CHAPTER 1
INTRODUCTION

Fast growth in the number of publications every year is causing serious difficulties for
the users. It has become almost impossible for the scholars to keep themselves up to
contains information about nearly 164400 periodicals that are published throughout the
world. The problem is further complicated because of the nature of most of the books,
periodicals, reports and other sources of information. Many a time a number of these
documents deal with not a single concept, but cover a variety of subjects, ideas and
issues. Despite this position, it is necessary for scientists and researchers to know:
1. What materials are produced in a particular subject?
2. Where is the desired information located in each document?
3. Whether the information would be really useful to them?

About all this, every scientist and researcher wants to find out and locate the
material regularly and as quickly as possible. In such a situation, various types of
information services come to the rescue of the users. "Indexes" are a kind of
information services which provide guides to material that the user may wish to recall
or that he may not know exists; that is, indexes are used for questions of recall or
discovery. Without indexes the searchers would waste time by turning through
documents page by page. Indexes save time and make practicable searches that would
otherwise be given up (Bernier, 1968). Hence, indexes are necessary to facilitate
retrieval of information. Most information systems that are currently available require
an index, because sequential or random retrievals to satisfy a request is prohibitively
time consuming (Fidel, 1994).

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To provide an index, indexer draws significant and important keywords from the text or assigns descriptors to state its concept. These words – singly or in combination called variously keywords; descriptors or index terms (Svenoniues, 1994 and Bose, 1986) -are assumed to be useful and valuable for users and are arranged alphabetically. Bibliographic information about each article, report, dissertation or other kinds of documents, which contain keywords, is mentioned in the index. Since indexes are keys to contents; more points of access an index has, more useful it would be. A good index provides enough access points, from author and title to subject and publisher, to allow the user to find precisely what is needed (Katz, 1992).

There are many kinds of specialised indexes. Such as index to formulas, organic rings, taxonomic names, names of organizations, corporate authors, words derived from titles of documents and citations. The most common types of indexes are name indexes and subject indexes.

An “abstract” which is an abbreviated, accurate representation of a document, serves as a surrogate to a primary source and helps in saving time as well (Borko and Bernier, 1975). Abstracts provide clues to the relevance of materials. By using an abstract a user would find whether a document would be useful and relevant to his study or not. Therefore, in many cases it is not necessary to refer to the original text. So, it prevents wastage of time. Furthermore, due to worldwide coverage by abstracting services, now researchers in various fields are informed of all-important materials, which are published in different languages throughout the world.

As Katz has noted, by the 1990s, more and more general indexes offered abstracts. In fact, students and laypersons are now so used to abstracts that they prefer, where possible, to use only indexes which have this feature (Katz, 1992).
Functions of indexes and abstracts

The primary purpose of an index is to permit users to locate particular information. In fact, an index is an indicator of content and location. With this purpose in view, two functions of indexes that could be considered are:

1. In a separate document such as a book or even a collection an index is a systematic guide to items contained in or concepts derived from it. In this respect index is a list of names and subjects in an organised order, usually alphabetical, with reference to the location in the text. Besides, the index must bring together cognate items that may be scattered in the source (Rothman, 1977).

2. To find suitable documents among a mass of produced information, an index is a bibliographic tool, which guides scholars in access to the desired materials.

Meanwhile according to Bernier (1968) "beyond serving as guides, indexes provide, in a highly compact form, useful information about a person or field. A general view of a subject area can be obtained from a subject index" (Page 169).

Abstracts are an extension of indexes. They are closely related in function to indexes in locating and recording the content of documents. Abstracts "comprise not only the citations with bibliographical details but also provide summaries of the contents of publications or articles. Thus they organize the primary literature in most convenient form" (Sewa Singh 1997, Page 242); and “help in bringing information to the notice of those who need it rather quickly” (Krishan Kumar 1989. Page 32).

Finally, indexes and abstracting services are systematic listing of works that tell where information can be located (Bopp and Smith, 1991). As such, the major function of abstracting and indexing services is two-fold:

a. To facilitate retrospective literature searches and,

b. To satisfy the current awareness needs of scientists (Subramanyam, K., 1979).
Future of indexing

There are about 4,000 indexing and abstracting services in the world (Katz, 1992), which are used in libraries, information centers as well as databases. Most of these services are produced in machine readable form. In spite of those who believe that the life time of printed indexes is going to expire, another opinion is: “indexes in print will continue to exist for at least as long as paper books exist” (Milstead 1994, Page 577).

