

The Research Life Cycle and Innovation through Grey Literature in Nanotechnology in Korea

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Introduction

Goal of this study

To analyze the research life cycle in nanotechnology

To trace innovation through grey literature in Korea

- **Assumption** : Changes of numbers of publications of grey literature and white literature in NT show the process of innovation, because technical reports and journal articles contain research results.
- **Data** : Numbers of publications of Korean technical reports and journal articles in NT on NDSL and Web of Science
- **Comparison** : Numbers of publications of research results in technical reports and journal articles year by year
- **Innovation in Nanotechnology** : Beginning in the 1980's, covering a broad area of expertise, and appearing in consumer products

The Research Life Cycle in NT I

Needs of the research life cycle in NT

- As the national information center for science and technology, KISTI should be aware of the information environment of domestic researchers and provide a stable system.
- The Research life cycle is investigated because it is important to adjust to and prepare for the users' needs and changeable information environment.

Object of the research life cycle in NT

- What is the R&D research life cycle in nanotechnology in Korea.

The Research Life Cycle in NT II

Conduct interviews

- Method : In-depth interviews and close observations
- Interviewees : 24 researchers in field of NT working in universities and research institutes in Korea
- Interview Period : March – April in 2011 (2 months)

Analysis of the research life cycle

- Divided into 5 Stages : idea building, funding, experiment and analysis, result creation, and evaluation
- Needs are different in every stage of the research life cycle
- Needs for literature reviews (technical reports, journal articles, etc.) using NDSL, NTIS, etc. in every stage of the research life cycle
- Research output in grey and white literature, industrialization

