

Full Length Research

Providing a suitable model for Selective dissemination of information services (SDI)(Case study: libraries and information centers in Iran)

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Purpose: This study attempts to examine the ways to provide selective dissemination of information(SDI) in libraries and information centers, and study the services in the 16 Iranian libraries then, comparing the practices employed by the process of providing these services, to offer an excellent model(pattern).

Research Methodology: For this research, a survey methods applied have been used. First, through the study of literature in this field of SDI service delivery process and criteria specified. Second, getting information about SDI service in centers under review, a questionnaire consisting of preparation of standards achieved and provide information on practices in the service centers, were collected under investigation. Using statistical softwares to analyze the data. The study includes 16 Iranian libraries and information centers in the service provider which were identified through web search.

Findings: Research findings indicate that the issue most libraries and information centers under review in SDI services to the semi-electronics. Overall, the 16 centers under review, in 13 centers (81.2%) process execution services as semi-electronics, 2 centers (12.5%) all stages of the electronic and 1 center (6.2%) of the process, the services to the traditional method completely runs. But according to the percentage of the implementation process can be said that the traditional method in all centers an average of (20.8%) to traditional processes are implemented and the percentage using electronic methods to reach 49%. Also, it was found: significant correlation between the type of resources used to implement selective dissemination of information services and practices in the implementation of this service centers there. And between the practices employed by the Centers for significant differences in the service implementation process is seen. Finally suggestions for future research presented.

Conclusion: Most information centers under consideration in this study use the half way electronic selective dissemination of information services. Then, Expert staffs provide services to users with the help of electronic tools. Due to the supervision of expert staff, the best method for providing services is the one existing now.

Keywords: libraries, information centers, reference services, current awareness services, selective dissemination of information services

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INTRODUCTION

Universities, research centers and most teaching and researching institutions hold and produce periodically loads of knowledge and information. Besides their own knowledge, these institutions are always looking for new means to access documents from the same areas kept back in other research centers. This wealth of knowledge must be properly organized and disseminated in order to maximize its use (De Giusti et. al., 2010).

Excessive expansion of the factors of production, use and dissemination of information and the emergence of the information society, scholars approach has changed from general investigations to specialized subject matter. This phenomenon has led to develop new services and new special features such as "Selective Dissemination of Information (SDI)".

Quoting Luhn one of the pioneers in this field, Koomar (Koomar, 1989:109) quotes: Selective Dissemination of Information (SDI) is a service with the task of directing new information items from different sources into the spots in the organization where they can be more useful to serve the interests and needs of individuals. These services are trying to prevent the unbalanced distribution of new information and reject the risk due to the lack of communication.

Nowadays, many of required interests of people are available on the web. People can easily find the information, but at the same time, they should overcome the increasing problem of information overload. So they depend on the specialized tools and systems designed to search, query and retrieve web data. Selective Dissemination of Information is a good mechanism which can help users to solve this problem.

In an SDI scenario, a user posts a profile or continuous query expressing their information needs to the system in order to receive notifications whenever certain events of interests take place. (Koubarakis et al., 2003)

This system acts as a middle-ware. Infact, user posts his query or profile to this middle-ware. The middle-ware receives new incoming information and decides whether it matches stored user profiles and delivers it to the interested subscribers. (Tryfonopoulos, 2003)

The main goal of SDI device is providing appropriate information according to researcher's field of interest and saving time and labor in the process of finding information.

The main objectives of dissemination services can include:

1. Updating information of researchers
2. Prevent parallel execution and replicable research
3. Saving time and labor in the stage of data gathering
4. Helping the researchers in scientific research

Pao (1387:366) believes that all the SDI systems have common components in their projects. These activities include users 'research profiles matching with relevant documents, inform, feedback and review users 'records with index records.

In general, these services include the following steps:

1. Needs assessment, which is done through questionnaires. The user can add or delete requirements provided in other settings. This option can guarantee informational support (Mousavi Chelek,2001);
2. Construction of research profile;
3. Selecting appropriate descriptors from existing thesaurus according to subject content of each profile to prevent false loss (Jafar Beiglou,2002);
4. Scanning new documents and resources include periodicals, books, seminars' abstracts, reports, patents and databases;
5. Selecting documents in terms of users' interest (matching action between users' interest and subject content of new documents);
6. Sending resource sat any form of information distribution : in person and hand to hand, telephone, post, e-mail; providing awareness bulletins, indexes and abstracts (Mousavi Chelek,2001);
7. Evaluating services in order to provide convenient services to users.

