are expected to encourage regulators to improve outcomes for the community honestly, fairly, and efficiently, within the boundaries of their legal framework and the objectives outlined by the government. The twelve areas with governance elements consistent with each category are presented in Table 1.

Table 1: Key Factors in Managing Research Funding with Source-Based Governance Classification

Categories	Governance Elements	Sources
(1) Role clarity	accountability, scope of action, rule of law, efficiency	- OECD (2014a)
(2) Intelligence Acquisition	capacity reinforcement, public participation, integrity	- Smits & Champagne (2020), Governance of health research funding institutions
(3) Management of relationship	independence, effectiveness, integrity	- Smits & Champagne (2020), Governance of health research funding institutions Governance of health research funding institutions - OECD (2014a)
(4) Accountability for research performance	accountability, efficiency, transparency	- Smith & Champagne (2020), Governance of health research funding institutions Governance of health research funding institutions - OECD (2009)

Table 1: Key Factors in Managing Research Funding with Source-Based Governance Classification (Continued)

Categories	Governance Elements	Sources
(5) Decision-making and governing body structure for independent regulators	independence, accountability, scope of action, integrity	- OECD (2014a)
(6) Funding	accountability, efficiency, transparency	- OECD (2014a)
(7) Performance evaluation	transparency, accountability, efficiency	- OECD (2014a) - OECD (2009)
(8) Strategy formulation and portfolio management	accountability, capacity reinforcement	- Smith & Champagne (2020), Governance of health research funding institutions - RAND Corporation (2018)
(9) Flexibility and responsiveness to change	efficiency, effectiveness	- RAND Corporation (2018)
(10) Openness and transparency	efficiency, public participation, scope of action	- RAND Corporation (2018) - OECD (2017)
(11) Engagement with stakeholders as part of achieving their objectives	accountability, social inclusiveness, public participation, efficiency	- OECD (2014a) - OECD (2017)
(12) Knowledge transfer and utilization	capacity reinforcement, accountability	- Governance of health research funding institutions (2020) - OECD (2013)

This study aims to improve outcomes through better governance by developing a framework that outlines general principles applicable to all research funding regulators. The framework is intended to provide principles for assessing existing governance arrangements, conducting regulator reviews, and guiding the development of governance arrangements for regulators.

2) *Guiding Questions and Guidance Principles for Assessing the Performance of Research Funding Institutions.*

After formulating the twelve areas, this report proposes guiding principles for each of them. To ensure the alignment of these guiding topics with the diverse requirements of research funding institutions, we also provide guiding questions in each area, matching the issues embedded in the framework. The content of each principle was developed based on the six documents mentioned earlier, and we examined ten examples of research management practices in foreign countries, including South Korea, Japan, the People's Republic of China, Australia, England, Germany, the Netherlands, Norway, Ireland, and the United States (Boytchev, 2020; Dillo, 2018; Doyle et.al., 2021; European Commission, 2006; European Commission, 2015; European Commission, 2020; Federal Ministry of Education and Research, 2022; IDA Ireland, 2022; Irish Research Council, 2022; Kaufmann, et.al. (2010); Motohashi, 2011; National Programme Open Science, 2022; Nomile, 2022; Norwegian Institute of Public Health, 2016; Norwegian Ministry of Education and Research, 2019).

For Thailand, we conducted in-depth interviews with executives of the Thailand Science Research and Innovation Institution (TSRI) as a case study. Our integrated analysis of the evidence, guided by the issues emerging from the case study, interviews, literature, and topics of specific interest, reveals that the functions of research funding institutions, in brief, include policy and strategy formulation, policy deployment, and the management of research grants. This involves the allocation and distribution of research funds among different research projects or institutions, as well as the evaluation of research impact.

Each of the following areas provides further information about the issues involved with the principle and the implications of applying the governance principles to regulators.

2.1) *Role Clarity*

Proper governance of regulatory bodies is essential for effective regulation. Clear objectives, linked functions, and coordination with relevant bodies are crucial for a research funding regulatory agency to operate effectively. Objectives should define outcomes, not methods, to avoid redundancy and ensure efficient collaboration among agencies within the same organization. Without clear objectives in laws or regulations, regulatory agencies may lack prioritization, leading to coordination problems, mistakes, and delays.

