Changing society, role of information professionals and strategy for libraries

Hisamichi Yamazaki, Ph.D.
Chuo University
Tokyo, Japan
hyama@tamacc.chuo-u.ac.jp

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Abstract

The environment surrounding libraries and information centers has been seriously altered because of social and technological change with the following four aspects.

(1) Information technology (IT) has made a great advance with popularizing Internet access and use throughout the world.

(2) The volume of information production has increased to an alarming extent especially on the Web system.

(3) Striking and unexampled changes have occurred in the use of information and information systems.

(4) The value of information itself has been enhanced within an organization as well as in an individual.

From the points stated above, strategic guidelines for libraries and information

professionals are proposed. These would helpful to overcome the environmental changes around them and to bring further development and brighter future to them.

This paper is intended to review the key aspects of the environmental changes now occurring around libraries, information centers and library professionals, followed by a tentative proposal with the aim of making a breakthrough for them in the digital era. We will focus our attention on information professionals (IP) in special libraries, information centers and so on at first. They have been exposing themselves to the risk that the resources assigned to their libraries would be rather easily reduced, influenced by the difficulties in finance and the renewal of management plans of parent organizations mainly due to economic depression. This makes them even more sensitive to efficient and effective management of their libraries. Therefore, by analyzing them, we are able to acquire some "leading indicators" in library services management and human resource management for library people.

1. Environmental change –viewed from four aspects

The environment surrounding libraries and information centers has been seriously altered because of the social and technological change that took place in these ten years. Four types of change trends or the four aspects of the whole change process have been observed which are to be managed and overcome by libraries and library professionals. They are as follows:

(1) Information technology (IT) has made a great advance with popularizing Internet access and its use by people throughout the world.

(2) The volume and the variety of information that are being produced day by day have reached to an alarming extent especially on the Web system.

(3) Striking and unexampled changes have been brought by end-users of information and information systems; one of which is the fact that end-users of information have become able to gather necessary information through the Internet without visiting any libraries or consulting librarians, the other is that end-users' view in information access has altered from a discipline-oriented one to a problem-oriented one.

(4) The value of information itself has been enhanced in business scenes as well as in daily lives.

2. A great advance in information technology (IT)

According to OECD Factbook 2006[1], information and communication technologies (ICT) have been playing the leading role for more than ten years with prominent productivity growth.

In most OECD countries, ICT services have increased their relative share of business services value added because of the development of telecommunication services and software industry. This has brought a general shift towards a service economy mainly because of the achievement of computerization in most industries.

With regard to Internet access, in Korea, Iceland, Denmark, Switzerland, Norway and Germany, more than 60% of households had Internet access by 2004, while in the Czech Republic, Greece, Hungary, Mexico and Turkey, only about one-fifth or less had Internet access by 2004. In general, households with children were seemed to have Internet access at home in 2004.

From this viewpoint, one may say that the key factors in the development in IT are the telecommunication and networking service symbolized by the Internet and computers with the emphasis on software.

3. A tremendous explosion of information

Table 1 shows long term changes of the sales or the use of various information media in Japan.

Table1 Production and distribution of information on various media in Japan, 1990-2000

		1990	1995	2000	*1990*	*1995*	*2000*
					Index number (1990=100)		
Book sales	Hundred million yen	8,660	10,470	9,706	*100*	*121*	*112*
Magazine sales	Hundred million yen	12,638	15,427	14,261	*100*	*122*	*113*
Newspapers	Circulation	51,908	52,855	53,709	*100*	*102*	*103*
Movie theater visitors	Ten thousand	14,600	12,704	13,539	*100*	*87*	*93*
Video software (user expenses)	Hundred million yen	3,862	4,050	4,154	*100*	*105*	*108*
Audio CD production	Hundred million yen	3,233	5,512	5,239	*100*	*170*	*162*
Television industry sales	Hundred million yen	23,967	25,608	29,978	*100*	*107*	*125*
Satellite broadcast sales	Hundred million yen	952	1,300	2,924	*100*	*137*	*307*
Video game software shipment	Ten thousand	5,357	7,190	8,126	*100*	*134*	*152*
Personal computers (hardware) shipment	Hundred million yen	5,859	13,916	21,442	*100*	*238*	*366*
Software for personal computers shipment	Hundred million yen	1,486	3,728	7,056	*100*	*251*	*475*
Host computers connected with the Internet(world)	Thousand	535	8,200	125,888	*100*	*1533*	*23530*
Internet service providers sales	Hundred million yen	434	1,062	7,067	*100*	*245*	*1628*

