



Patterns of Research Output Produced by Scholarly Communities in Korea

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1. Introduction
2. Related works
3. Definition of research output
4. Survey results and data analysis
5. Conclusion
6. Direction for future study

1. Introduction

- To Develop an open access-based knowledge/information flow model
- To Further seek a way to facilitate the communication process within and among scholarly communities in Korea
 - A. Because open access has different characteristics according to the different academic fields or local fields.
 - In Korea,
 - ✓ Prefer to subscribe and contribute a research output to a foreign journal
- Focus of presentation
 - A. The Number of production by types of research outputs
 - B. Comparison of output patterns of engineering and science fields
 - C. Motive of publishing
 - D. Copyright holder
 - E. Intention to open-use of research output
 - F. Preserving research output
 - G. Trusted digital archive

1. Introduction

- The Status of STM domestic articles published on SCI(E) journals
 - A. 52 fields are taking the top 20th rank

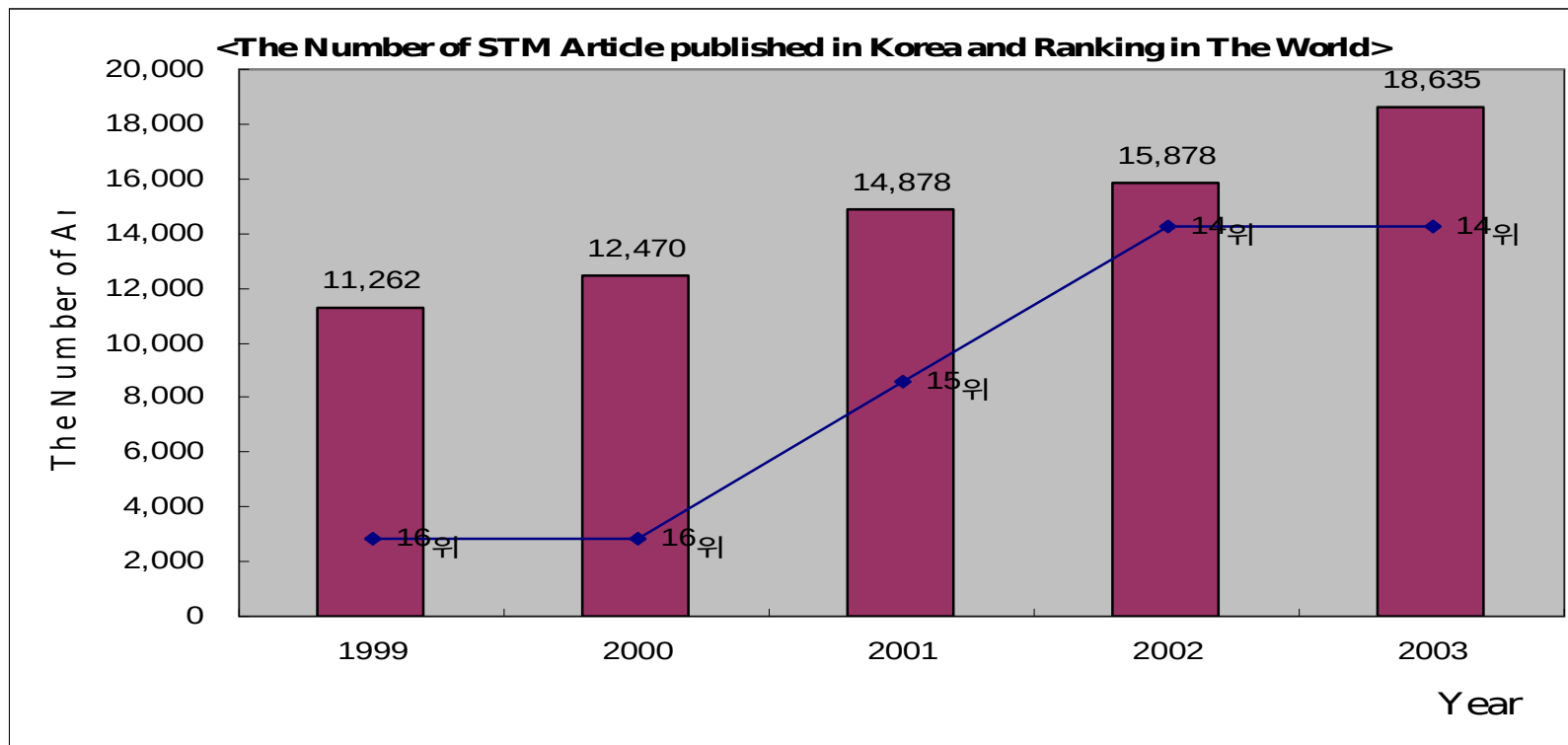
Subject	articles in Korean	The Num. of articles in the world	Rate (Top 20 th in the world)
Engineering and Computer	5,503	106,980	5.14%
Life Science	2,960	141,939	2.09%
Physics, Chemistry, Earth Science	8,382	242,474	3.46%
Medical Science	2,453	144,008	1.70%
Agriculture, Biology, Environment Science	418	13,504	3.10%
Total	19,716	648,905	

