Mission-oriented Evaluation System of Government–Funded Research Institutes in Korea

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TaiJung Choi
Associate Research Fellow
R&D Evaluation Center
Korea Institute of S&T Evaluation and Planning

Abstract

It has been emphasized on the importance of performance evaluation of GRI (Government-funded Research Institutes) in Korea for the reason that the investment in GRI is constantly increased and accounts for 45% of the national R&D budget in 2012.

For measuring excellence of R&D performances, the continuous improvements for evaluation system for GRI have been made in several decades. Nevertheless, incessant needs for developing more compatible and adaptive methods to review its own mission effectively has been increasing.

This study is introducing newly designed evaluation system of GRI, which is named as ‘Mission-based approach’ in GRI evaluation. It has several features. First, the original characteristics and mission of each institute is fully reflected from the plan review to the final evaluation. Second, it is composed of two levels of evaluations in order to enhance the accuracy of results. Lastly, the evaluation result is linked to the R&D budget based on the evaluation grade.

It is expected that this method can provide a insight for more effectively assessing research performance of GRI's.
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I. Outline
1. Purpose and Object

**Purpose**
To Set up Roles of GRI’s and Promote R&D Productivity through Reviewing Research & Management Performances

**Object**
44 GRI’s under the MSIP, DAPA, etc.

**Section**
- Research Performances
- Management Performances
  - R&D Portfolio and Strategy, HR, Budget, Organization management etc.


- **1991**
  - First Evaluation
    - Performed by the Prime Minister’s Office
    - According to the Evaluation Results, Merge and Abolition of some GRI’s made

- **1998**
  - Management Diagnosis by Foreign Consultant
    - Benchmark of Foreign GRI’s

- **1999-2005**
  - Research Council System
    - 4 Research Councils were Established
    - Each Research Council performed Evaluation of Affiliated Institutes

- **2011**
  - Establishment of 2nd Performance-based Evaluation System
    - Change of Evaluation System (Relative Evaluation → Absolute Evaluation)

- **2014**
  - Establishment of 3rd Performance-based Evaluation System
    - Change of Evaluation System
      - Common criteria based Evaluation → Mission oriented Evaluation
3. Structure of GRIs Evaluation

Each Ministry evaluates its own GRIs in terms of both Research and Management section. Management sections include the evaluation of R&D Strategy, Social contribution of R&D results, HR, Budget and organization operation, etc.

In Research section, the quantitative and qualitative accomplishments are evaluated in comparison with their initial goals.

Meta Evaluation

The highest level organization (National Science and Technology Council) evaluates the appropriateness of self-evaluation system from the viewpoints of Evaluation Planning, Process and Results.
II. Directions

1. Directions [3]

Reflection of GRI’s Characteristics

To Promote Research Performance of the GRIs, independent goals can be designed considering the GRIs’ R&D Characteristics.

Each Institute has its own Characteristics according to its research field. Some of them like KIMM, KITECH, ETRI are focusing on Products Development more than Basic research. Others such as KARI, KASI, KIST are mainly working on the field of Fundamental Science.

In order to evaluate their research abilities precisely and effectively, Appropriate evaluation Indicators should be employed according to their Mission and Goals.

That’s why we designed Mission-oriented evaluation method.

KIMM: Korea Institute of Machinery & Materials
KITECH: Korea Institute of Industrial Technology
ETRI: Electronics & Telecommunications Research Institute
KARI: Korea Aerospace Research Institute
KASI: Korea Astronomy & Space science Institute
KIST: Korea Institutes of Science and Technology
1. Directions (continued)

Evaluation period

According to the inauguration of the head, evaluation period is varied. Generally, the term of head is 3 years. In the middle of term, Consulting is executed on Research section. At the end of term, Evaluation is done on both Research and Management section.

Evaluation Sections

The intrinsic goal of GRIs is to conduct research on both fundamental science and technology development. So, we considered RESEARCH ABILITIES as the most important virtues. Next, MANAGEMENT ABILITIES that help researchers to work more comfortably and efficiently are also treated as crucial factors in evaluating GRIs.

Reinforcement of Utilization of Evaluation Results

Depending on Evaluation Results, Budget is Allocated Unequally to Research Institutes in order to strengthen the accountability of using Government funding sources.