Recent developments in information technology, resulting in electronic information services have improved indexing. Based on Lunin’s and Fidel’s idea:

“...The design of an information system assumes that the system has one or more users who will search for information, using keys appropriate to that system. Although the technologies to process information have become infinitely more sophisticated in the later part of this century, recognition that indexing is critical to the efficient operation of systems is not new. Early-to mid-20th century systems concentrated on various techniques such as meta-languages and codes to characterize documents and to make them amenable to systems then available, such as punched cards. Keys in one form or another are still needed, and new kinds are called for because technologies today make it possible to process and store many more forms of information than text or numeric data. These new forms such as images; photographs; video, still and motion; multimedia; and sound-pose new challenges to indexing”.

Consequently they concluded that indexing is consistently essential for information retrieval while information technology becomes more and more developed and complicated:

“...The rapidly developing Internet and the increasing number of databases worldwide emphasize the importance of good indexing as well as the growing complexity and difficulties in that analysis. Examples of these complexities are systems to index e-mail messages that administrations must by law save, and authentication of documents in digital form to verify the original or indicate a modification. While technologies ranging from smart cards to supercomputers and software with gophers appear to receive the most attention at conferences and in publications, the heart—indeed the soul—of many systems is the indexing, whether automated or human” (Lunin and Fidel 1994, Page 570).

But as Wellisch (1994) points out:

“It is often necessary to index terms that do not actually appear in the text, yet are needed to lead users to topics that are only implicitly expressed... However, in the indexing of humanities, particularly in philosophy, history and literary criticism, as well as in the indexing of biographies and narrative prose, the provision of terms not found in the text but only implied is often crucial for the effective retrieval of topics by means of an index. Needless to say, terms for implied topics can be assigned only by human intellectual effort, since no algorithm or artificial intelligence device can generate terms that are not in the text itself” (Pages 620-621).
So, he believes human indexing is still necessary for every information system and service. Milstead (1994) also has the same opinion:

"Indexes continue to be both compiled and used by humans, and there is no evidence that this situation will change in the near future. While databases that have no human indexing are available, there is even a tendency for some human effort to be added to these" (Page 577).

Internet and Indexing

The Internet, particularly its World Wide Web (WWW) facility, has made information resources available to a wide audience of potential users on a scale that would have been unimaginable as recently as a decade ago (Lancaster, 1998). WWW with its multi million users is without doubt the largest and most used information system. Recent researches have shown that the current methods of accessing Internet resources fall short when it comes to the locating discrete pieces of information. So that Miller (2001) compares users as well as professional searchers to the lone fishermen; they do not know what they would catch – neither can be sure that their catch is maximal (P. 333). Casey (1999) declares one solution to this problem is creating analytical indexes to the Internet:

"Just as a library of uncataloged, haphazardly shelved books is of little use when searching for a specific book, the web will never be a true research tool and resource until a means of directly accessing discrete pieces of information and digital objects is developed. It is clear that the information highway will not magically sort itself out. One solution is to rethink the way the Internet, especially the web, is currently accessed… through an analytical index” (Page 587).

Some individual websites have their own indexes, of varying degrees of quality and many resemble back-of-the-book indexes, while broad subject guides or directories to Internet resources have been prepared. Much software has been designed to allow users to perform relatively specific subject searches of these resources. The browsers primarily the "Netscape Navigator" and the "Internet Explorer", provide the initial level of access. A number of search tools are available through any browser. These tools are
called "search engines", and hundreds exit. A search engine on the Internet or on the Web is a retrieval service consisting of databases describing mainly the resources available on the Web. Search engines operated by building indexes to the network resources by the extraction of words or phrases from the text itself and the building of files that permit the searching of these extracts using Boolean and sometimes other approaches. As Chowdury (1999) describes the present day search engines use a program called a robot, a wanderer or a crawler, to traverse the WWW, following links between pages. Whenever a page is found, it is copied back to the site running the traversing program and is added to a database there, for later indexing to create a keyword search engine at that site.