1. Introduction

● The Number of STM articles increased 17.4% in Korea

A. Analysis on the ISI database :

- a. 11,262 articles in the year of 1999 taking the 16th rank in the world; 12,470 in the year of 2000 ranking 16th; 14,878 in 2001 ranking 15th; 18,635 in 2003 ranking 14th



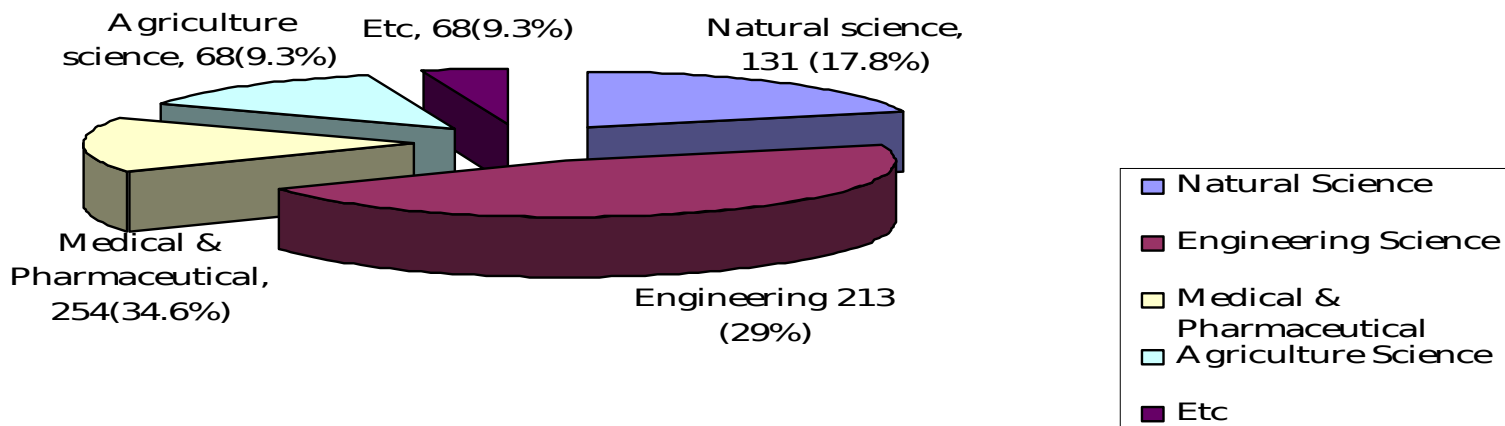
<Source : Analysis on the Research Achievements in Science & Technology Fields Using SCI Database. KAIST. 2004.>