Online database service sales	Hundred million yen	1,886	1,973	2,916	100	105	155
Postal matters collected	Million	22,815	25,486	26,531	100	112	116
Home delivery	Million	1,125	1,434	2,574	100	127	229
Fixed phones	Million	5,453	6,111	5,226	100	112	96
Mobile phones incl. PHS	Million	138	1,171	6,679	100	849	4840
Car navigation systems shipment	Thousand	128	515	1,609	100	402	1257
Karaoke rooms in operation	Number	52,578	146,400	141,000	100	278	268
Mail order shopping sales	Hundred million yen	17,600	21,100	23,900	100	120	136
Public libraries	Number	1,984	2,297	2,639	100	116	133
Public library holdings	Million	17,498	22,372	28,749	100	128	164

Source: Dentsu Communication Institute, Inc. "A Research for Information and Media Survey" 2006 et al.

We see from Table 1 that information produced through various media has been increasing in volume. Traditional media such as "Book sales" and "Magazine sales marks the index number approximately 110, while audio-visual media(analog) and what are called "complex media" show a little more higher growth of information. Digital media represented by Internet access have been growing very rapidly. The similar trends could be observed in most countries.

The most important point of this argument is that people are now familiar with such digital information media and can employ such media to send and receive various sort of information every day. They keep their hands on much larger amount of information than ever.

4. A behavioral transition in the end-use of information

4.1. From where do they gather information? -- transformation of information gathering activities by end-users

Before the Internet became familiar, end-users had gathered information at libraries

and consulted librarians to have access to information resources. The popularization of the access to information resources on the Internet encouraged end-users to search and get necessary documents through Internet providers by themselves without any assistance of librarians. McDonald, Peter compared this phenomenon to the transition from "Ptolemaic" View to "Copernican" View.[2] The libraries have now fallen to the local nodes in the information network, while they occupied the central place in the center of the information universe in the past.

This clearly shows that end users live in the environment that enable them to enjoy more varied and spontaneous options in seeking information than ever.

4.2. What kind of information do they seek for?—the change of scope in information seeking

The character of our society is becoming more and more complex. This means that the problems or issues we are confronted with become of complicated nature. In other words, the problems or issues that could be solved with the help of knowledge within a single discipline may decrease, while the knowledge to be obtained by the connection or coordination among plural disciplines will be requested to solve most problems. Therefore, multidisciplinary or interdisciplinary information will be needed for problem-solving.

For instance, if we have a problem in the field of physics and wish to solve it, we will refer to the documents and journal articles in physics. Thus, we are able to find a solution of the problem by making use of the knowledge in physics. In other words, we can solve the problem with the information within a single discipline.

