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The Role of The National Library of Korea in the Competitiveness Enhancement of Libraries

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Abstract

The National Library of Korea (NLK) sets up a team of library automation in 1979 and has made efforts for the library automation of Korea as well as that of the NLK.

In the first stage, the NLK developed an automation system for the national bibliography which was collected and cataloged by the NLK. In the second stage, the NLK has developed the KOLAS (Korean Library Automation System) based on the automation system mentioned earlier. The KOLAS has been leading the library automation in Korea and has been distributed to both public libraries and government libraries throughout the entire nation.

From the beginning of the system development, the NLK has designed the system which enables individual libraries to establish their own databases by downloading the national bibliographic database without performing original cataloging locally. The NLK has provided the libraries with the national bibliographic database in the formats of magnetic tapes, CD-ROMs, and On-line according to the change of technology environment. Helping each library set up a database efficiently, the NLK has contributed to improve the nation's competitiveness.

In the next stage, the NLK developed a cost-effective resource sharing network system by launching the National Electronic Library in collaboration with major Korean libraries. This resource sharing system allows users to access library materials in cyber space without visiting a specific library.

In the fourth, the NLK has been establishing contents database for publications published in Korea except for materials of which contents can be omitted such as novels, encyclopedias and dictionaries. The contents database provides both contents information and cataloging information to the libraries nationwide.

Additionally, to help libraries nationwide supply their newly collected bibliographic information, the NLK has been establishing and providing catalogs and contents database service on a daily base for materials collected by the NLK through the legal deposit since 2005. It also enables local bookstores, publishing companies, and publication distributors to make good use of the database for their basic bibliographic information services and POS(Point-of-Sale) system.

As of 2006, the NLK is planning to select outstanding materials from legal deposit collection and provide the links of the selected materials on the NLK official website which is intended to lead fast and complete legal deposit system and help public libraries select valuable works from the publications. The NLK also has a plan to provide the selected materials to library users through public libraries in cooperation with the publication industry promotion project implemented by the Korean government.

With a library management information system introduced in 2005, the NLK will decide to open shelf books of each reading room after analyzing the statistics report of both open stacks and closed stacks. Until now, the collections have been shelved by the year of publication. The library management information system will help library patrons use a library collection more conveniently and will be distributed to public libraries nationwide.

This paper is intended to present projects that the NLK has initiated for the formation of the information environment of the Korean libraries and the improvement of nation's information competitiveness.

1. Introduction

The invention of paper and printing was a monumental event in the development of human civilization. Such an invention made it possible for people to record their cultural heritage, to spread it to others and to pass it down to the next generation. Libraries have been taking on the vital task of collecting, organizing, and preserving the whole culture of mankind to pass it on to the people who need it, since before the days of Christ.

Modern society, which is based upon knowledge, has not only invented various digital media that can be substituted for paper to save and use great amounts of information, but also developed means of mass communication such as the Internet to convey information to an infinite number of people at low expense and in just a short time.

Such a phenomenon can find its cause in the advent of the new digital culture among the culture of paper, which resulted in alterations to the recording culture. Also, in this type of new environment, information that is stored in a conventional medium, such as a book, is important, but the importance of digitally stored information is even more emphasized.

Changes in the environment call for extra efforts and manpower in terms of quality and quantity of the data collected in libraries. Moreover, it calls for a change in the content of the services that are offered to the public. To accomplish this, here are some projects that can improve the competitiveness of information handling in libraries.

2. Library Information Environment

The National Library of Korea organized an automation preparation team and created KORMARC in 1979 in order to standardize documents processing methods. In addition, The National Library established a database of information about domestic documents and a Comprehensive Library Information Plan based on the experience of computerization to form an electronic network of libraries. In 1989, the library network construction project was selected as a major project of the "Electronic Network of Educational Studies" project, which is one of the five major national electronic network projects. In 1990, the library information network construction project was promoted as part of the balanced regional development project. These projects were meant to develop libraries nationwide in a balanced way to allow the public to acquire the information they required from anywhere through an information network of libraries, which could offer convenient use of information regardless of location.

The National Library of Korea has established a second-stage project plan (1998~2010), following the first-stage project plan (1991~1997), based on the government's will, and has formed KOLIS-NET (Korean Library Information System-Network), which interconnects 495 major libraries nationwide and foreign

document circulation organizations together to promote a project to construct and utilize a bibliographic database jointly.