1. Introduction

● The Number of STM academic society in Korea

	Agriculture	Medical & Pharm	Natural	Engineering	Etc	Total
Society	68	254	131	213	68	734

<The Number of Academic Societies for the year of 2004>



<source : *Statistics of Academic Society for the year of 2004*. Korea Research Foundation. <http://www.krf.or.kr>>

2. Related Works

- JISC Author Study (Key Perspectives Ltd. 2004, 2005)
 - A. Study of authors who had published their work in open access journals, and compared and contrasted non-open access author
 - B. Study of Author self-archiving behavior

- Targeting Academic Research for Dissemination and Disclosure: TARDIs Project (Hey, Jessie M.N. 2004)
 - A. To build a sustainable multidisciplinary institutional archive of e-Prints to leverage the research created within Southampton University

- University of Rochester IMLS Grant (2004)
 - A. Faculty members' need in connection with their research activities.
 - B. Grey Literature in Different Disciplines

- Construction of the SciTech Knowledge Sharing System based on Open Access (S.Lee, H. Hwang, H.Kim, K.Joung, M. Seol 2004)
 - A. Model of Korea national open access portal as an online public library for research output

3. Definition of Research Output

● Definition of research output

A. All types of information resources produced from the scientific research activities, which can be divided into four phases: learning, proposing, performing and publishing.

a. Performing phase

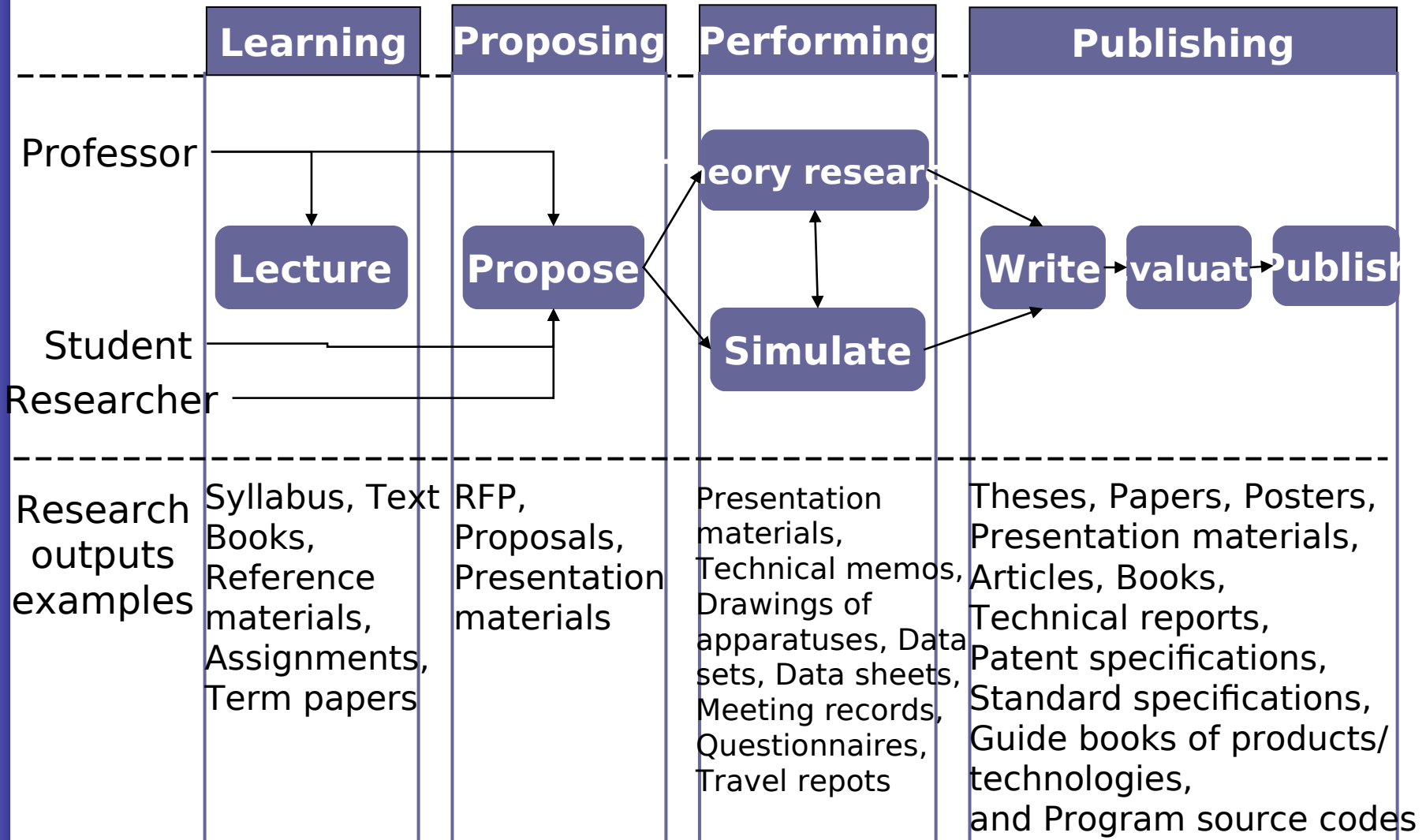
- presentation materials, technical memos, drawings of apparatuses, data sets, meeting records, questionnaires, data sheets, and travel reports