Due to the process of SDI service, its offering styles can be different; however, this difference appears in deployment of new hardware and software technologies. Providing this service traditionally or performing it with designing special software and using electronic databases or using a combination of these two methods can be effective in performing these services in an information center. However, using each of these methods requires specific study of the information center who wants to offer these services and considering its conditions. Thus, understanding the ways to establish these services appears essential.

The aim of this study is to identify methods of providing SDI and compares different ways of employing these methods for implementing these services in libraries and information centers in Iran which can reveal the most use of these methods.

After receiving the necessity of SDI service by libraries and information centers and deciding to launch this service, its feasibility according to the facilities and special users of each library and information center is required. In this regard, choosing the best way to provide SDI services which requires the identification of possible

ways to implement such service is necessary. Information in this field determines that these methods each have their own characteristics and conditions and selecting any way is possible after careful review and investigation by information professionals.

According to studies, it was found that there is not any information about these methods and their implementation criteria. Identifying these methods and its implementing conditions can be helpful for libraries and information centers in selecting the appropriate method in accordance with their information condition, software and users.

Reviewing of employed methods in the service providers and comparing them was determined as the main issue in this study. Of course, requirements and infrastructures of employing each method can be studied in additional research.

In this study, using available literature on SDI services, the development process of these services in particular will be discussed. This process consists of procedures and standards related to them. The stages of this process in the information centers and libraries in this study will be compared to the identified process and the amount they match with each other will be specified.

Questions raised in this research are:

1. What type of materials is used for SDI service in the information centers?
2. Are standard procedures used for collecting information from users and providing research profiles in the information centers that provide SDI service?
3. How is the administrative procedure in SDI service in the information centers which provide this service?
4. What is the role of information technology (software, information databases, data mining techniques, information classification methods, system design and content management system) in providing SDI service?
5. Does recognizing the necessity of SDI service by the information centers' administrators seems effective in providing this service?
6. To what extent the information centers who provide SDI service would like to implement this service electronically?

Studying literature review in outside of Iran shows the importance of SDI services and the need of researchers to get the required specialized information quickly in their subject area.

Keenan & Montgomery (1995) in their article entitled "Electronic selective dissemination services using CD-ROM of databases" described how automated selective

information dissemination services are provided using optical disc databases.

O'Neil (2001) in his thesis about selective dissemination services on the Web, refers to an important aspect supporting application of continuing query system.

Neto and his colleagues (2003) in their article entitled "The development of automated selective dissemination of multimedia information" about the necessity of it imply that developing media resources requires efforts to develop electronic systems in selective dissemination of multimedia information services.

Jabir Hussain and Islam (2008) in their joint paper entitled "Selective dissemination of information service: A conceptual paradigm" discussed the traditional and online procedures of SDI services. They formulated a technique for matching between user's subject interest and document profile with exploration along with electronic delivery of voluminous information techniques. They also explore some requirements for performing online SDI service.

Azim and colleagues (2009) in an article present Starburst, a routing-based protocol designed to efficiently disseminate data items to small subsets within a sensor network. This protocol dynamically determines what portion of nodes need an update and locally adapts its delivery policy accordingly. In this way efficient selective dissemination carries out without transmitting updates to all nodes in the network.

According to Nosrati Ardekani (2007) in his thesis, one of the main types of current awareness services is SDI service. His main goal in this study is designing a database specifically for SDI service through e-mail for faculty members of Chamran University and based on their comments.

Kiani (2007) in an article, studied the nature and types of current awareness services and SDI services. He has also listed the benefits of providing this service in the electronic environment.

According to Ahani and Azimi poor (2009), the reason of using SDI services in data centers these days and its connection with knowledge management is the accelerated growth of scientific production that is causing the phenomenon of information explosion. They have also studied different methods to meet the information needs of chemical engineers employed in the petrochemical companies located in Special Economic Zone Mahshahr.

Porcel and et.al. (2012) in their paper have a recommender system presented the selective dissemination of research resources. Recommender systems could be used to help users in their access processes to relevant information. Hybrid recommender systems represent a promising solution for multiple applications. In this paper we propose a hybrid fuzzy linguistic recommender system to help the Technology Transfer Office staff in the dissemination of research

resources interesting for the users. The system recommends users both specialized and complementary research resources and additionally, it discovers potential collaboration possibilities in order to form multidisciplinary working groups. Thus, this system becomes an application that can be used to help the Technology Transfer Office staff to selectively disseminate the research knowledge and to increase its information discovering properties and personalization capacities in an academic environment.