(10% Increase of R&D Budget to Excellent graded Institutes and 10% Decrease of R&D Budget to Unsatisfactory graded Institutes)
III. Evaluation Processes

1. Evaluation Section (Self-Eval.) [4]

- Research and Management section

<table>
<thead>
<tr>
<th>Section</th>
<th>Object</th>
<th>Interval</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Performance</td>
<td>Research Projects funded by Government</td>
<td>3 years</td>
<td>- Achievement of Performance Objectives</td>
</tr>
<tr>
<td>Management Performance</td>
<td>Management Activities</td>
<td>1 year</td>
<td>- Improvements of Management Activities and Achievement of Management Goals</td>
</tr>
</tbody>
</table>
2. Evaluation Step (Self-Eval.)

From the inauguration of the head,

<table>
<thead>
<tr>
<th>Step</th>
<th>When</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan review</td>
<td>+ 6M</td>
<td>- Initial goals of Research and Management Performance</td>
</tr>
<tr>
<td>Mid-term consulting</td>
<td>+18M</td>
<td>- Midterm check of Research achievements</td>
</tr>
<tr>
<td>Final evaluation</td>
<td>+ 30M</td>
<td>- Quantitative and qualitative Achievement of Research and Management in comparison with initial goals</td>
</tr>
</tbody>
</table>

3. Management Evaluation (Self-Eval.)

<table>
<thead>
<tr>
<th>Evaluation Items</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of Vision and Strategy of Institute</td>
<td>• Excellence of President's Leadership and Level of Achievement of Management Goals</td>
</tr>
<tr>
<td>Social Contribution of R&amp;D</td>
<td>• Efforts of Promoting S&amp;T Culture</td>
</tr>
<tr>
<td></td>
<td>• Establishment of Cooperative System among Academia, Institutes and Industry</td>
</tr>
<tr>
<td>Development of Human Resources</td>
<td>• Employment of Excellent Manpower and Establishment of Global Research Networks</td>
</tr>
<tr>
<td></td>
<td>• Efficiency of Institute Management and Utilization of Manpower</td>
</tr>
<tr>
<td>Budget and Finance Management</td>
<td>• Clarity of Budget Management and Execution</td>
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</tbody>
</table>
### 3. Criteria in Management Evaluation


To Review the Appropriateness of Self-Evaluation System

<table>
<thead>
<tr>
<th>Items</th>
<th>Indicators</th>
</tr>
</thead>
</table>
| 1. Appropriateness of Evaluation Planning (20) | • Appropriateness of Evaluation Objectives  
• Appropriateness of Evaluation Planning  
• Appropriateness of Evaluation System (Indicator, Weight, etc) |
| 2. Appropriateness of Evaluation Process (40)  | • Fairness of Evaluation Committee's Composition and Operation  
• Appropriateness of Evaluation Indicators and Methods  
• Fairness of Evaluation Execution |
| 3. Effectiveness of Evaluation Results (40)     | • Composition of Evaluation Report  
• Objectiveness of Evaluation Results  
• Appropriate Utilization of Evaluation Results |

#### 5. Grade of Meta Evaluation [4]

Grade is divided into 2 Level

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate</td>
<td>100 – 71</td>
<td>Approval of Self-Evaluation</td>
</tr>
<tr>
<td>Inappropriate</td>
<td>Under 70</td>
<td>Disapproval of Self-Evaluation and Re-evaluation</td>
</tr>
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</table>

According to the Evaluation Results of Management Performance
- Increase or Decrease of Operating Cost of GRIs (±2%)
- Increase or Decrease of President’s Annual Salary of GRIs

According to the Evaluation Results of R&D Performance
- Decrease of R&D Budget in Unsatisfactory Institutes ( - 10% )
- Increase of R&D Budget in Excellent Institutes ( + 10%)

Through the peer reviews
- Offer useful consulting opinions about R&D Portfolio and Strategy of the Institutes

IV. Conclusions
1. Conclusions

- Design Evaluation System that Reflects the Characteristics of Institutes
  - Clarify the GRIs' Mission and Evaluate their Achievements

- Apply two levels of evaluations
  - Self evaluation and Meta evaluation for checking system's appropriateness

- Enhance the Accuracy and Effectiveness of Evaluation
  - Employ various evaluation indicator according to the characteristics of institutes

- Strengthen the relationship between evaluation results and R&D budget
  - Decrease of Budget in Unsatisfactory Institutes ( - 10% )
  - Increase of Budget in Excellent Institutes ( + 10% )

References


Thank You!