The Research Life Cycle in NT III

Experimental Instrument

Idea Creation



Test for practical
Possibility



Evaluation



Funding
Cowork

Research plan and proposal

Industrialization

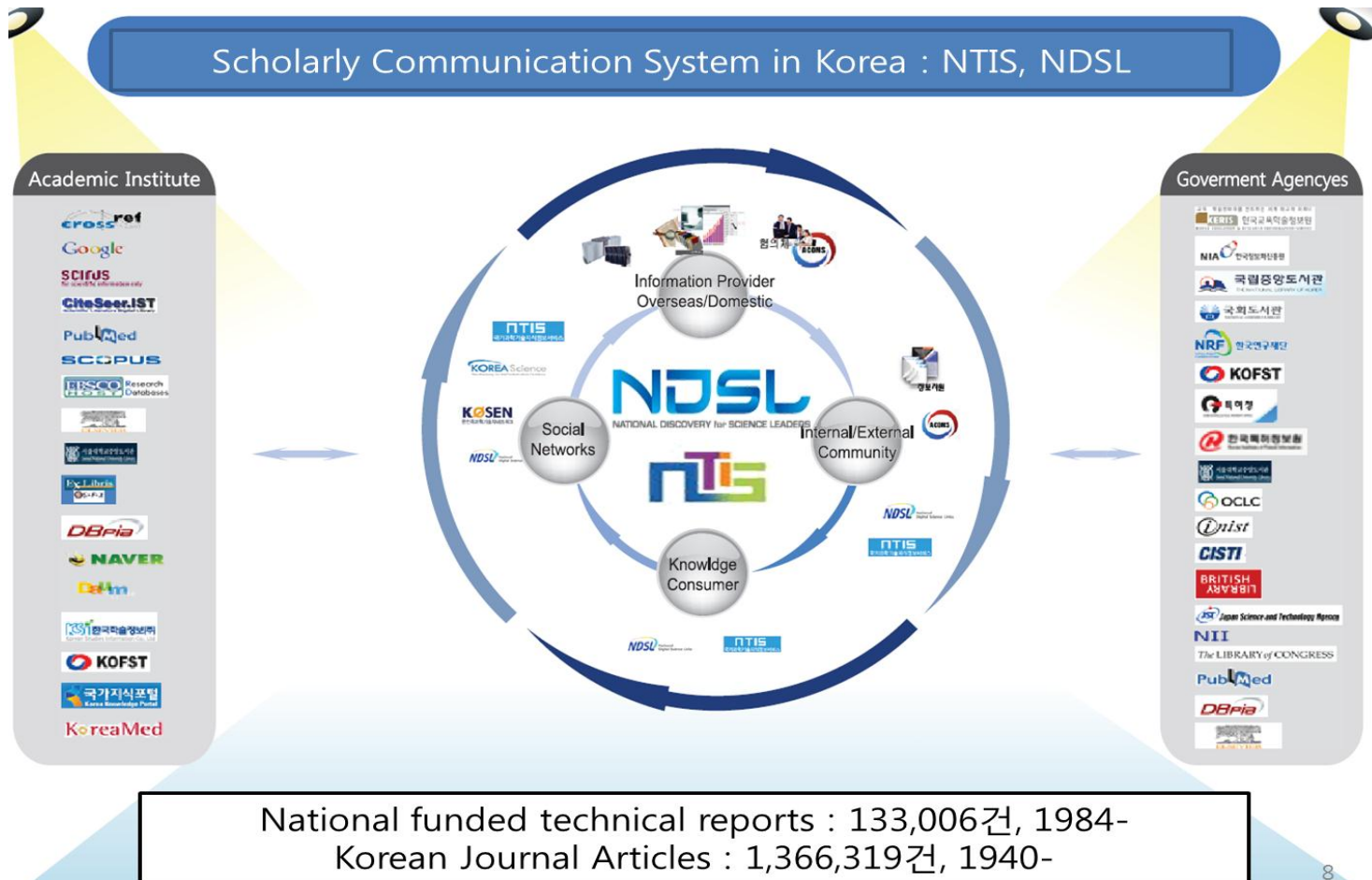


Experiment

Analysis of Result

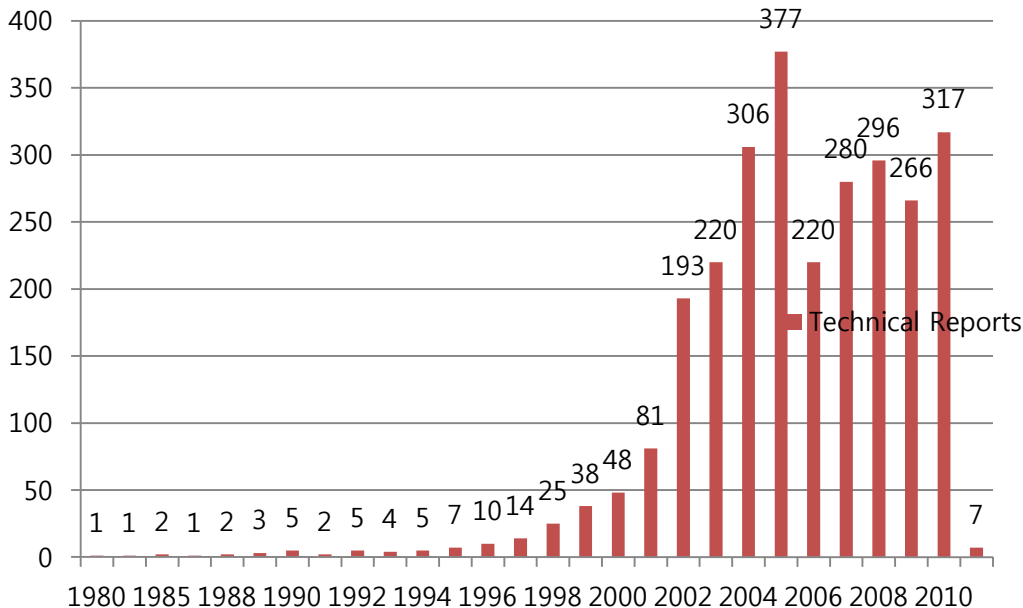
Technical Report,
Journal Article, patent