3. Projects to Strengthen the Competency of Library Information

1) Development of standardized tools for processing bibliographic information

In order to construct and utilize DB jointly, the standardization of processing tools is essential. The library information process, especially, emphasizes the standardization of processes due to the complexity of bibliographic components and that is the reason why the standardization project of list forms, which acts as the basic tool for computerizing bibliographic information, is being promoted.

Initially, KORMARC formats for monographs were developed to be applied in the construction of the bibliographic database of monographs at the National Library of Korea, but from 1991, the formats for monographs, periodicals, multimedia materials, old books, authority control, and library holding information were developed and established as KS. Currently, 958 libraries nationwide are using KORMARC for constructing catalog databases.

<Chart 1. Current status of KORMARC format usage>

(Unit: the number of organizations)

Type	Domesti	c publica	tions		Overseas publications					
Туре	KOR MARC	US MARC	Not applied	Other	total	KOR MARC	US MARC	not applied	Othe r	total
Public Libraries	372	4	0	1	377	156	6	25	1	188
University Libraries	296	2	4	0	302	118	171	8	2	299
Specialized Libraries	242	3	25	9	679	173	33	25	25	256
Total	910	9	29	10	958	447	210	58	28	743

Last year, the integrated KORMARC bibliographic information standards for books, periodicals, multimedia materials, and old books were established as KS, which opened a new era of the integrated bibliographic standard formats and the authority control at the National Library of Korea.

2) The Development and Distribution of Library Application Software

A system that could perform work in a standardized way while improving the competence of library information and reducing the expenses and manpower

required in developing programs suited for each library was developed. The development of this system was based on the system called KOLAS (Korea Library Automation System) that is being used by the National Library of Korea and can process tasks such as acquisitions, cataloging, circulation, online public access catalog, collection management, and various statistical reports through the TOTAL SYSTEM, according to the scale of the computerized device and distributed it free of charge to libraries nationwide.

The computerized application package, which allows monographs and periodicals to be processed by UNIX or PCs, was invented in 1991, and since then, it has been modified and supplemented several times to be distributed to 4,031 libraries nationwide. In addition, in 1999, a standardized data management system (KOLAS II) for public libraries in the Windows environment was developed and distributed to 420 libraries, and is presently in use.

<Table 2. Current Distribution of KOLAS>

***** KOLAS

(as of 2006.04.)

Type	For	PCs	For U	JNIX	Shared	Total
Туре	Monographs	Periodicals	Monograph s	Periodicals	cataloging	Total
Public Libraries	337	99	87	40	94	657
Specialized Libraries	1,920	45	229	15		2,209
University Libraries	412	55	92	24		583
University Library Schools	47		16			63
School Libraries	458	2	58	1		519
Total	3,174	201	482	80	94	4,031

KOLAS II

(as of 2006.04.)

Seoul	Kyunggi	In- Cheon	Kang- Won	Chung- Nam	Dae- Jeon	Chung- Book	Bu-San	Ul-San	Dae-Gu	Kyung- Book	Kyung- Nam	Chun- Nam	Kwang- JU	Chun- Book	Che-Ju	Total
34	65	13	32	42	11	23	23	5	14	35	40	39	10	20	14	420

3) The Standardization of Bibliographic Information and the Creation of a National Catalog Database

The National Library of Korea introduced its computer system in 1984 and developed a cataloging system, which has the bibliographic information at its core. Since 1984, it initiated the construction project of a database for cataloging publications deposited in the Library. By using the cataloging information of the deposited library collection, printed cards were manufactured and distributed in order to be utilized at libraries nationwide, paving the way for the standardization project

of bibliographic information.

In addition, from 1991 to 1997, all bibliographic information of the collections of the National Library of Korea was constructed as a database, which amounts to up to 2.68 million among 5.74 million books. In order to construct the database for the collection of all libraries nationwide based on the bibliographic information constructed by the National Library of Korea, a national union catalog database was constructed and offered to libraries and the public nationwide through the Internet. For the construction of the database of the national union catalog, the bibliographic database constructed in the National Library of Korea was created into a national database as the first step. The second step was collecting the bibliographic databases of regional centers for public libraries nationwide to process it into a national database and the third step was to promote the national database project by collecting the bibliographic databases of public libraries nationwide. In addition, bibliographic databases of each administrative government agency's library and its library departments were collected and combined to create the national database.