RESEARCH METHOD

This study is a survey- descriptive study. The research population in this study includes 16 centers which are providing SDI services to their clients with different methods.

These centers are: (Table 1)

Research data are collected by the questionnaire included 42 open and closed questions including criteria determined by the researcher in the process of providing SDI services. These criteria are: Determining type of information resources, constructing research profile, the process of service implementation, method and type of sending information, software and databases used to provide these services and statements in information center manager's role in the implementation of these services and management of SDI service.

For validity of the study, the questionnaire is given to be studied by 5 people out of professors and experts of library and information science. After editing the questionnaire considering their comments, the validity of it was approved.

In order to assess the reliability of the questionnaire identified, after entering data into SPSS software, Cronbach's α coefficient value was 0/90. Considering its standard criteria, the reliability of the questionnaire was approved.

To conduct this research, for the first step, centers providing SDI service in Iran have been identified. Initial recognition was performed through internet, information centers and libraries' websites and their services. Then the questionnaire was distributed among them. After receiving information and classifying them, using statistical software (SPSS) data were analyzed.

FINDINGS

Here findings were provided according to research questions.

First question: What type of materials are used in the information centers for SDI service?

Information stored in libraries and information centers are

different: printed materials (books, journals, dissertations, reports, and other documents), electronic resources (information saved in CD-ROMs, databases and ...), digital resources (resources available for use in digital libraries). Libraries according to their policies and goals use these resources to provide services for their clients. SDI service are such services that is based on these resources. Identifying new information resources available in libraries and information centers are the first step in launching SDI service. These resources include printed and electronic resources that need to be identified by experts and using subject thesaurus, their proper descriptors should be determined. For the next steps, these descriptors can be used to send the required information to the researchers. Table 2

Findings in this step is showed that 15 centers (93.8%) use electronic resources for their SDI service and just one center mere use the printed resources for providing this service. In between, two centers use printed resources in addition to electronic ones.

Considering overall increase in electronic resources in libraries and information centers and also particular users' interest to these resources and being more accessible and easier to update than printed ones, it seems logical.

According to data provided in this research about using thesaurus for determining descriptors in information centers, it can be expressed that 3 centers (18.8%) use thesaurus to determine keywords associated with their information resources; and 13 other centers (81.2%) do not reply to this question because they use electronic recourses.

Finding of Second question: Are standard procedure used in the information centers who provide SDI service for collecting information from users and research profile? After determining the type of information resources in the process of SDI service, research profile is the first step in launching this service. Because it illustrates the user's information needs and is considered as the user 'scientific profile. Table 3

For determining how to implement this step in the process of providing SDI service, the second part of the questionnaire has been developed which includes six questions on how to implement this step by these centers.

According to the result of this part of research, most centers (13 centers) provide research profile electronically using specific software designed for this service.

Finding of Third question: How is the administrative procedure in SDI service in the information centers which provide this service?

To answer the third research question, the third part of the questionnaire has been developed in which

Table 1.

1. Research Center of IRIB	9. Library of Imam Reza University
2. Organization of Agricultural Research and Education	10. Central library of Arak University
3. Library of Vice- Presidency for Strategic Planning and Supervision	11. Central library of Shahed University
4. Library of Central Bank of Islamic Republic of Iran	12. Library of Tehran Faculty of Education
5. Library Information Network Oil and Energy	13. Central librant of Power and Water University of Technology (PWUT)
6. Digital Library of Isfahan Municipality	14. Shiraz Special library of Science and technology
7. Library of Isfahan Art University	15. Islamic Information Center
8. Central library of Birjand University	16. Iranian Research Institute for Information Science and Technology (IRANDOC)

Table 2: Types of paper used by service providers Selective dissemination of information

Type of information option	Electronic Resources (Frequency)	Print(Frequency)			
		Book	Journal	Content	List of News
Yes	13	2	1	3	2
	(%81.2)	(%12.5)	(%6.2)	(%18.8)	(%12.5)
No	3	14	15	13	14
	(%18.8)	(%87.5)	(%93.8)	(%81.2)	(%87.5)
Total	16	16	16	16	16
	(%100)	(%100)	(%100)	(%100)	(%100)

Table3: Summary of SDI centers in the process of research profile

Phase	Option	Function	
Creation of Research Profile	Type of research Profile	Electronic	%56.2
		manual	%12.5
		manual-electronic	%37.5
	Access to user information	Electronic Form	%81.2
		Reference Interview	%43.8
		Statements and Publications	%12.5
	Recorded	Fixed Profile	%6.2
		Learner Profile	%68.8
	Use a thesaurus for documentation of user requests		%50
	Use reference materials to complete the scheme subject		%56.2
	List of email users	Electronic	%81.2
		manual	%6.2

administrative procedure in the project of SDI service has been studied.