To trace innovation through grey literature in Korea



Comparison of No. of Technical Reports and Journal Articles I

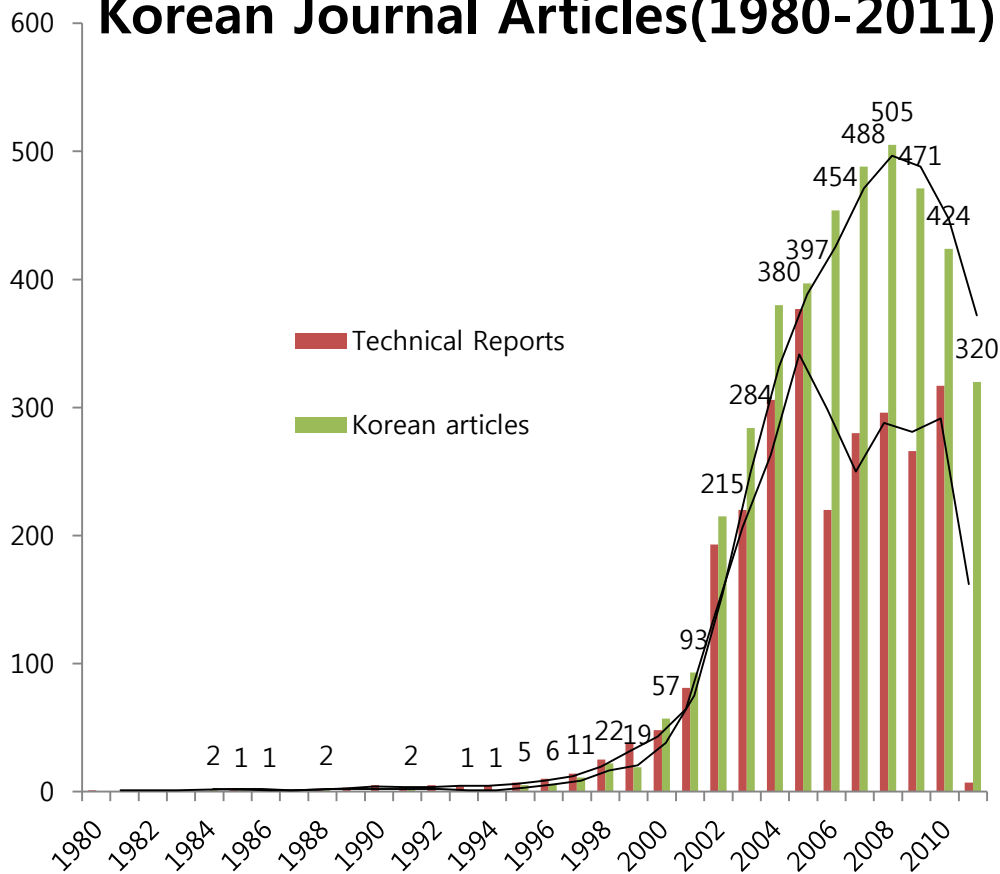
Korean Technical Reports on Nanotechnology through NDSL



- Technical reports funded by the Korean government on nanotechnology have been published since 1980.
- The peak of technical reports publication was in 2005.
- Early stage of research development of NT can be detected in the grey literature.

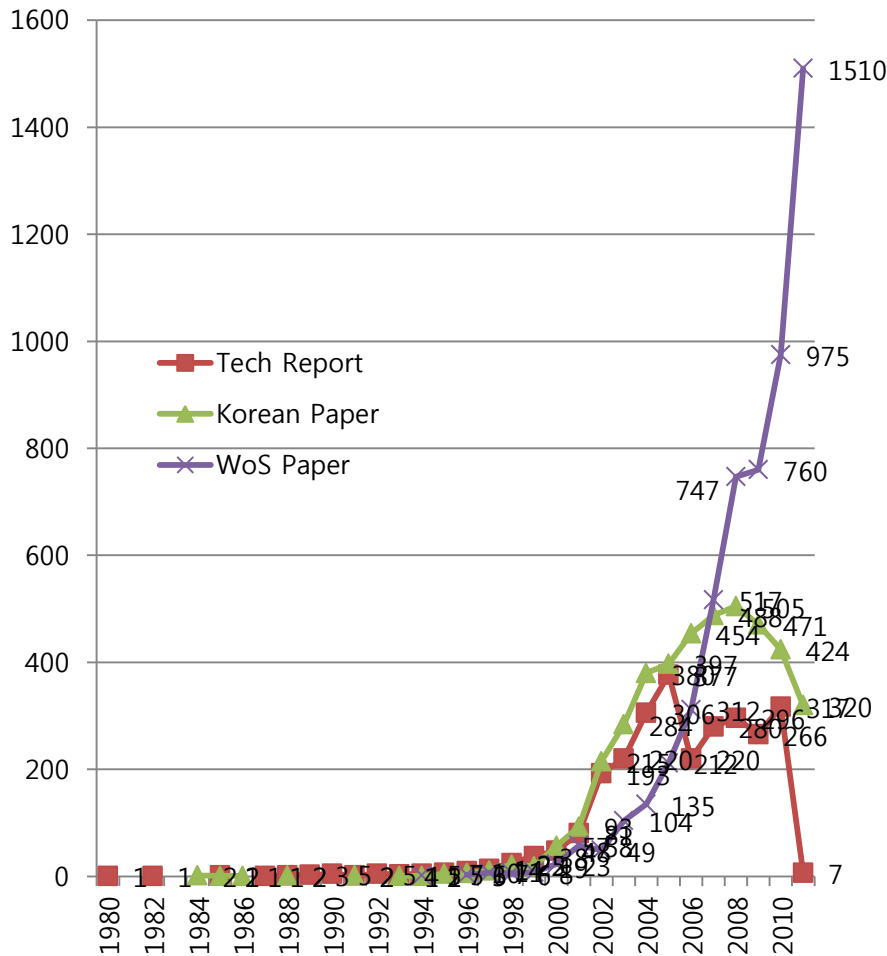
Comparison of No. of Technical Reports and Journal Articles II