The construction method of the national union catalog database is making one search record for one item and recording libraries holding information in order to turn it into a service. Moreover, the Korea Education and Research Information Service (KERIS) is organizing a comprehensive bibliographic database of university libraries and the two systems are linked and serviced in order to utilize two databases in public and university libraries.

<Table 3. Number of Libraries Participating in the National Union Catalog Database and the Number of Records>

Libraries Partic	ipating		Number of	Number of Libraries		
Public Libraries	Specialized Libraries	Total	Bibliographic Records	Holding Records		
406	59	465	4,673,871	17,895,248		

From 2004, in order to offer a standardized database and content information to libraries, publications trading agencies and bookstores nationwide with speed, the Korean Publishers Association, which is the representative organization of the Korean publishing industry, has been authorized to collect publications on behalf of the National Library of Korea and to deposit them on a daily basis with catalog and content records created by a professional designated company.

The NLK creates standard record by examining the provided records and giving main entry and authority control and gives access to new titles through the Internet. Employee interests are researched to make it possible for records to be organized according to topics, resulting in designation of librarians who are knowledgeable about their own professional field and who carry out classification and cataloging tasks in their own specialized areas.

In the future, librarians will strive to enhance their own capacity by carrying out tasks such as reference services by topics, selecting foreign books, and collecting Internet resources.

<Table 4. Current Status of MARC and Contents Download Requests for New Titles>

Туре	Public Libraries	V	Specialize d Libraries	School s	Bookstores	Publishing Companies	Other	Total
Number of Organizatio ns	268	179	64	5	4	70	7	597

4. Construction of the Table of Contents and Full-text Database

The National Library of Korea is in the position of collecting and preserving all issues published in Korea according to the Library and Reading Promotion Act to hand them down to future generations.

Due to environmental changes in the use of information, libraries have been making great efforts to assist users in terms of acquiring more information by offering them the cover image of publications and the table of contents through the Internet.

The National Library of Korea has also been offering bibliographic information of its collection by using PC communication since 1991, and through its Internet home page since 1996.

In 1997, in order to make use of the original text in cyber space, a pilot project for electronic libraries was promoted and it resulted in the National Electronic Library which is being operated by the seven major libraries of the state and has now been renamed the National Digital Library (www.dlibrary.go.kr),.

Additionally, an integrated search system of all information offered in the National knowledge portal site (www.knowledge.go.kr) has been implemented to provide information other than bibliographic information to users of the National Digital Library.

<Chart. 5 Construction Status of the Database of the Organizations that takes part in National Digital Library>

<as of 2005. 12>

		<as 12="" 2005.="" of=""></as>			
Name of the Institute	Current Status	Volume			
	Major monographs	• 134,210Books			
	(publications before 1997)	42,188,723pages			
	Published under Japanese	◆ 11,230Books			
	Colonial Rule and Related	3,450,572pages			
	to Korea				
	Selected Korean Classics	615Books 92,450pages			
	Korean Novels during	915Books 88,554pages			
The National Library of	1910-1930				
Korea	Published by Ministry of	• 1,442Books			
	Culture & Tourism	534,121pages			
	* OII D 1	# 02 00CD 1			
	Old Books	• 92,006Books			
	1 Destard these	13,822,347pages			
	Doctoral theses,	• 7,816Books,475,273pages			
	Subtotal	333,893Books 93,702,151pages			
	Monographs	• 6,222Books,800,458pags			
	Government Publications	44,456Books14,482,838pages			
	Social Science theses	442,272Books			
		37,458,813pages			
The National Assembly	Social Science Journals	◆ 574,155cases			
Library		12,801,546pages			
	Conference Proceedings	• 17,398cases			
		1,170,724pages			
	Old Books	522books 75,560pages			
	Subtotal	1,133,897books			
		69,582,873pages			
	Legal Journals	4 42,549 Items			
		643,248pages			
	Cases of the Supreme	4 1,683 Items 8,415pages			
Supreme Court Library of	Court(1948. 2004.10.1.)				
Korea	Decisions by the	• 683 Items 8,415pages			
	Constitutional Court				
	(1989. 2004.7)	+ F 0 F 2 Y			
	Case Examples	• 7,952 Items 39,760pages			
	(1948. 2004.9)	0.01.01.01.01.01.01.01.01.01.01.01.01.01			
	Subtotal	85,945 Items 813,145pages			
	Domestic Journals,	• 561,949 Items			
Korea Institute of Science	Conference Proceedings,	5,610,000pages			
and Technology	Theses	+ 20 25 c L			
Information	NationalResearch Reports	\$\psi 30,356 \text{ Items,}\$			
	A Discontation -	5,000,000pages			
	Dissertations	28,992 Items,2,900,000pages			
		/ VII II I I II II II II II II II II II I			