The primary search engines, such as Infoseek, Altavista, Yahoo!, and Excite, have different approaches to gathering information web sites and providing classification of the results. For example, some only search on a supplied keywords, and other search the entire document on the website. Most provide a scoring as to the appropriateness of the retrieved sites to the desired search word. There is no standard approach; the challenge for the researcher is to determine which keywords should be used in order to find the proper sites (Howen, 1999).

In some search engines a software package automatically indexes the pages. Automated indexing is based on (a) only title words, which offer a rather limited approach to retrieval (e.g. lack of linking of semantically related terms) or (b) searching of full text that is now becoming common, but is likely to present problems of relevance (Foskett, 1996). Though Internet indexing methods have heavily favoured full text over other types of indexing, full text search results in lower precision ratios (number of relevant and retrieved/total number retrieved) than keyword search for bigger databases (Blair and Maron, 1990). Some studies focus on reduced recall (number of relevant and retrieved/total number relevant) for free text searches because
in full freedom of natural language, similar concepts may be described by different
words (see Lynch, 1997; Sievert and McKinin, 1989). Thus it can be assumed that the
increasing size of result sets will render full text search of documents published on the
Internet, or other very large electronic document collections, increasingly impractical
and inefficient (Bodoff and Kamil, 1998).

The subject approach to information, which has traditionally been controlled by
library and information professionals with the help of classification, cataloguing and
vocabulary control tools, is an important area of research in the Internet environment.
The recent development in the Internet and web have brought new challenges to
information professionals to provide subject access through classification and
controlled vocabularies for resources on the web (See Hodges 2000; Chowdhury 1999;

"The attempts to solve the problem of information indexing and searching on the
Internet by new methods have yet to yield the desired results. All that currently
exist in Internet indexing and searching tools possess a number of substantial
properties, which, on the one hand, often deliver inconceivable volumes of
information to users and, on the other hand, Internet searching qualitatively affects
search results from the standpoint of scope and relevance (Page 332).

This author suggests to construct a thesaurus with the features:
1. Include the maximum number of terms and their synonyms.
2. Be based on objective relations between terms.
3. Be multilingual.
4. Be hospitable for new terms (P. 334).

Finally, Miller concludes "Neither computers nor the Internet can replace a person at
the stage of semantic processing of information; they can only qualitatively lighten this
process. There is not, nor can there be, available in formation search without its
semantic processing, especially during its geometrical progression" (P. 333).
Growth of Publications in Iran after Islamic Revolution 1979

The number of publications from a country could be criteria for measuring its scientific and economic developments. There has been a considerable increase in the number of publications and information sources from Iran after the Islamic Revolution. An overview of the publishing situation in Iran in recent years indicates:

- Increase in the literary warrant of social sciences, literature, humanities, science and technology (National Bibliography of Iran 1970–).
- Increase in the number of periodicals: daily newspapers, general magazines, and scientific journals. (Directory of Iranian Periodicals and Newspapers 1968–).
- Foundation of several government organizations and their agencies, which publish books and documents related to their specialised fields.
- Undertaking of publication work by a number of universities. Textbooks, academic journals, reports of the research projects, graduate thesis and dissertations are a significant part of information products. Due to increase in the number of students and founding of new universities the number of such publications has increased manifold during the recent years.
- Establishment of a number of research institutions that have started publishing results of their activities and researches in the form of reports, monographs, journals, etc.
- Enormous increase in the number of seminars, conferences, congresses, etc. held every year. Papers and proceedings of such activities are also published generally. These kinds of publications have also added to the growth of publications in Iran recently.

Development of indexing and abstracting in Iran

Need for easy access to the information has led to developments in indexing and abstracting. After the fall of monarchy and establishment of the Islamic Republic, Iran is marching on the road of economic, scientific and technical development. Due to the role of information in research and development, information services are now
considered more important than ever before. During 1980-1988 a war was imposed on Iran by Iraq. To oppose the enemy firmly, supplies and equipment were required to be made available to the army regularly and in sufficient quantities. For this purpose research and studies in the field of military science, industry, construction, medicine, surgery, agriculture, transportation, communication and in related areas became necessary. To continue and improve these services and activities; researchers, scientists, and research institutes sought relevant information about such activities.