b. Publishing phase

- theses, papers, posters, articles, books, technical reports, patent specifications as well as standard specifications, guide books of products and technologies, and program source codes

3. Definition of Research Output

- Research output by research phases



4. Survey Results and Data Analysis

● Overview of survey

A. Method

- a. Online and Offline survey using e-mail and partly regular mail
- b. Target : 4,792 KISTI individual member
- c. Period : Aug 17 - Aug 24, 2005 (1st), Aug 25-Sept. 16 (2nd)
- d. Total number of Respondents : 250 (only 5 % response rate among the recipients)

● Composition of the respondents

Classification	Types	Occurrences	Rates (%)
Job	Academics	159	63.6
	Industry	87	34.8
	Others	4	1.6
Major of final degree	Engineering	148	59.2
	Science	59	23.6
	Medicine	9	3.6
	Humanities/Social	23	9.2
	Others	11	4.4

4. Survey Results and Data Analysis

- The number of production by types of research outputs
 - A. The most popular output type :
 - a. Technical report, presentation material

 - B. Many Korea researchers are involved in projects sponsored by government or other funding organizations

 - C. The most popular output format :
 - a. Word processor (HWP, MS Word, PDF, PPT, RTF, XLS, Txt, LaTeX)
 - b. Multi-media (MPEG/MPG, WAV, AVI, MOV)
 - c. Web page (HTM/HTML, XML, ASP, PHP, JSP, DHTML)
 - d. Image (JPG, GIF, BMP, TIF, Postscript, EPS)
 - e. Database (RDB, NDB, OODB, ORDB)
 - f. Program (C/C++, Visual Basic, Java, FOR)
 - g. Design, Modeling, Visual (CAD/CAM, GIS, Molfiles)

4. Survey Results and Data Analysis

Research phases	Types of Research Outputs	Producing more than 1 within 3 yrs.	Rates (%)
Publishing	Technical reports	163	65.2
Publishing/Performing/ Proposing	Presentation materials	158	63.2
Publishing	Peer reviewed papers	141	56.4
Publishing	Conference papers	129	51.6
Proposing	Proposals	125	50.0
Publishing	Patents	108	43.2
Publishing	Conference posters	104	41.6
Performing	Experiment Materials	100	40
Performing	Questionnaires	67	26.8
Publishing	Books	66	26.4
Publishing	Theses	60	24.0
Performing	Drawings of apparatus	59	23.6
Performing	Statistics Data	54	21.6
Performing	Experiment Equipment and System Explanation	50	20
Performing	Data sheets	45	18.0
Publishing	Program source codes	45	18.0
Performing	Software	36	14.4
Performing	Multimedia	36	14.4
11/28/18 Performing	Data set	34	[12/25] 13.6