Table 2: Framework of Guidance Principles and Guiding Questions for Role Clarity

1. Role Clarity		
	Guiding Question	Guidance Principles
1.1	Do the objectives of the legislation represent clearly defined outcomes? Is there the potential for interpretation that could lead to expansion of the legislation's scope?	Clarity and appropriateness are essential in establishing the organization, regulatory powers, and other necessary functions to achieve the regulator's objectives, ensuring sufficiency for attaining those objectives.
1.2	Are the respective roles of the regulator in research funding policy development clearly defined and supported by processes to ensure effective collaboration?	The legislation should empower regulators to enhance coordination and efficiency by collaborating with internal and external agencies, streamlining interactions with businesses through delegation, information sharing, joint regulation, and accrediting entities that meet regulatory standards.
1.3	Is there an explicit advisory role for regulators in policy development?	Regulators should play a specific and explicit advisory role in government policy, and there should be opportunities for them to provide input in the development of government policies.
1.4	Does the legislation provide suitable powers to fulfill their functions and meet the objectives?	Royal decrees/laws/regulations should grant adequate and sufficient authority to achieve the specified objectives, allowing agencies to work efficiently.
1.5	Are there any conflicts or potential conflicts among the regulator's functions, and how do you manage these conflicts?	Research funding agencies should avoid conflicting objectives but may combine them for broader goals, managing conflicts efficiently.
1.6	Can legislation permit a judicial review when regulators surpass legislative bounds? Does the law provide regulatory discretion, and if so, why? How is this discretion managed?	Royal decrees, laws, and regulations should have specific objectives to prevent excessive discretion. If authorized operations face constraints, agencies can employ discretion within limits to achieve organizational goals, primarily for unforeseen events.
1.7	How will information about shared and cooperative programs be provided to the regulated entities?	To ensure transparency in operations, every regulatory agency should have tools for coordinating between agencies, such as minutes of understanding, manuals, and official agreements, available on the regulatory agency's website.

2.2) *Intelligence and Knowledge Acquisition*

Intelligence acquisition involves the methods employed by funding institutions to obtain strategic knowledge and expertise. An institution providing research funding should have a strategy to acquire knowledge from various sources aligned with its specified goals. Smits and Champagne (2020) introduced the concept of applying governance principles to health research funding institutions, focusing on intelligence acquisition. This research extended four concepts to funding institutions in various fields beyond health, as elaborated in Table 3.

Table 3: Framework of Guidance Principles and Guiding Questions for Intelligence and Knowledge Acquisition

2. Intelligence and Knowledge Acquisition		
	Guiding Question	Guidance Principles
2.1	Is the intelligence used in setting directions, plans, and research issues obtained through a top-down or bottom-up approach?	National research funding policies typically adopt a government-driven approach. To formulate a research vision that aligns with international standards, institutions are required to gather intelligence and knowledge from both top-down and bottom-up sources.
2.2	Is the intelligence used to establish directions, create plans, and address research issues acquired from outside sources or generated from within the organization?	A research institute that leverages intelligence and knowledge from external sources and complements it with internal knowledge acquisition demonstrates its readiness to respond effectively to changing requirements.
2.3	Are intelligence and knowledge employed to determine directions and plans and address past research issues, whether through a proactive or reactive approach?	Funding institutions should proactively acquire knowledge directly relevant to their mission.
2.4	Does the agency continually improve the intelligence and knowledge within the organization?	Research institutions should prioritize continuous knowledge acquisition through a structured process. This process involves reviewing the selection of research evaluators through peer review, utilizing bibliometrics for project screening, analyzing the doctoral-level workforce to forecast research collaboration capacity, and distinguishing between necessary administrative burdens and those imposed by established regulations to streamline operations.

2.3) *Management of Relationship*

The primary objective of relationship management in organizations is to establish effective governance structures, maintain regulatory integrity, and achieve regulatory goals. Robust governance systems should prioritize integrity, clear objectives, and the avoidance of conflicts of interest and bias (Government of the Netherlands, 2021).

National funding institutions often involve state officials, field experts, and advisors, necessitating the maintenance of these relationships while upholding public trust and preventing undue influence. This is crucial for impacting decision-making, regulatory functions, and confidence in the oversight system.

To assess relationship management, the research collects offer three opinions related to personnel relationship management, offering guiding questions for research funding institutions and guidance principles as good practices in this area (Table 4).

Table 4: Framework of Guidance Principles and Guiding Questions for Management of Relationship

3. Management of Relationship		
	Guiding Question	Guidance Principles
3.1	Can the regulatory function be effectively performed within a normal ministry decision-making structure, or does it require an arm's length distance to protect regulatory integrity?	Research funding agencies should appear independent from political or external influences to uphold public trust in their fair decision-making processes. While the level of independence varies across countries due to differing cultural norms, it is essential to legally safeguard the independence of regulatory agencies to ensure their autonomy and impartiality.
3.2	Where stakeholders are members of the governing body, what is the justification for this? How are conflicts of interest managed?	In cases where stakeholders are members of the governing body of a research funding agency, they should attend meetings but refrain from voting unless necessary and invited by the supervisor. Committee members should not act as representatives of stakeholder interests.