On the other hand, if we are going to build and start a day service center for elderly people to realize social care of the aged, we can hardly expect all information necessary for this project to be found in the documents within one single discipline, as we did for the problem in physics. There will be the need for multidisciplinary approaches to it as shown in the following diagram.
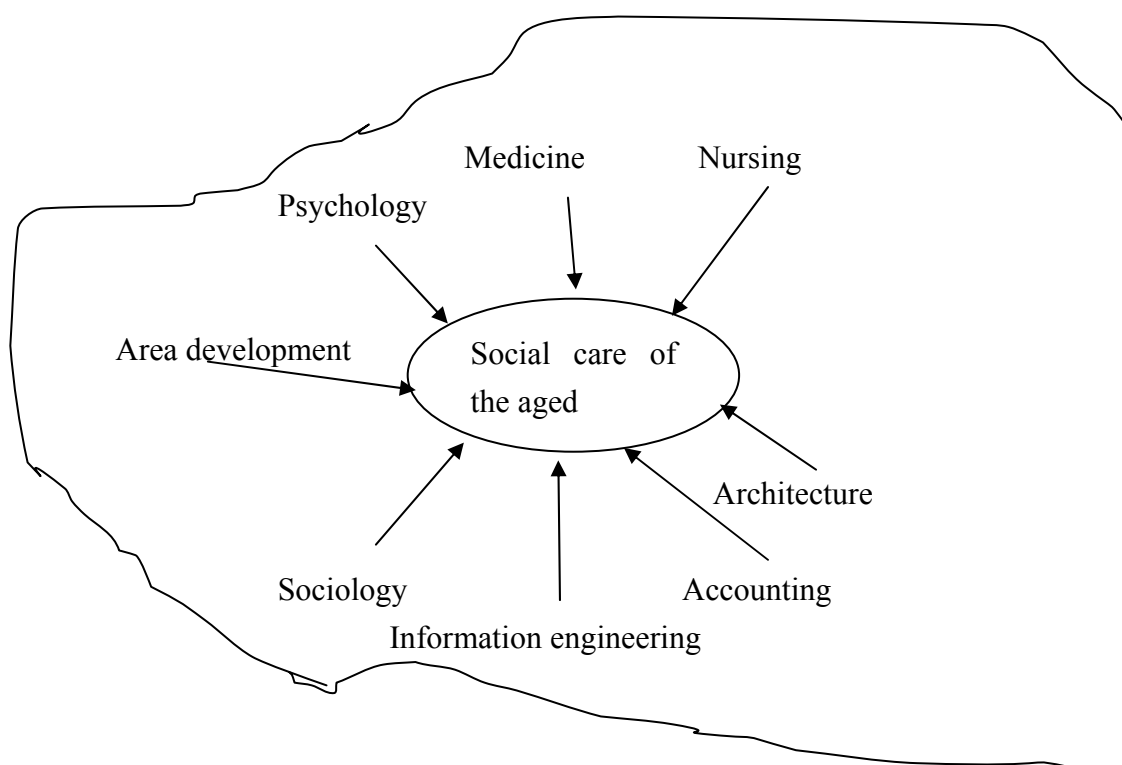
Fig. 1 Multidisciplinary approaches to "social care for the aged people"

Librarians are not experts in a single discipline except in library and information science. They are non-professionals in most disciplines and subjects, yet they have universal and homogeneous knowledge throughout most disciplines as they are walking classification schedules such as DDC and UDC! They are used to grasp the nature of the situation of various current problems from multidisciplinary or interdisciplinary points of view to find some solutions for them.

5. An enhancement of the value of information

Nowadays both on business and in the home, we spend information as a kind of valuable resources like money and energy. We may say that the value of information for individuals and organizations has enhanced to the level beyond the extent we have ever experienced.

There is enough evidence to show that the fact is true. From the macroeconomic viewpoint, the ratio of the investment to information devices and tools to Gross Domestic Product in Japan was 1.74 in the first quarter of 1985, which sifted to 3.35 in

the first quarter of 2000. On the microeconomic side, the corporate rating service industry including Moody's and S & P has grown up to an influential and powerful one in the business world. It can be classified into information service industry. The downgrading by each of such corporate rating services may destroy the companies themselves.

Most of industrial products we consume every day include so-called information cost within their prices. Consider a T-shirt for example. We call a T-shirt "a textile product." What does it mean? Do we pay money for the piece of cloth? The prime cost of cloth prepared for a T-shirt is estimated only 5-10 percents of the selling price of the T-shirt. The most part of the cost is devoted to the designers' fee or royalties on a copyright.   In truth we pay expenses for information instead of cloth through the action of buying a T-shirt. There are other numerous examples of "information-based" or "information-shifted" products.

Failure in information management brought reputable companies to a crisis. Some major companies were in an impasse due to illegitimate accounting, unanticipated outflow of confidential information and the loss or less retrievability of important documents. On the other hand, home delivery services and a chain of convenience stores are profited by enterprise information systems that treat information elaborately and timely.   These cases lead us to the conclusion that information management is a key factor to success in these days.

6. Strategic guidelines for IP

From the points stated above, I would like to suggest some strategic programs as a set of guidelines for libraries and information professionals as follows. These would helpful to overcome the environmental changes around them and to bring further development and brighter future to them.

6.1. Begin strategic planning after an insightful conceptual model.[3]

It is obvious that a library is an organization with various kinds of managerial resources like a company.   This fact indicates that libraries should be managed through strategic planning process.

  The matrix shown below is an example of a SWOT (Strengths, Weaknesses, Opportunities and Threats) Matrix which makes one of the key factors in the whole process of strategic planning for libraries.

Strengths	Weaknesses
Elaborative knowledge and skills to order and organize information Rich experience in reference and information service and searching various databases A bird's-eye view to the present disciplines and subjects	Not deep knowledge and judgment in an individual discipline or on a subject Difficulties to understand end-users' information needs completely
Opportunities	Threats
Explosion of information Problem-oriented access to information Multidisciplinary approach Higher cost to search commercial databases New rights on databases	End-user searching Decrease of bibliographic databases well-indexed The development of search engine services on the Internet

Fig. 2   The SWOT Matrix for Information Professionals

Through making this chart, we realize the present position where IPs are situated on.