4. Survey Results and Data Analysis

- Comparison of output patterns of engineering and science
 - A. The total rates of peer-reviewed and conference papers in engineering fields produce more than those in science fields
 - B. Science-related fields are more productive in terms of conference posters, presentation materials, and experimental materials

	Patterns of Research Output
Engineering (Mechanical and Metal)	Peer reviewed paper, Conference paper, Patent, Technical report and Proposal
Science (Chemistry)	Conference Poster, Presentation Material, Experimental Material

4. Survey Results and Data Analysis

Type of outputs	Fields	Producing within 3 yrs.					Rate (%)
		1-3	4-6	7-9	10>	Total/no. respondents	
Peer reviewed papers	Eng.	16	6	4	3	29/42	69.00
	Sci.	1	5	5	6	17/29	58.60
Conference papers	Eng.	11	8	2	4	25/42	59.50
	Sci.	3	3	6	3	15/29	51.70
Conference posters	Eng.	8	3	1	2	14/42	33.70
	Sci.	1	7	2	4	14/29	48.30
Patents/Utility Model	Eng.	10	4	3	4	21/42	50.00
	Sci.	6	4	1	1	12/29	41.40
Technical reports	Eng.	15	6	3	2	26/42	61.90
	Sci.	7	3	5	2	17/29	58.60
Presentation Materials	Eng.	8	2	10	2	22/42	52.40
	Sci.	4	2	10	2	18/29	62.10
Proposals	Eng.	10	3	4	3	20/42	47.60
	Sci.	3	1	3	2	9/29	31.00
Experiment Materials	Eng.	7	3	4	4	18/42	42.90
	Sci.	3	2	7	3	15/29	51.70

4. Survey Results and Data Analysis

● Motive for Publishing

A. Question

a. In general, What are your objectives when publishing your research output ?

Ranking	Motive of Publishing	Rate(%)
1	Requirements of their affiliations	65.2%
2	For their academic reputation	61.2%
3	To communicate results to my peers	52.0%
4	To obtain the direct financial reward	19.2%

4. Survey Results and Data Analysis

● Copyright Holder

A. Question

a. Who do you think is the most desirable copyright holder for your research output that published formal publishing channel. Please check the priority.

Entity	1st	2nd	3rd	4th	others
Researcher	170(68.0%)	50(20.0%)	20(8.0%)	4(1.6%)	6(2.4%)
Organization	60(24.0%)	116(46.4%)	53(21.2%)	9(3.6%)	12(1.2%)
Sponsor	23(9.2%)	67(26.8%)	126(50.4%)	9(3.6%)	25(1.0%)
Publisher	5(2.0%)	8(3.2%)	23(9.2%)	154(61.6%)	60(24.0%)

4. Survey Results and Data Analysis

● Intention to Open Access of Research Output

A. Question

a. *Do you have a intention to open your research output to the public domain for the public purpose*

- *Are you going to allow the non-profit use of your research output if researcher's copyright is stated clearly.*
- *Are you going to allow modifications of your research outputs if researcher's copyright is stated clearly.*

	Respond.	Rate
Open	221	88.4 %
Close	29	11.6 %

		Respond	Rate
Non-profit Use	Allow	203	91.9%
	Do not allow	11	4.9%
	Allow commercial Use as well	7	3.2%
Sub-Total		221	100%
Modification	Allow	140	63.3%
	Do not Allow	81	36.7%
Sub-Total		221	100%