Table 4: Framework of Guidance Principles and Guiding Questions for Management of Relationship (Continued)

3. Management of Relationship		
	Guiding Question	**Guidance Principles**
3.3	Regarding the dimension of management of relationships, one operational and empirical application would be to consider the aspect of Internal versus external partners, and Intermittent versus recurrent partnerships.	Finding research partners, whether internal or external to the organization, can benefit the organization in various ways. Such partnerships can be temporary or ongoing. Collaborating with external partners, like ministry representatives in committee meetings, can enhance information sharing and align decision-making with the country's administrative needs, facilitating progress in research development. However, it also carries the risk of potential conflicts of interest.

2.4) *Accountability for Research Performance*

Research funding institutions must oversee and uphold the quality and integrity of the projects they fund. The drive for project quality is integral to countries' efforts to enhance competitiveness and foster innovation through R&D investments, creating a necessity for effective research performance evaluation. Government investments in research and development and innovation are crucial in shaping research assessment. This assessment is vital for indicating responsibility and efficiency in using research funding, enabling governments to allocate resources wisely, design better projects, promote transparency, create a data-driven society, and highlight research's impact on economic and societal progress (Smits & Champagne, 2020).

This study addresses the dimension of responsibility for research outcomes. It collects five opinions to create a framework, guiding questions, and guidance principles as good practices for research funding institutions in this area, presented in Table 5.

Table 5: Framework of Guidance Principles and Guiding Questions for Accountability for Research Performance

4. Accountability for Research Performance		
	Guiding Question	Guidance Principles
4.1	Is there a process for disclosing information, including selection criteria, funding decision criteria, and criteria for presenting output and outcomes? Additionally, is there a published list of scholarship recipients?	To promote transparency, the agency should disclose the committee's work process throughout the research cycle, including the selection and funding criteria. Additionally, they should provide criteria for presenting outputs and outcomes, along with a list of scholarship recipients.
4.2	Is there any monitoring of undesirable behavior of research grant recipients?	Monitoring research quality should cover issues related to fraudulent practices in funding acquisition and results management.
4.3	What are the procedures for checking the quality and completeness of funded research?	Institutions providing research funding should establish procedures to ensure high research quality standards, including monitoring ethical standards in research conduct and presentation of results
4.4	How do you support interdisciplinary research?	The RAND report from 2018 recommends that funding agencies should promote collaborative and interdisciplinary research by establishing efficient research networks. This can be done by connecting researchers from different fields and allocating funds for collaborative projects. To encourage this type of research, a portion of research funding should be designated for networked research projects.
4.5	How can we maintain a network of individuals who have a stake in the outcomes of research work?	Maintaining a network of stakeholders in research outcomes is essential for funding agencies. This goal can be achieved by establishing mutual trust, understanding the needs of those who require research results. Additionally, collaboration to address problems or research questions together is crucial.

2.5) *Decision-Making & Governing Body Structure*

The governance structure of a research funding institute plays a crucial role in decision-making and departmental operations. There are three common models: the Governance Board Model, where the board provides strategic guidance and policies while the CEO and employees implement decisions; the Commission Model, where a committee makes decisions and the CEO and employees follow directives from the Board of Directors; and the Single Member Regulator Model, where a designated individual makes major regulatory decisions and delegates other decisions to employees. These structures aid in maintaining effective functioning, regulatory integrity, and the achievement of compliance objectives for research institutes and agencies (OECD, 2014). In its report, the OECD provides recommendations for organizational decision-making in public institutions. We have adopted relevant concepts for research funding agencies and established a framework with six guiding questions and corresponding guidance principles, as presented in Table 5.

Table 6: Framework of Guidance Principles and Guiding Questions for Decision-Making & Governing Body Structure

5. Decision-making & Governing Body Structure		
	Guiding Question	Guidance Principles
5.1	Does the minister have the power to give the regulator directions on how it should perform its functions? If so, are these directions published and listed in the annual report?	Effective decision-making and accountability in agencies require clear roles for political authorities, CEOs, and operational personnel. The legal framework should delineate decision-making authority at each level, and decision outcomes must be documented and shared with relevant agencies to ensure transparency.
5.2	Are technical experts or representatives from outside institutions included on the board to enhance the strength of regulatory decision-making?	To strengthen regulatory decision-making with technical experts or representatives from outside on the board, it is important to ensure their independent participation, separate from representing stakeholders. Measures for addressing and managing conflicts of interest should also be implemented.