	Subtotal	621,297Items 13,510,000pages
Korea Advanced Institute of Science and Technology,	Dissertations	 18,775Books 1,768,920pages (Tiff) 2,148Books 215,000pages (PDF)
Science Library	Subtotal	20,923Books 1,983,920pages
Korea Education and Research Information Service	Academic ReportsDissertations by Korean in local and overseas	 ♦ 760,000 Items, 11,400,000pages ♦ 260,000 Items, 20,800,000pages
	Subtotal	1,020,00032Items, 200,000pages
Korea Agricultural Science Library	 Published by Rural Development Administration(RDA) Dissertations by RDA researchers Experimental Research 	 7,077Books 1,673,305pages 1,052Books 122,840pages 79,828 Items,
	Reports by RDA	1,262,114pages ◆ 72,791 Items 378,363pages
	Subtotal	160,748Books(Items) 3,436,622pages
То	3,376,703Books(Items) 215,228,711pages	

Moreover, in 2000, in order to provide more information about the collections of the National Library of Korea, the construction project of the Table of Contents (TOC) database was initiated and 1,190,000 TOC for titles collected prior to 2003 have been built retrospectively. Since 2004, the system was reformed to construct the table of contents database and the cover image database together with the construction of a bibliographic database for deposited publications.

The table of contents database and cover image database created through this process can be accessed through the home page of the National Library of Korea and on the site, search results on the screen can show the cover and when the table of contents plus the original text are constructed, they can be used by making an icon.

<Table 6 Current Status of the Construction of the TOC Database for the National Collection>

<as of 2005.12.>

Туре	Construction Titles			
1922-1945 (Japanese Colonial Rule)	98,000			
Domestic Monographs	502,000			
Japanese Books	20,000			
Periodicals	459,000			
TOTAL	1,198,000			

5) Providing Computerized Devices for Libraries Nationwide and the Installation of Digital Information Centers

To form a library network, each library that is connected to the network must have a computerized device of an appropriate size that is suitable for its role. In the National Library of Korea, the whole country is divided into 10 regions in order to form a library network for all public libraries nationwide and one regional center is indicated in each region. Following this plan, domestic computerized devices (TICOM II) were provided to 4 of the 10 regional centers in 1993 as the first step. The other 6 centers were supplied with the device in 1995. From 1995, in order to make Internet and multimedia resources available in public libraries nationwide, a multimedia LAN was installed in 177 public libraries nationwide with the societal fund donated by Samsung in 1996.

In addition, from 2001, digital information centers were installed in 348 libraries nationwide as a cornerstone in making libraries the core of the knowledge-based society.

< Table 7 Current Status of Digital Information Centers>

Region	Seo ul	Bu - Sa n	Da e- Gu	In- Che on	Kwa ng- Ju	Dae- Jeon	Ul- San	Ky ung -gi	Kan g- won	Chu ng- Boo k	Chu ng- Nam	Chu n- Boo k	Chu n- Nam	Kyu ng- Boo k	Kyu ng- Nam	Che- Ju	Tota 1
Number of Libraries	25	22	11	8	8	8	4	55	27	21	31	24	31	30	37	6	34 8

< Table 8 List of Supplies for Information Centers in Public Libraries Nationwide>

Hardware	 Server: Data Control, Multimedia Service, WEB use, Security PC and Printer: For Users, Administrator Network: Switching Hub, Hub, Router, CSU/FDSU, LAN Supplies for the Disabled: Braille and Voice Recognition Monitor, Screen Magnifier, Audio Book Reader, Screen Reader Other: AV Devices, Notebook Computer and Projectors, Booking Management System, Interior, Desks, Chairs, etc.
Software	 OS for the Server Integration and Management System for Multimedia Content (CD-ROM, VOD, Original Text, etc.) Management Support Software Booking Users for Digital Information Center Software Digital Information Center Management Software

4. The Globalization of the National Bibliography

The advent of the Internet has globalized the world. The revolution of IT technology eliminated country borders and changed the concept of information from possession to access.