4. Survey Results and Data Analysis

● Intention to Open Access of Research Output

A. .

B. *Do you think it is beneficial to share your own research output with colleagues before publishing formally.*

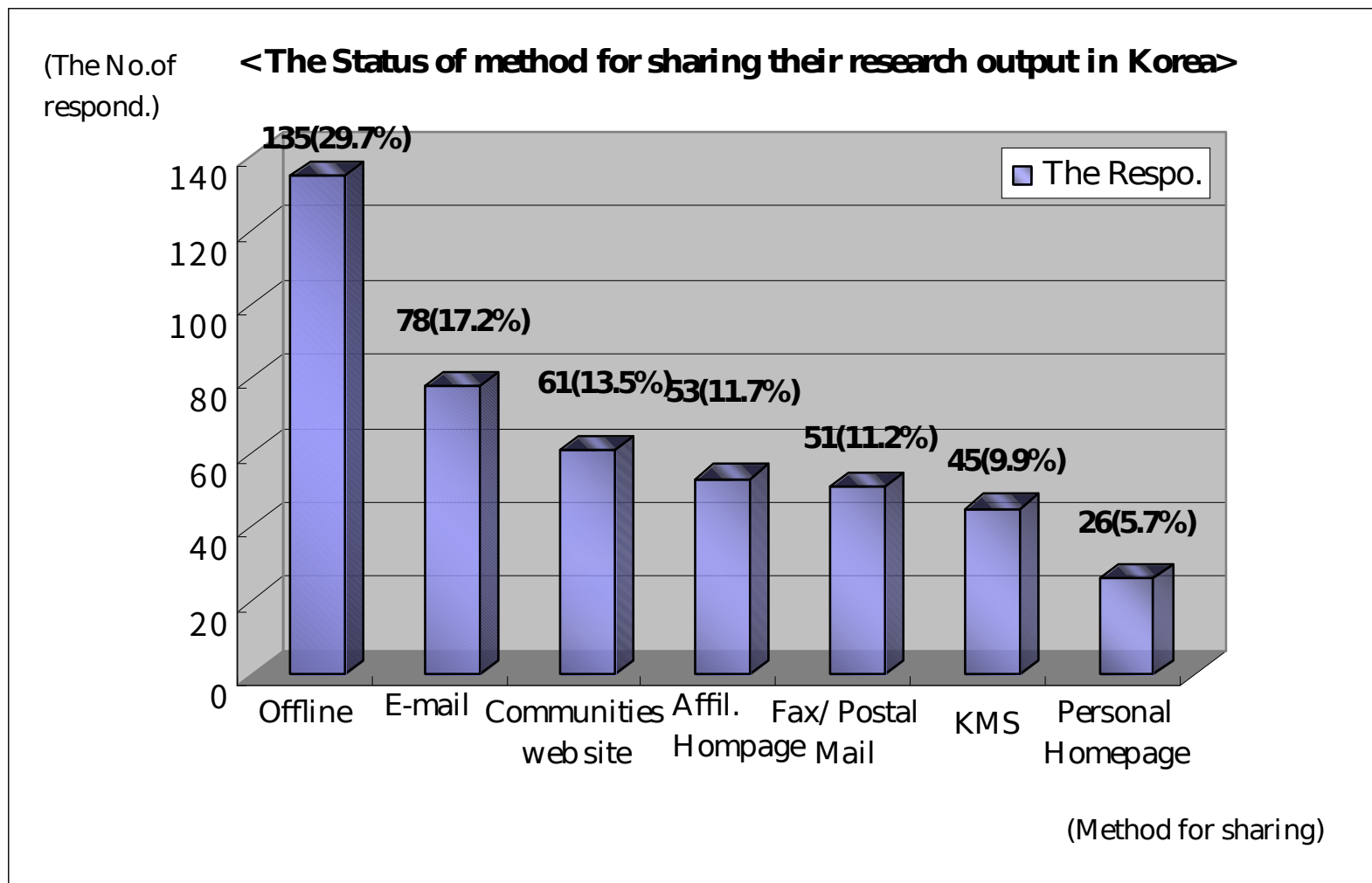
- ✓ 75% of Korean Researchers think that sharing their research outputs with colleagues before publication would be HELPFUL