Table 6: Framework of Guidance Principles and Guiding Questions for Decision-Making & Governing Body Structure (Continued)

	5. Decision-making & Governing Body Structure	
	Guiding Question	Guidance Principles
5.3	Does the legislation clearly specify the skill set and experience relevant to the regulatory functions that need to be represented by the governing body?	The legislation must clearly specify the skill set and experience relevant to the regulatory functions that need to be represented by the governing body.
5.4	Does the governing body have the power to appoint and remove the chief executive?? Are there limits on the number of terms for which a CEO or board member can be appointed?	The guidelines, procedures, and eligibility requirements for appointing members to the governing body should be clearly documented and easily accessible. This promotes transparency and helps in attracting suitable candidates. Members of the governing body should be limited to the number of terms of appointment to the Board.
5.5	Do regulatory decision-making powers belong to multiple members or to a single person?	The exercise of decision-making authority within an organization should align with the specific circumstances and governance structure of each institution. There are three governance structures: the Governance Board Model, the Commission Model, and the Single Member Regulator Model, each with its advantages and disadvantages in decision-making.
5.6	Was there an empirical or analytical basis for major decisions? Is the justification publicly available?	Policy and agency decisions should be legitimate, based on knowledge and past evaluations, and adhere to criteria for achieving organizational goals. These decisions should be shielded from external influence, and their results should be transparent to the public.

2.6) *Research Budget Management*

The funding amount and sources of funds substantially impact a regulator's structure and operations, but they should not influence regulatory decisions. Regulators need to remain impartial and efficient in their pursuit of objectives. The OECD (2014a) provides recommendations on the organization's funding allocation structure to enhance the agency's efficiency in achieving its objectives. This study highlights key issues concerning the funding structure of the regulator, adapts relevant concepts from research funding agencies, and establishes a framework of seven opinions with guiding questions and corresponding guidance principles, as presented in Table 7.

Table 7: Framework of Guidance Principles and Guiding Questions for Research Budget Management

6. Research Budget Management		
	Guiding Question	Guidance Principles
6.1	Is the amount of funding received sufficient to achieve your agency's objectives?	The research funding budget should be large enough to ensure that operational decisions are impartial and effective in achieving the agency's objectives (p. 98).
6.2	Does the cost recovery scheme impose unnecessary burdens or costs on regulated entities that cannot be justified?	Fees for recovering failed research funds should be transparent, easily understood, and accessible to all stakeholders. The process of setting these fees should consider the costs and time associated with legal proceedings and appeals. It is important to ensure that the recovery fee is reasonable and does not impose an undue administrative burden on the agency. Legal costs should not deter the agency from pursuing fund recovery.
6.3	Can it be demonstrated that all funding activities directly contribute to the regulator's objectives?	Full transparency is essential in disclosing all research funding approvals, and funding agencies should be capable of showing that the activities they support not only align with but also surpass policy objectives.

Table 7: Framework of Guidance Principles and Guiding Questions for Research Budget Management (Continued)

6. Research Budget Management		
	Guiding Question	Guidance Principles
6.4	Does the regulator fund any external entities to contribute to government processes?	When providing research support to outside agencies, it should conduct activities related to the research institute's objectives.
6.5	How difficult is the agency's funding allocation process?	The budget allocation process should be transparent, efficient, and simple. To ensure clarity and a widespread understanding, a communication channel for the research and innovation grant application system should offer accurate information and prevent confusion among participants.
6.6	How do you present your organization's annual report, and what details do you provide?	Research funding agencies should submit an annual report that demonstrates the efficient utilization of budget resources. This report should cover expenses related to legal compliance and include income from various activities, accounting for total expenses and income derived from budget allocations, fees, fines, and private research contributions.
6.7	In the context of research funding, to what extent does your agency have decision-making autonomy?	When it comes to research funding, agencies need to possess autonomy in making funding decisions in a minimum of two domains: the funding procedure, such as determining which grants to allocate, and the research subject matter, including the prioritization of content for funding.

2.7) *Performance Evaluation*

Regulators must be aware of the impacts of their regulatory actions and decisions. Agencies should continually evaluate their performance according to their assigned authority. Performance should be evaluated both within the agency and externally. These evaluations help drive internal improvements. These evaluations not only underscore the regulator's accountability but also foster trust in the regulatory system, affirming its efficacy.