Korean NT Technical Reports and Korean Journal Articles(1980-2011) on NDSL



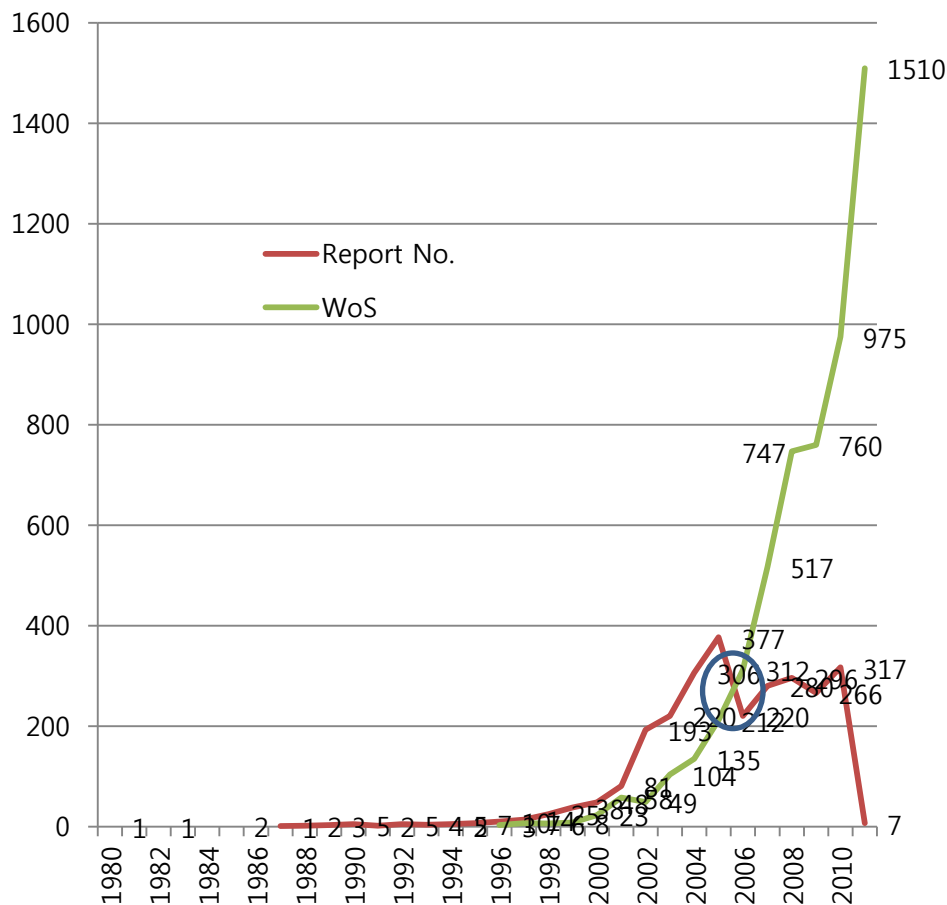
- The numbers of domestic journal articles have increased up to 505 in 2008 and then reduced gradually.
- The peak of publication was slightly behind that of technical reports.
- Both trends of publication are similar.

Comparison of No. of Technical Reports and Journal Articles III



- Numbers of technical reports and domestic journal articles have been reducing since 2005 and 2008.
- WoS journal articles written by Koreans appeared in the 1990's and have been increasing dramatically.

Comparison of Technical Reports and WoS Journal Articles IV



- 2005 is the turning point for dominant literature in NT. Research output publication is ranging from technical reports to journal articles on WoS
- WoS journal articles written by Koreans has increased dramatically.
- Nanotechnology was the 10th most published subject for WoS journal articles written by Koreans in 2011.

Conclusion

- Technical report or grey literature provide creative ideas, important information and research results in the early stage of development of NT in Korea. Innovation in NT can be traced through grey literature.
- Innovation in NT is taking place.
 - Numbers of publication are increased in Web of Science(SCIE),
 - The 10th most published WOS papers written by Koreans in 2011.
 - NT emerged in the 1980's and became one of six major technologies supported by the Korean government.
 - NT was the second most funded technology by the Korean government.
 - NT has influenced to other subjects, created knowledge, and changed human life.
- **Innovation through grey literature is in progress in other areas of science and technology.**

Thank you!!