The administrative procedure in SDI service is divided to different stages: implementation, output, evaluation and facilities. In each stage some criteria is being

studied. In the implementation stage, search strategy and matching information resources to user needs; in output stage, informing method and providing statistics; in evaluation stage, sending user profile, type of transmitted information, type of sorting information, feedback style,

Table 4: Summary of centers in the process of selective dissemination of information-Implementation process

Phase	Option		Frequency	
Execute phase	Search	strategy	Search Groups	7 %43.8
			Special Search	6 %37.5
			Performance feedback	8 %50
			Modify the search process	8 %50
	Adapted to the needs of users of information resources		Implementation and selection specialist	9 %56.2
			Adaptation and selection by computer	7 %43.8
Output	Method Send		Email	14 %87.5
			Presence	5 %31.2
			Telephone, personal page, automation	4 %25
			Information Bulletin, preparing abstracts and indexes	2 %12.5
	Preparing	statistics	Monthly	6 %37.5
			Annually	9 %56.2
			Monthly- Annually	4 %25

Table 4: Continuation of Table 4

Evaluation	Send research File to the user		4	
			%25	
	Type of Information	Bibliographic Information	13	
			%81.2	
		Full Text	3	
				%18.8
	Bibliography and Full text		11	
			%68.8	
	Way to Sort Data	Title Alphabetical	3	
			%18.8	
		Relevance of the topic	7	
			%43.8	
	Publication date		6	
			%37.5	
	A combination of methods		2	
			%12.5	
	Date of Send	Daily	6	
			%37.5	
		Weekly	2	
			%12.5	
Two Weeks		2		
		%12.5		
Monthly		2		
		%12.5		
Feedback	Electronic Form	6		
		%37.5		
Face to Face		4		
		%25		
Correction of records Based on the feedback		11		
		%68.8		
Changing or adding keywords that a user wants		15		
		%93.8		
Continuous Evaluation		10		
		%62.5		
Facilities	Document Delivery	Specific file type	5	
			%31.2	
	The user requested file type		9	
			%56.2	
	Translation	Specialist translation in other languages	1	
			%6.2	
Tell Specialist in other Language		1		
		%6.2		

editing profile or keywords according to feedbacks and continuous evaluation and in facilities stage, type of transmitted file and translation are being studied. Table 4

According to information provided in this part, it can be said that in most centers (11 center, 68.8%)

administrative procedure of SDI service is performed as it is defined. In this procedure, some facilities can be considered for users in order to access and download the correct and accurate information more effectively.

Table 5: The Management

Phase	Option	Frequency	
The Management	Standard Service	6	
		%37.5	
	Range of Service	Members	9
			%56.2
		Public	6
			%37.5
	Managers think about expanding the range of services	Compliant	9
			%56.2
		Against	4
			%25
Role of the management	Important	16	
		%100	

Finding of Fourth question: What is the role of information technology (software, information databases, datamining techniques, information classification methods, system design and Content Management System) in providing SDI service?

Today, with the arrival of computers and advanced softwares in various scientific fields, the processes carry out fast and more accurately. The use of computer techniques and applications in library and information centers' services as information services, is evident. The use of softwares, increases the speed and accuracy of different stages of SDI service (from receiving user information, matching their needs with the available resources to selecting documents and related information needs, as well as sending information and receiving feedbacks and evaluating). Also the use of softwares cause the statistical process and monitoring services to be performed with greater speed and accuracy.

In order to answer to the fourth question concerning the role of information technology in the process of SDI service in centers and libraries under review, nine statements as "soft stuff" is prepared. Existence of special software for these services, technical features of the software whether local or web-based, using specific databases, the classification techniques in databases, data mining and artificial intelligence techniques as well as specific web sites and their use of the modules available in this area are being investigated in this part. The results show that that only 4 center out of studied centers, use specific software designed on their website.

Finding of Fifth question: Does recognizing the necessity of SDI service by the information centers' administrators seems effective in providing this service?

Another issue that was considered in this study was to understand the place and role of managers in SDI services which have been investigated in two aspects of

these process, codifying this service based on the specified principles and criteria, and determining the extent of providing the services. Based on the collected data it was found that only 6 centers (37.5 %) have special regulation to provide services and it seems to be necessary for providing better services. Table 5

Finding of Sixth question: To what extent the information centers who provide SDI services like to implement this service electronically?