In the OECD report of 2014, recommendations were provided to assist public regulators in achieving greater efficiency and realizing their expected outcomes. This study addresses key issues related to regulator performance evaluation, applies relevant concepts to research funding agencies, and introduces a framework of 7 guiding questions and corresponding guidance principles. The following table outlines the Framework of Guidance Principles and Guiding Questions for Performance Evaluation (Table 8).

Table 8: Framework of Guidance Principles and Guiding Questions for Performance Evaluation

7. Performance Evaluation		
	Guiding Question	Guidance Principles
7.1	What activities of the regulator will be assessed?	Regulators should establish clear criteria for assessing their activities, including periodic evaluations of the effectiveness of regulations over time. They should also gauge their performance in carrying out their responsibilities and monitor public trust in their impartiality.
7.2	What are the reasons of conducting an external evaluation of the regulator?	In allowing outsiders to evaluate the performance of the agency, the evaluation should focus on whether the agency's strategic goals are being met.
7.3	How are the evaluation results be used to improve the results to achieve the agency's goals?	In evaluating work performance, the evaluation should encompass the working system, processes, work procedures, and overall operational efficiency. The results of this evaluation should be used to enhance the organization's efficiency in achieving outcomes, not just outputs.

Table 8: Framework of Guidance Principles and Guiding Questions for Performance Evaluation (Continued)

	7. Performance Evaluation	
	Guiding Question	**Guidance Principles**
7.4	Have there been evaluations conducted regarding the consequences of the recent regulatory changes, and if there have been, could you please specify the operational outcomes that were assessed?	In the event of regulatory changes, the results of these changes should be evaluated after the new regulations have been in effect for some time. Additionally, the evaluation results should complement and support internal assessments of the agency's performance.
7.5	How do you evaluate performance within the organization?	To enhance the efficiency and public trust of government agencies, they should create performance indicators aligned with their intended goals.
7.6	Is the performance evaluation used to determine personal performance assessments of staff in the regulator? Are these outcome-focused rather than output focused?	Performance evaluation aims to facilitate personnel growth and development, enabling them to effectively carry out their responsibilities. Establishing performance indicators that accurately assess regulatory agency officials can help achieve outcome-oriented goals rather than just outputs
7.7	How do you evaluate performance within the organization?	The evaluation results should be reported to the public to demonstrate the achievement of objectives, enhancing both the agency's efficiency and public confidence.

2.8) *Strategy Formulation and Portfolio Management*

Funding institutions should develop responsible and efficient operational strategies that are open, transparent, participatory, and flexible. Three key aspects to consider in research strategy are the formulation process, the content, and the creation of a portfolio for prioritizing decisions.

This study organizes the key points related to strategy formulation and portfolio management as reported in the RAND (2018) and Governance of Health Research Funding Institutions (2020) studies. It applies relevant concepts to research funding agencies and introduces a framework with four guiding questions and corresponding guidance principles, as presented in Table 9.

Table 9: Framework of Guidance Principles and Guiding Questions for Strategy Formulation and Portfolio Management.

8. Strategy Formulation and Portfolio Management		
	Guiding Question	Guidance Principles
8.1	What processes are used to develop organizational strategies?	The strategy formulation process often includes gathering ideas from both internal and external sources. It is essential to involve external perspectives in strategic planning, as this helps in determining the organization's vision and mission. The research strategy should originate internally and then be enriched by insights from external experts.
8.2	Does your organization primarily employ a centralized or decentralized work system, or does it utilize a combination of both?	Choosing between centralized and decentralized organizational structures is key for performance. Giving departments more autonomy, with managers making decisions and being profit-responsible, enhances flexibility, fosters an entrepreneurial spirit, and enables quick adaptation to change.
8.3	Has your organization ever conducted a comparison and established connections between research outputs, results, and impact with other research funding agencies? If so, how was this accomplished?	To enable the evaluation and comparison of organizational strengths and weaknesses for the purpose of improvement, research funding institutions should develop strategies to connect research outputs, outcomes, and impacts with external research funding organizations (RAND, 2018 p. 81).
8.4	How do you prepare a portfolio for research management?	Research portfolio management involves collecting and analyzing data about funded projects, researchers, and outputs to prioritize and make effective strategic decisions.

2.9) *Flexibility and Responsiveness to Changes*

The adaptability and responsiveness of organizational structures and governance systems are essential to accommodate changing circumstances. Numerous research studies have consistently highlighted the significance of establishing mechanisms and frameworks that foster organizational flexibility and agility as fundamental elements for effective strategic decision-making (RAND, 2018).