C. *By which methods, do you share your research output with research colleagues.*

- ✓ The way of sharing Korea researchers prefer is
 - Off-line : research club, lab seminar (29.7%)
 - E-mail (17.2%)
 - Communities website (13.5%)
 - Affiliate's Homepages (11.7%)
 - printed material via fax or postal mail (11.2%)
 - In-company intranets (knowledge management system) (9.9%)
 - Online sharing including personal homepages (5.7%)

4. Survey Results and Data Analysis

● Intention to open access of research output



4. Survey Results and Data Analysis

● Preserving research output

A. Question

a. *Where do you store your research output*

b. *How long do you think your research output that stored somewhere are searched, used, and stored.*

Authors' preservation method	The Num. of Respondent	Rate (%)
Personal computers	236	48.3%
CD-ROM	103	21.1%
USB memory devices	68	13.9%
In-company intranet	32	6.5%
FTP Server	28	5.7%
Floppy diskette	12	2.5%
Commercial web Hard	10	2.0%

Authors' expectations on period of preservation	The Num. of Respondent	Rate (%)
Less than 1 year	9	3.6%
1 - 3 years	69	27.6%
3-5 years	70	28%
5-10 years	52	20.8%
over 10 year	49	19.6%
none	1	0.4%

- The lack of Institutional repository culture
- Preservation is individual researcher 's responsibility

4. Survey Results and Data Analysis

- Trusted digital archive
 - A. *Do you have intention to submit it if trusted institution/organization guarantees you to store and use your research output for long periods.*
 - ✓ 80.0% of Korean researchers want institutional repositories for reserving some of their research outputs
 - B. *If trusted digital archive is built, who do you think is desirable to manage and operate it.*
 - ✓ Korean researchers prefer their own or governmental organizations

Intention to submit output	Respondents (%)
Willing to submit all their output	58(23.2%)
Submit except very important output	142(56.8%)
I don't have	13 (5.2%)
It's depend on situation	37 (14.8%)

Candidate Authorities of TDR	Respon.(%)
Organization that employs researcher	99 (39.6%)
Governmental organization	82 (34.0%)
Researcher	35(14.0%)
Community researcher participate	27(10.8%)
Others	2(0.8%)
No Response	2(0.8%)

5. Conclusion

● Types of research output

- A. The most common output type among Korean researchers was found to be technical reports and the next common was found to be presentation material
- B. Researchers in engineering field produce more than those in science field in case of ;
 - peer reviewed papers, conference papers, patents, technical reports, and proposals
- C. Science researchers produce more
 - Conference posters, presentation materials, and experiment materials
- D. However, in terms of both peer-reviewed and conference papers,
 - Science researchers were dominant with respect to output per researcher

● Publishing objectives

- Main reason for publishing their research output was found to be that it was a requirement of their affiliations.

● Awareness regarding copyrights

- The first copyright holders of researcher's outputs should be themselves and the organizations that employ them.

5. Conclusion

- Information sharing
 - A. Most Korean researchers think that sharing their research outputs with colleagues before publishing would be helpful
 - B. The preferred method of sharing for Korea researchers is off-line.
 - ✓ Diverse online sharing tools are also used, but the rates are at very low levels compared to the rates of other countries

- Preservation of information
 - Korean researchers preserve their research outputs mainly on the hard-disc memory in their personal computers (48.3%)

- Trusted-digital archive
 - A. Many Korean researchers want institutional repositories for reserving some of their research outputs
 - B. Korean researchers prefer their own or governmental organizations over other bodies as an authority of a trusted-digital archive.

6. Directions for future study

- This is primarily an initial study to tap into the possibility of developing an open access archive in the Korea scholarly environment especially in the science and engineering fields
- A more specific study can follow with an aim to discover these same possibilities in more specific academic fields
 - *Nano-technology, IT Technology, Bio-technology as well as others.*

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Thank you for your attention



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