The results show that SDI service provided in more selected centers are provided semi- electronically. In 13 centers, SDI services performs semi- electronically, 2 centers provide this services fully electronically and one center provide it traditionally. Infact, most part of SDI process in studied information centers in this research are performed electronically with the help of computers, softwares and special electronic methods.

CONCLUSION

With the many advances made in the fields of information science, and the changes occurred in the storage of materials with more quality and in high volume, information centers and libraries are biased toward more electronic resources.

The results of this study indicate that the majority of information centers in this study (93/8%) use electronic databases as the resources for SDI services and only 2/6% of these centers use printed recourses.

In the step of construction of research profile, given the cited data, it can be concluded that the preparation of research profile electronically – as it is showed in the result of this study- seems to be necessary according to the current needs of the increasing number of users and the necessity of saving time. The format of this

information should be considered flexible for probable modification or change in research profile. Also, it should be possible to use thesauruses and references for the content terms of research profile. It needs to be mentioned that in all the information centers in this study, the stage of construction of research profile is in an acceptable level.

According to the results of this research:

1. all the studied centers are acceptable in the administrative procedure in SDI service except for the feed back of search procedures. And finally, in 62/5% of these centers, continuous evaluation is being done. According to the important role of evaluation stage in improvement of their future services, it should be more considered by the information centers.

2. Discussing the softwares used by information centers for SDI services can be said that only 4 center out of studied centers, use specific software designed on their website. This is very few. Therefore, this issue requires more emphasis on the use of software facilities by the information centers who provide this service.

3. General questions about the role of managers in the SDI services showed that position and role of managers of libraries and information centers is very important in providing library services. So that, performance procedure of these services is affected by decision-making of manager.

4. According to the results of this study, SDI service are provided semi- electronically in more selected centers in Iran. Thus, some of the SDI service steps is performed by information professionals and some others are done by computers.

5. Usually things like surveys, constructing research profile, and also determining keywords related to information resources and needs of users are done by professionals and with their supervision. However, in a few centers these steps are provided fully electronically and the professionals only monitoring the processes.

Of course, in future with increased new technologies in libraries and information centers and having managers familiar with the services of information presentation and its applications and increased their number of different needs of users, libraries and information centers are being forced to use new technologies in order to provide services fully electronically more than ever.

Finally, according to findings this studies the proposed model for the selective dissemination of information services are provided:

SDI Steps	Suggestions
1. Management	<ul style="list-style-type: none"> - Having managers who are familiar with the field of library and information science - Feasibility study of providing SDI services according to users' needs and library and information centers' goals and policies - Using information professionals - Documenting SDI services
2. information resources	<ul style="list-style-type: none"> - Identifying the type of information resources - Identifying keywords related to information resources using subject thesauruses
3. research profile	<ul style="list-style-type: none"> - providing electronic forms for user information - constructing research profile based on work procedure (profile learning)(Amati& Crestani,1999) - using subject thesauruses for determining keywords related to needs of users - using references and encyclopedias for completing user' s research profile - preparing electronic list of user's addresses - developing research profile with the help of subject professionals and experts - constructing research profile electronically
4. Administrative processes	<ul style="list-style-type: none"> - Selecting appropriate search strategy based on goals and politics of information center - Receiving feedback after sending information to the user in order to find out usefulness of search operation - Verification and modification of search strategy according to the received feedback - Matching subject keywords of information resources with subject interests of users - Selecting relevant documents based on subject interests of users by computers with oversight of specialists

5. Output and evaluation	<ul style="list-style-type: none"> - Sending Information to user through email or user's personal page (first priority), telephone or in person (second priority) - Providing statistical report on system function monthly - Sending required data along with his research profile in order to find the amount of relationship between delivered information and user's need - Sending bibliographic information with links to their full texts - Sorting bibliographic information based on related subjects and publication date - Evaluating of offered services according to statistical reports of system function - Receive feedback electronically with creating a feedback option at the end of sending information form - Modifying research profile according to received feedback
6. Facilities	<ul style="list-style-type: none"> - Sending required information to users based on specified file type in their research profile - Providing translation facilities by subject specialists in other languages
7. Softwares	<ul style="list-style-type: none"> - Using web-based software for providing SDI services or designing special module based on library requirements - Using appropriate database and programming language - Using inter-organizational systems for better coordination with other sectors - Designing website using content management system

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