Incorporating insights from RAND's 2018 studies, this research organizes key findings on flexibility and responsiveness to changes. It applies relevant concepts to research funding agencies, introduces a framework comprising five guiding questions, and aligns with the guidance principles outlined in Table 10.

Table 10: Framework of Guidance Principles and Guiding Questions for Flexibility and Responsiveness to Changes

9. Flexibility and Responsiveness to Changes		
	Guiding Question	Guidance Principles
9.1	How can an organization encourage or incentivize greater flexibility and responsiveness?	Adapting the organizational structure and operational procedures to accommodate changes can be achieved by considering factors such as legal modifications, Cabinet resolutions, regulatory updates, Policy Council resolutions, and similar matters.
9.2	How does your organization prepare its workforce in advance to be adaptable to changing situations?	Research funding institutions must be able to reassign personnel promptly to meet the organization's needs, without them being overly attached to any one job or department.
9.3	What strategies you employed in funding research projects to ensure adaptability and responsiveness to the country's needs?	When funding research projects, it is crucial to remain flexible and responsive to strategies that address the country's needs, rather than exclusively funding specific areas. The concept of change should be communicated in a balanced and compromise-oriented manner.

Table 10: Framework of Guidance Principles and Guiding Questions for Flexibility and Responsiveness to Changes (Continued)

9. Flexibility and Responsiveness to Changes		
	Guiding Question	**Guidance Principles**
9.4	How is research funding organized to remain flexible in response to changing situations, prevent system overwhelm, and foster new ideas for research and innovation development?	The decision-making strategy for research project funding should be adaptable and responsive to the country's research and innovation needs, avoiding restrictions on specific areas and preventing the concentration of power that stifles new ideas. Leaders should remain open to collaborative and flexible changes.

2.10) *Openness in Research*

Openness in research implies that the research community in every country should have equal access to research data at the lowest possible cost, not exceeding the marginal cost of distribution (OECD, 2021, p. 15). Earning the trust of the community is crucial, and transparent open access to research data plays a key role in achieving this (RAND, 2018).

All research data funded by the government should be made publicly available. Providing access to research data enhances the return on investment in government research by fostering opportunities for knowledge exchange, promoting education, and facilitating diverse opinions. It encourages exploration in new fields and allows the investigation of topics not previously anticipated.

The OECD (2007), titled 'The Principles and Guidelines for Access to Research Data from Public Funding, recommends principles and guidelines that include guiding questions and guidance principles as best practices. This paper selects five of them that align with research funding institutions, as summarized in Table 11.

Table 11: Framework of Guidance Principles and Guiding Questions for Openness in Research

10. Openness in Research		
	Guiding Question	Guidance Principles
10.1	How have you facilitated public access to research data funded through government budget allocation?	Research funded by the government should be readily available on the internet, provided in a timely manner, and presented in a user-friendly manner.
10.2	Has your organization identified accessible resources, including documents that can be disclosed, and the conditions for using information that interesting users can find online?	Information on data-producing organizations and their holdings, documentation on available data sets and conditions of use should be easy to find on the Internet.
10.3	How does your organization disseminate information on research data policies to individual researchers, academic associations, universities, and other stakeholders in publicly funded research?	Research organizations and government agencies should proactively communicate their research data policies to individual researchers, academic associations, universities, and other stakeholders involved in publicly funded research
10.4	Has your organization worked with stakeholders to establish research data preparation standards to streamline research resource utilization and alleviate the burden on researchers and institutions?	Whenever relevant, all members of various research communities should assist in establishing agreements on standards for cataloging data. The application of existing standards should be considered, when appropriate, to avoid imposing additional burdens on research resources, workloads of researchers, and their institutions.
10.5	Has your organization communicated information on data management and data access conditions to data users and data providers to ensure best practices for all parties involved?	Information on data management and access conditions should be communicated among data archives and data-producing institutions to facilitate the sharing of best practices.

2.11) *Engagement with Stakeholder as Part of Achieving Their Objectives*

The research funding process should incorporate stakeholder engagement to achieve the organization's objectives. This will help identify the positive and negative impacts of the operation, facilitating more efficient problem-solving. Participatory governance also plays a crucial role in building public confidence in an organization's decisions and operations (OECD 2014b, p. 90).

To ensure meaningful stakeholder participation, it is recommended that an official framework for transparency and efficiency be established, activities prioritized, productive idea exchange and dialogue facilitated, robust participation encouraged, and data-driven decision-making over consensus emphasized.