Hence, it became necessary to find out better means for quicker and comprehensive access and searching of documents already available and to use the results of research and development activities. To achieve this goal and to meet the enhanced needs of information in the country:

- Several new information centers were founded to undertake this function by providing databases and other information services. The result was the production of a number of indexing services in general as also in specialized fields.
- Most of research institutions and some libraries started supporting a documentation center. Some of these centers provide databases, which are accessible at the center only.
- Historical research centers and archives started processing the documents relating to the social activities and historical events of the country pertaining to the period prior to the Revolution. These documents are used by a number of scholars as well as the public.
- Some scholars, especially in humanities such as history, literature, and religious study started preparing indexes and concordances for scriptures and important books in the fields of their interest. Most of these documents are used as basic material and some of them as textbooks. These concordances, therefore, come handy as sources of information retrieval and reference work.

Therefore, growth and development of documentation centers, indexing, and abstracting services, indexing techniques and tools became imperative.
Statement of the problem
During the last thirty years there has been a lot of development in indexes, indexing activity and indexing services in Iran because of the enhanced need and developments in the field of science and technology. As a result, a number of new indexes, indexing and abstracting services have appeared. But there is no document available which lists, at one place, all worthwhile indexes and indexing services available in Iran, nor is there any source which evaluates these sources and services. The researcher has been a teacher of Library Science and has been teaching reference sources and services for the last almost one decade. The need was felt for such a bibliographical and critical source consistently. This perpetual gap has been there since long. The study in hand is an attempt to fill up the existing gap.

Objectives of the Study
To meet the needs discussed above, this study takes the responsibility to prepare a source for:
1. Providing an explicit scene about the state-of-art in indexing situation in Iran.
2. To synthesize entire information about documentation centers and their indexing activities, including Thesauri available in Persian language.
3. To introduce indexes, indexing and abstracting services prepared in Iran.
4. To evaluate and identify areas of strength and weakness in indexing and abstracting services in Iran.
5. To suggest means for improvements in the situation.

Scope of Study
The study will cover:
1. Documentation or research centers located in Tehran (capital of Iran) and Qom (Center of Islamic studies and theological schools) providing indexing and abstracting services.
2. Indexing and abstracting services prepared in Iran, either in print or non-print form.
3. Indexes and abstracts prepared in Persian, Arabic, and English languages in Iran. It is important to clarify here that the official language of Iran is Persian and most of documents are produced in Persian. Meanwhile some books, periodicals, reports, and other documents are produced in other languages such as Arabic, English, French, German, Urdu, etc. However, most of the services presented in this study are in Persian, some in Arabic, and a few in English. Since Arabic is the religious language of Iranian people and is written in the same script as Persian, several indexes and concordances have been prepared for Islamic studies and texts, in Arabic so far. This study covers such indexes and concordances as well. It is worth noting here that Islamic studies are divided into several branches. The most prevalent ones which have been mentioned in this study relate to:

- **Qoran**: The sacred scripture of Islam
- **Tafsir**: The Qoranic commentary; the science of explanation of Qoran
- **Hadith**: Tradition or narrative of the Prophet; the sayings and manner of living of the Prophet
- **Fiqh**: Muslim jurisprudence; the science of ascertaining the precise terms of the Shari'a, or Islamic law
- **Kalam**: Speculative theology
- **Shi'ism**: The school of Islam which is followed in Iran

**Limitations**

1. The study excludes book indexes, except concordance to Persian Classic Literature and Islamic Texts. Because, due to the importance of Islamic sacred books and masterpieces of Persian literature in Iranian life, a majority of Iranian scholars have prepared several concordances to Islamic texts and prominent books in Persian literature, by using words and phrase that are similar to the application of natural language in indexing. These concordances facilitate access to texts and to recall desired topics. Thus many reference questions are answered by consulting these sources.
2. Documentation centers located in cities other than Tehran and Qom will also be excluded because all important research and documentation centers are located in these two cities only; and no worthwhile and unique service, deserving special mention is published from any other city or town in Iran.