Following this change, libraries changed their conventional operating information system as a small membership to a mass-scale system that is operated by the scale of the world.

In Korea, to keep up with the flow of society, the National Library of Korea has developed a UNI-CODE based system to utilize bibliographic information in all libraries that have Korean collections, which is being prepared as a service.

Also, to lessen the burden of converting the letters into Roman when cataloging Korean publications in foreign countries, a computerized Roman conversion system will be developed and serviced through the UNI-CODE system after altering the catalog records

5. Introduction of the Library Management Information System using RFID

The National Library of Korea has introduced and developed computerized devices from 1984 to create its own library automation system that has all the collection's bibliographic information as the core. Until 1997, all the collections in the National Library of Korea had been constructed into a bibliographic information database and the integration system of its own is implementing tasks such as the deposit process, technical processing, indication of room publication is stored in, search process, and publication of bibliography. Since 2002, RFID tags have been affixed to all materials that are on the open stacks in order to collect statistics in real-time, which was intended to innovate the management of libraries. In 2004, a user registration system was developed and the registered user selects the topic of interest to obtain the

bibliographic information and the table of contents information of the selected topic.

Also, from 2005, the National Library of Korea's integrated management system was improved to help users search and order collections in closed access storage by using the search results screen. The selected items from the search results are collected straight from the storage to be offered to the user. A mobile phone SMS system, which is recorded in the process of the registration, is utilized to let the users know the current status of the material that they want to borrow. The National Library of Korea has installed 9 topic-specified reading rooms to make available some 300,000 publications that were published within the previous 3 years to the users in the open stacks.

The fundamental philosophy of the library management system is to accumulate the statistics of the users and the usage data in real-time in order to reflect them in the management of libraries. Collections that are operated as a closed system can be tallied by content in the computer records upon ordering, but collections that are open to users are selected by the users directly from the stack. Therefore, self-checkout machines were installed in the open stacked information rooms where users can place their library card and material on the device for recognition before going to the reading section.

Using this accumulated data as a base, evaluations on short-term purchases and opening and closing policies for materials will be operated. In the long term, the data will be utilized in the expansion of the reading rooms and opening of new reading rooms. Furthermore, a regular membership card and one-day pass is being created for the National Library of Korea. One-day passes work by using an ID and password to get one-day permission from the permission printing device installed at the entrance of the library.

6. The Establishment of the National Digital Library

The National Library of Korea is promoting the establishment of the National Digital Library, due to an increase in user demand for new services derived by factors such as the introduction of digital publications, increased efficiency of on-line information resources, and the development of the mass media industry, which are all triggered by rapid changes in the information environment.

The National Library of Korea has submitted a request for the establishment of a National Digital Library to the government to gather on-line data, which is being undertaken in the major libraries of the world. In 2001, the Ministry of Planning and Budget requested that the Korea Development Institute(KDI) conduct a feasibility survey and confirmed construction. The fundamental plans were established in 2002, and the National Digital Library is being constructed in the front section of the National Library of Korea to offer a linked service between the two.

< Table 9. Content of the National Digital Library Project>

Type	Content
Location	The Square in front of the National Library of Korea
Scale of Facilities	 - 3 floors above ground/5 floors underground - Facilities: Multimedia Studio, Databases Editing Room, Multimedia and On-line/Electronic Publication Reading Room, Temperature and Humidity control Room - Library Facilities: Stacks for Books and Others, Material pick-up room, - Administration: Planning and Developing Content, Collecting Online Information, Organizing Topic database, Operating Programs, Preservation, etc. - Other facilities: Machinery Room, Electricity Control, Parking Area
Volume of Books	12 million books
Period of the Project	2002~2008(7 years)
Total expense (Government paid)	1,208 * 100 million won (Construction costs 980 * 100 million won, IT 180 * 100 million won, management costs 48 * 100 million)

The National Digital Library holds its "integration of high-quality digital information and provision of an open-service environment" vision to construct a open platform that is based on the integrated management of domestic and foreign information resources, access to information resources, and results in an upgrade of the digital information service by blending together information technology and the information-based society's cultural elements.