6.2. Coordinate existing commercial information services, databases and e-journals to develop a new service from the library

We must redesign our service menu for our customers through thinking functionally. Under the present conditions where the Internet has become very popular for everyone to have access to necessary information, it is important for us to concentrate the service focus to the services which can be served only by libraries or information professionals. For this purpose, we are requested to clarify our service concept and invent a set of new services.

It will be practical to coordinate existing commercial information services, databases, e-journals and IT applications to develop a new product or service from the library. For that purpose, it is needed to refine our eyes to value various IT devices and information services available and examine which can be employed to present an effective library service.

6.3. Examine cost-effectiveness of an individual activity and/or service before determining a service menu.

    When information professionals decide the menu of information services to be offered to users, they should make comparative studies on the balance between the end-users' benefit obtained through the service and the necessary cost for the execution of the service to select the more cost-effective set of services to offer. For that purpose, they may make such kind of table shown below.

**Table 2   The characteristics of individual information service
to be carried out**

			A	B	C	D	E	F	G	H	I	J	K
Benefit that users receive through the support by IP	Educational effect				○	□			□	□	○		
	Problem solving		□	□			□	□				□	□
	Idea generating								□	○			
	Choosing a future course			○	□	○			○	□	□	○	○
	Information search		○		□	□	○	○		□		□	
Resources that have been spent by libraries and IP	Personnel expenses	Expertise	●	▲			●	▲	▲		▲	▲	▲
		Working hour — Service	▲	▲	●		●		●				▲
		Preparation	▲		▲	●	●	▲		●	●	●	
	Monetary resource: Direct cost					●	●						
	Equipments					▲	●	●		▲			

A   Reference and information service
B   Referral service
C   Library use education
D   Printed guide for users
E   Online database search service
F   CD-ROM database search service
G   Readers' advisory service
H   Current awareness service
I   Learners' advisory service
J   Community information service
K   Information and referral service

Note: ○considerably beneficial   □beneficial   ●extremely resource intensive ▲resource-needed

Also a rating service on various websites in academic and professional subjects and consultant-like services based on higher expertise to their customers are also effective and worth examining.

6.4. Consider carefully what types of documents or information can be served successfully and effectively.

There are quite a few types of documents or information to be used for decision-making of a company and other organizations. They can be grouped under many kinds of factors, while two of them are adopted here to show the necessary information for "product development." One is about the descriptive manner of information: numeric information, non-numeric information. The other is about the place or location where the documents and information are produced and circulated: produced inside an organization, published outside an organization.

The table below shows the four kind of areas (A-D) divided with above two factors, where some example documents or information are classified using this schema.

Table 3 Examples of documents and publication needed for new product development[4]

	Non-numeric information(text)	Numeric information
Produced inside an organization	**(A)** Business diaries Reports by branch offices Engineers' memoranda R & D reports Trouble settlement reports Call center reports (customer-contact systems) Customer order sheets Unfitted orders Patent documents Reports by test marketers	**(B)** Sales data of related products including POS data Financial statements Cost accounting data Cash flow data Market research Product tests
Published outside an organization	**(C)** Financial statement Annual reports Patent specification Various kinds of standards Product catalogs Economic and industrial paper articles Economic and industrial magazine articles Trade paper articles Industry magazine articles Science and Technology information (articles and reports) Patent information of competitors Public opinion polls	**(D)** Government statistics Industry statistics Sales data of related products by competitors

Among them, the documents in the area "C" have long and traditionally been collected and served to the users by special libraries, while the documents in the area "A"

are now attracting attention due to effective introduction of knowledge management and the reinforcement of intellectual property management in an organization.

Limiting the argument to a special library or an information center, its mission can be stated as "seeking and acquiring widely and exhaustively documents and information on the conditions and details of the external environment surrounding the parent organization to provide them to the top management, staff and experts inside that organization."   This explains the critical importance of the documents that are located in the area "C."