This study organizes four key points related to participation principles suggested by the OECD (2014a) in the report titled The Governance of Regulators: OECD Best Practice Principles for Regulatory Policy. It applies relevant concepts to research funding agencies and introduces a framework with guiding questions and corresponding guidance principles, as presented in Table 12.

Table 12: Framework of Guiding Principles and Questions for Stakeholder Engagement in Achieving Objectives

11. Engagement with Stakeholder as Part of Achieving Their Objectives		
	Guiding Question	**Guidance Principles**
11.1	What forms of stakeholder engagement does your institution use to enhance its research work?	Research funding agencies should regularly engage with stakeholders to improve regulatory framework effectiveness and track research outcomes
11.2	Are structured engagement mechanisms permitted or encouraged? What formal and informal engagement mechanisms are used?	To ensure meaningful stakeholder participation, establish an official framework for transparency and efficiency is recommended. This framework should prioritize activities, foster productive idea exchange and dialogue, encourage robust participation, and emphasize data-driven decision-making over consensus.

Table 12: Framework of Guiding Principles and Questions for Stakeholder Engagement in Achieving Objectives (Continued)

11. Engagement with Stakeholder as Part of Achieving Their Objectives		
	Guiding Question	Guidance Principles
11.3	What are the key purposes and benefits of utilizing stakeholder engagement mechanisms in regulatory decision-making?	To ensure meaningful stakeholder participation, establish an official framework for transparency and efficiency is recommended. This framework should prioritize activities, foster productive idea exchange and dialogue, encourage robust participation, and emphasize data-driven decision-making over consensus.
11.4	Do you have a public feedback channel, and how do you handle responses?	The likelihood of success in the engagement mechanism increases when regulators genuinely invite comments from research participants and other stakeholders.

2.12) *Knowledge Transfer and Utilization*

Knowledge transfer refers to the sharing and dissemination of information to solve problems. It encompasses organizing, creating, collecting, and distributing knowledge to make it available for future use. Knowledge transfer extends beyond simple communication and includes the transfer of technology, experience, management expertise, corporate culture, and other forms of intellectual capital. Good governance in this area, in terms of expanding the scope of action and inclusiveness of research participants, will demonstrate the account-ability of regulators in effectively utilizing research work (Argote & Ingram, 2000).

After summarizing findings from various study reports on knowledge transfer, we introduce a framework of three guiding questions on relevant concepts to research funding agencies in Table 13.

Table 13: Framework of Guidance Principles and Guiding Questions for Knowledge

12. Knowledge Transfer and Utilization		
	Guiding Question	**Guidance Principles**
12.1	Has your organization supported activities that promote the dissemination of knowledge from research, and if so, what is the format of the dissemination?	In the research process, funding agencies should have a knowledge dissemination and utilization process for research projects they support. The knowledge transfer format may provide support for conferences or seminars between researchers and interested parties or those who wish to utilize the research findings (Smits & Champagne, 2020).
12.2	Has your organization established indicators to demonstrate the success of transitioning scientific research into commercial use? Please specify the indicators used to measure the success of commercially oriented research results transfer.	To promote the effective transfer of scientific knowledge and technology from government to business, research funding agencies should establish indicators for measuring and assessing this process. These indicators should collectively provide a comprehensive view of how well research knowledge is being transferred and utilized by businesses. This, in turn, will assist funding agencies and policymakers in making informed decisions about research investments and strategies aimed at fostering innovation and economic growth. In Denmark's National Innovation System, several indicators are utilized to measure this transfer, including indicators related to the stock of knowledge, knowledge flow, the effectiveness of knowledge sharing and transfer, and the economic impact of knowledge sharing and transfer.
12.3	How does your institution bridge the gap between research work and its commercial applications?	To bridge the gap between research work and its commercial applications, there should be a department that supports research applied to trade and industry.

3) Scoring Criteria

In this section, we present scoring criteria designed to evaluate the implementation level of the guiding questions by aligning them with established guiding principles considered as good practice. To assess the quality of organizational management and operations, we utilize Curtin's approach criteria, which is known as the "Approach-Deploy-Result-Improve (ADRI) framework." (Curtin University, 2002). The scoring criteria for assessment are categorized within a four-step quality cycle, as follows:

Approach - The Thinking and Planning Phase

This step considers whether the organization has the trail from its mission, vision, and values to more specific goals such as principles, operational guidelines, and various regulations that are beneficial for achieving its objectives or not.