Various types of integrated NDL management environment construction, NDL integrated search portal, establishment of an environment for information sharing, digital archiving of high-quality digital resources, and all sorts of digital operation process reforms have been selected as strategic goals and are being promoted.

7. The National Library of Korea 2010

Libraries have existed and have been developed since the history of mankind as a societal and cultural device. This identity not only made libraries act as pivotal organizations that acquire, provide, preserve, and inherit the intellectual culture of mankind in both the East and West, but also gave them the just cause to do so. However, in the case of a library that represents a country, the scale expands and calls for the need for a greater and more strategic identity and capacity. In other words, a national library acts as a storehouse of knowledge that collects and preserves intellectual heritage and information produced and distributed within the

country, a information service center that guarantees access to information by the public and narrows the relative gap, a leader that supports all the other domestic libraries, a window that makes it possible for people to interchange with other libraries around the world, and a time capsule that allows use and access by future generations. A national library must form its own value, role in society, future-oriented plan and strategy in order to foster its core capacity.

With such a background, the National Library of Korea has presented its mid to long-term vision - the National Library of Korea 2010. Making the collection of knowledge and information and its services hybrid, strengthening and equalizing access to knowledge-information, creating a public-oriented library and forming a daily reading culture, and boosting cultural development of the state and economical growth, were set up as the basic principles.

In addition, 4 vital values were reflected upon each of the goals that are to be attained by the National Library of Korea by 2010 based on the basic principles of the mid to long-term vision.

These so-called 4Ps are the vital values that stand for: National Pride of the state's knowledge and information, Information Provision, Policy and Research on the services of the library, and the expansion and role as a Global Portal.

The 4 major goals to be attained by the mid to long-term vision, materialized by combining the priorities and connectivity of the 4 essential values described, are as follows:

- Pride and Repository of Korean Knowledge Heritage
- Distribution and Provision Center of National Knowledge and Information Resources
- Library Policy and Research Hub
- Global Portal & Gateway for the Library and Information Center

The mid to long-term vision of the National Library of Korea was set as an intellectually powerful country by the 4Ps, based on the basic principles and the 4 major goals specified from those principles.

The reason for setting this as the premise for the mid to long-term vision is because only when the National Library of Korea takes control of domestically produced information and supplies and guarantees access to information for the public, can the gap of information and knowledge be resolved, resulting in early settlement of the reading and library culture. Furthermore, an intellectually powerful nation would only be attainable when the people's ability to process knowledge and information is enhanced and when the level of information-centered culture has improved.

8. Conclusion

Making it possible for people to acquire all information through a library, in an environment where knowledge becomes the motor of a country's development and improves their lives, is the responsibility of the National Library of Korea, which controls the policies of Korean libraries.

The National Library of Korea is promoting a project in order to provide opportunities for people to use the material they need by visiting a library or using the material on-line in cyber space.

In addition, a project to link the publishing companies, which is mainly responsible for intellectual property, and libraries, the combination of all intellectual properties, is being promoted. Furthermore, the National Library of Korea is making great efforts to standardize the bibliographic information and enhance national competence by immediately collecting all information published domestically, utilizing libraries, and even distributors and bookstores, nationwide.

Today, the information society, knowledge-based economy, and digital utopia, which are especially topics of Western society, require the premise of non-discriminated access and sharing. Therefore, a true democratic society, cultural nation, and digital utopia are only achievable when libraries guarantee freedom of access and use, as is the case with the current libraries of the international society.

In this aspect, it would not be an exaggeration to say that the National Library of Korea is taking on the role of representing the country by collecting and organizing useful domestic information to preserve and provide it to people.

This is why the National Library of Korea will keep striving hard to strengthen its policies and at the same time establish its identity as a representative of the nation that serves as a stronghold of domestic and international exchange.

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