The Evaluation Method for Basic Research in Korea

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Contents

• Introduction

• R&D Evaluation Method in Korea

• Characteristics of Basic research
  – Survey Result of Researchers in Korea
  – Network Analysis with SCIE papers in Korea

• Summary
Introduction

• Why Basic Research?
  – Important factor for the innovation and growth engine, in the 21 C, knowledge based system

  The New Economy: Beyond The Hype (OECD 2001)

  Rising Above The Gathering Storm: Energizing and Employing America for a Brighter Economic Future (USA, National Academies 2005)

  Plan For The National Finance 2004~2008 (Korean Government 2004) : “plan to increase the budget for basic research”
Introduction

- **Current Status of Basic Research(Paper) in Korea**

  - We need to improve the quality of the papers.
  - How?  => Improve the effectiveness of R&D program
  => Improve R&D Evaluation method
R&D Evaluation Method in Korea

• Basic Concept for R&D Program Evaluation

Basic research → Paper → Science → Knowledge → Applied research & Development → Patent → Technology → Economic benefit

≈ Linear Concept
R&D Evaluation Method in Korea

• Output Indices for R&D Program Evaluation
  – Paper
  – Patent
  – Commercialization
  – Technology Transfer
  – ...

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R&D Evaluation Method in Korea

• Available Questions for R&D Program Evaluation
  – Do you produce any paper?
  – Where is the result of your research used?
  – Do you produce any patent?
  – What is a socioeconomic contribution from your research?
  – …

  *at the moment of the end of research!*
R&D Evaluation Method in Korea

- Are we asking correct questions for basic research?
- Can we know the meaning of basic research at the moment of the end of research?

“When & Where

“Uncertainty“
Characteristics of Basic research

• Survey Result of Researchers in Korea
  – When is the result of your basic research used?
  – Where is the result of your basic research used?
  – How is the result of your basic research used?
  – Successful, unsuccessful or unexpected result at the moment of the end of basic research?
Characteristics of Basic research

Survey Result of Researchers in Korea

When?
- ~1 year after: 31%
- 1~2 years after: 2%
- 2~5 years after: 45%
- 5~10 years after: 22%

Where?
- In the same field: 71%
- In another subfields: 14%
- In another fields: 8%
- For another purposes: 7%

How?
- Applied research, Development: 31%
- New idea, basic research: 2%
- New idea, applied, development: 45%
- For another purposes: 22%

Successful?
- Successful: 81%
- Unexpected: 4%
- Unsuccessful: 15%
Characteristics of Basic research

- Network Analysis with SCIE papers in Korea
  ※ Citation Network Analysis with SCIE papers by Korean authors in 2006/1996

  - (When) Referencing time distribution
  - (Where) Knowledge transfer between fields of S&T by citation analysis
Characteristics of Basic research

- Network Analysis with SCIE papers in Korea
  - Referencing time distribution

![Graph showing citation occurrence over years with a maximum point at approximately 3 years]
Characteristics of Basic research

- Network Analysis with SCIE papers in Korea
  - Citation Network map (fields relation/knowledge transfer map, 1996)

G1 : All S&T fields w/o G2~G10
G2: Material Science
G3: Immunology
G4: Geosciences
G5: Agricultural Sciences
G6: Telecommunications
G7: Energy & Fuels
G8: Space Sciences
G9: Psychiatry/Psychology
G10: Nano Science&Tech
Characteristics of Basic research

- Network Analysis with SCIE papers in Korea
  - Citation Network map (fields relation/knowledge transfer map, 2006)

G1: All S&T fields w/o G2
G2: Space Sciences
Summary

When? & Where?

1. At the moment of the end of basic research
   \( \Rightarrow \) How about After 3~5 years?

2. Question list

   • Do you produce any paper?

   • Any paper?
   • Any additional unexpected result?
   • Where is the result used?
   • Same field or another field?
   • Applied or patent?
   • Produce new idea? New S&T field?
3. **Horizontal Concept** needed
(Knowledge transfer between S&T fields)

- Basic research
- Applied research & Development
- New Idea, New research
- Interdisciplinary
  - Fusion science/technology

**Summary**

**Linear Concept?**
Thank you.

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