Deployment - The Implementation Phase

The 'Deployment' dimension considers whether and how effectively the approach is being put into effect. Here are some questions to consider: Is the approach being deployed in the best possible manner? According to whom? What standards and benchmarks are the organization using to assess this? If the approach is not being deployed, why not, and how is this managed? And are staff appropriately trained and resources appropriately deployed to fulfill the approach?

Results - The Monitoring and Evaluation Phase

The 'Results' dimension examines an organization's outcomes to determine how well the deployment is achieving the planned approach. Some questions to consider: Is the organization achieving its intended objectives and outcomes? Does the organization understand why and how it achieved those results, i.e., are the results a consequence of the approach and deployment? How are the results reported and used within the organization?

Improvement - The Learning and Adapting Phase

The 'Improvement' dimension focuses on whether the organization is actively and continuously engaged with understanding its performance in each of the A-D-R dimensions and is using this understanding to bring about improvements. Some questions to consider: Does the organization know how it can improve? How does it know this (e.g., using external benchmarks)? How is it acting upon this knowledge? And does the organization have a sustained history of improvement?

In the evaluation, scores were categorized into six levels, from level 0 (the lowest score) to level 5 (the highest score). If a score falls below 5, it suggests there is an opportunity for the organization to enhance its quality.

Approach	Deployment	Result	Improvement	Score
no	no	no	no	0
yes	no	no	no	1
yes	yes partly	no	no	2
yes	yes	yes partly	no	3
yes	yes	yes	yes partly	4
yes	yes	yes	yes	5

Concluding Remarks

This study aims to develop a framework for enhancing public research performance through the application of good governance principles. These principles were formulated by conducting a review of existing literature and selecting six relevant documents related to research funding processes within research institutions and the governance principles pertinent to public research performance. After integrating these components, we developed a framework outlining twelve general principles applicable to all research funding regulators.

The framework is designed to provide guidance for evaluating existing governance structures in twelve areas, with 55 guiding questions. It is supported by principles that can be applied to all regulatory bodies. This report suggests guiding issues for each of the twelve formulated areas, aligning them with diverse research funding requirements. We present guiding questions for each area, derived from a comprehensive analysis of six referenced documents. Using the Thailand Science Research and Innovation Institution (TSRI) as a case study, we identified specific governance challenges through in-depth interviews.

Table 14: Organizes the Twelve Areas for Regulators of Public Research Institutions to Focus on in Their Management of Good Governance.

Area for Management	Number of questions	Governance Elements
1- Role clarity	6	accountability, scope of action, rule of law, efficiency.
2- Intelligence acquisition	4	capacity reinforcement,
3- Management of relationship	3	public participation, integrity
4- Accountability for research performance	5	independence, effectiveness, integrity
5- Decision making & governing body structure for independent regulators	7	accountability, efficiency, transparency
6- Funding	6	independence, accountability,
7- Performance evaluation	6	scope of action, integrity
8- Strategy formulation and portfolio management	3	accountability, efficiency, transparency
9- Flexibility and responsiveness to change	5	transparency, accountability, efficiency
10- Openness and transparency	3	accountability,
11- Engagement with stakeholders as part of achieving their objectives	4	capacity reinforcement
12- Knowledge transfer and utilization	3	efficiency, effectiveness
Total	55	

The quality of organizational management and operations within the institution is evaluated using Curtin's approach criteria, known as the "Approach-Deploy-Result-Improve (ADRI) framework." The evaluation categorized scores into six levels, ranging from level 0 (the lowest score) to level 5 (the highest score). If a score falls below 5, it implies an opportunity for the organization to enhance its quality.

While this study presents a comprehensive framework for enhancing public research performance through the application of good governance principles, several limitations should be acknowledged: (1) The framework is based on six documents, which may not fully capture the diversity of governance practices across different regions and research institutions. A broader document review is needed for wider applicability; (2) The study uses the Thailand Science Research and Innovation Institution (TSRI) as a case study to identify governance challenges. However, insights from TSRI may not be fully generalizable. Applying the framework to more diverse case studies could validate its broader relevance.

Building on this study, future research could explore several key areas to enhance the understanding and application of good governance principles in public research institutions. Conducting comparative studies to test the framework across different regions, research sectors, and types of institutions could help identify common governance challenges and best practices, as well as adapt the framework to diverse contexts. Implementing longitudinal studies to assess the long-term impact of applying the framework on governance performance would provide valuable insights into the sustainability of governance improvements and the conditions necessary for their success. By addressing these limitations and pursuing these research directions, scholars and practitioners can further refine the framework and enhance its applicability, ultimately contributing to more effective global governance of public research institutions.

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