6.5.   Define the social function of libraries and IP and appeal to people outside

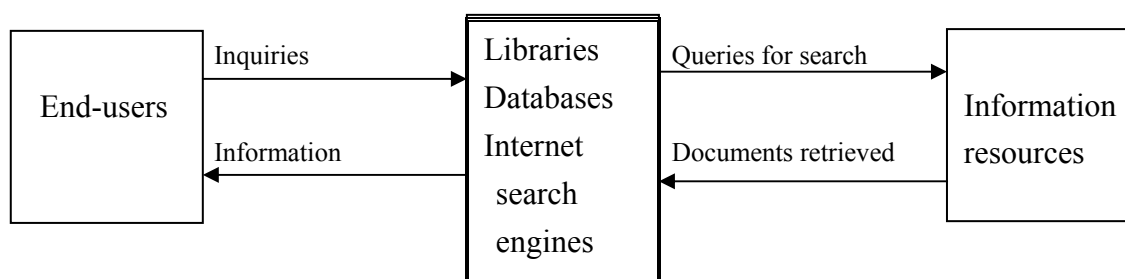Fig.3 shows the function of libraries and associates

Fig. 3   The function of libraries, databases and Internet search engines

As shown in Fig.3, Libraries stand between end-users and existing information resources to act as an agent for end-users to seek and acquire documents or information they want.   In this sense, libraries can be compared to intermediaries in information flow process as databases and Internet search engines can be so.   What IPs in libraries provide end-users with is a strong support on the basis of a skillful and elaborative method of subject access which seems difficult for end-users to realize by themselves in their searching activities on the Internet.

In addition to this, IPs have usually rich experiences in indexing and searching databases, which have made them, at the same time, skillful searchers and careful indexers.   This kind of experience in work may become the basis of building elaborative in-house databases for the internal and managerial needs of the parent organizations to carry out knowledge management and share information among the staffs inside.

What is important is to apply such skills and experiences to the knowledge and document management inside the organizations. This means that IPs are capable to enter into the management of the documents and information in area "A" in the Table 3 if they want and are required. To support problem-oriented or phenomenon-oriented approaches to the text information inside of the organization, it is helpful to construct and introduce a thesaurus for in-house use to gain the capability and performance of indexing and retrieving similar to that of commercial online databases.

6.6. Clarify the characteristics of IP on the basis of human resource management.

The Special Libraries Association (SLA) has released "Competencies for Information Professionals of the 21st Century Revised edition" in June 2003, which included core competencies, professional competencies and personal competencies.

Core competencies are as below:

I. Information professionals contribute to the knowledge base of the profession by sharing best practices and experiences, and continue to learn about information products, services, and management practices throughout the life of his/her career.

II. Information professionals commit to professional excellence and ethics, and to the values and principles of the profession. [5]

Professional competencies include "A. Managing Information Organizations," "B. Managing Information Resources," "C. Managing Information Services" and "D. Applying Information Tools and Technologies." As for personal competencies, it is recommended to keep positive and challenging attitudes to work.

Corrall, S and Brewerton, A proposed a professional competence model, which consists of six parts that include (1)generic personal skills(communication, problem-solving, etc.), (2)professional/specialist information skills(collection development and management, knowledge organization, etc.), (3)IT skills, (4)business and management skills(accounting, budgeting and costing, marketing, etc.), (5)organizational knowledge and subject understanding(culture and climate, terminology of the field, etc.), and (6)personal work behavior(achievement/results orientation, leadership/initiative, strategic perspective, etc.)[6].

An experimental curriculum shown below reflects this competence model. It is to be well applied to post-graduate students.

Introduction to information centers(special libraries)

Management of information centers(special libraries)

Accounting

Cost accounting

Financial statements

Research & development

Marketing

Information system development

Networking

Information retrieval

Databases

Knowledge management

Information service

Project design

Project management

Decision making

Language representation

Subject access and indexing

Fig. 4   A model curriculum for post graduates

McDonald stated that:

I am librarian, and my profession is at a crossroads.   I see ahead a changing landscape, and the going is uncertain.   In truth, I am not sure that my profession will even survive the revolution that is ahead without reassessing how we go about our business.[7]

It will be indispensable that information professionals in the near future are endowed with ability of efficient communication, basic knowledge on business process and literacy on computers and networks.   Besides, they are expected to be leaders like conductors of symphonic orchestras to carry all the members working together with to a single goal.   Information professionals are requested to find optimum solutions in the library service and information management after analyzing the present conditions both inside and outside the organizations.   At the same time, they should put through needed reform permanently with full conviction and bravery.   This would certainly suggest brighter future for libraries and information professionals.

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