3. The study will concentrate primarily on subject indexes.

4. For the transliteration of Persian words into Roman script, the researcher consulted several sources such as ISO 233 – 1984, which has been made for transliteration of Arabic letter; the method that is followed in *Encyclopaedia of Islam*, and some guides that are followed in Iranian literature. Finally the following list was selected for transliteration of Persian words into Roman Script.

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REVIEW OF LITERATURE

On having a comprehensive look at the existing literature, particularly articles published in Persian periodicals, list of research publications, and dissertations submitted to Iranian universities for Master’s degree in Library and Information Science, it was found that there are several research articles about this subject. However, they do not cover the exact concept “Indexing and Abstracting Services in Iran”, but pertain to some aspects of it. In all, on the basis of their coverage, these works could be grouped into four categories:

- Concept of indexing and abstracting
- Thesaurus, particularly Persian thesauri
- Documentation centers of Iran
- Indexes and abstracts in Persian language

The first category has several books and articles written or translated into Persian. Some of these are given below:

3. Naqsh-e namāye dar nezāmhā-ye bāzyābi-ye ettelā'ā/Role of Index in Information Retrieval Systems, by 'Abbās Gilvari published in 1996. This article deals with satisfaction factors in indexing such as exhaustivity, specificity, and consistency (Gilvari, 1996).

5. *Olgu’i raveshtenākhtī bar dāye chekide nevisi-ye mostanad/Documentary Abstracting: Toward a Methodological Model*, the original article is written by Maria Pinto Molina and has been published in JASIS, April 1995. ‘Ali Mazinānī translated this article into Persian in 1997. It is prepared on the basis of standard 1979 of American National Standards Institution and includes rules and steps of abstracting articles, reports, dissertations, etc. (Mazinānī, 1997).

6. *IRANDOC Technical Bulletin* is published quarterly since 1972. Its each issue contains some articles about different aspects of indexing and abstracting such as, indexing of periodicals, coordinate indexing, KWIC indexing, abstract and abstracting, thesaurus and its construction, particular abstracting services (e.g. Chemical Abstracts), and so on. For example translation of *Centers for Abstracting and Indexing Services in China* in Persian. The original article was written by Lei Zang, and published in *The Indexer* vol. 17, No. 2, October 1990, 99-107. The Persian translation entitled *Moruri bar marākez-e khadamātī-ye chekide nevisi va namaye sāzi dar chin*. It was translated by Mehrdokht Vazirpour. This article gives history and development of indexing and abstracting service in China (Lei Zang, 1990).

The second category has several works about thesaurus and its construction, particularly in Persian. Some of these works are introduced hereunder:

2. *Estelāhnāme dar nezām-e zakhire va bāzyābi-ye etteldā’ūt/Thesaurus in Information Storage and Retrieval System* by Mehrangiz Hariri. This article was published in 1982 in journal of *ettelā’ rasānī/Information Science* (Hariri, 1982).

3. In 1993 Ashraf o-sādāt Fulādi complied a bibliography about existing thesauri in English. This bibliography entitled *Ketabshenāsi-ye estelāhnāmehā/Bibliography of Thesauri* contains 266 thesauri in various subjects such as Social Sciences, Economics, Education, Philosophy, Library and Information Science, Arts, Science, Technology, Medicine, etc. (Fulādi, 1993).

All these publications have been sponsored and published by IRANDOC.

Furthermore, several MLIS dissertations have been devoted to the concept of "Thesaurus". Some of them are about necessity of the compilation of Persian Thesaurus in specific fields, and some dissertations pertain to the existing thesauri:

1. In 1975 ‘Abdolhosein Azarang undertook to study *Shivehā-ye namāye sāzi va entebāq-e ān bā sākhtemān-e zabān-e Fārsī/Indexing Methods and their Compatibility with Persian Language*. Here he explains methods of indexing, discusses feasibilities of Persian language for using coordinate indexing, as well as problems that indexers may face due to characteristics of Persian (Azarang, 1975).


3. Another dissertation entitled *Barrasi-ye emkānāt va mahdudiyathā-ye tadvin-e estelāhnāme-ye keshārazı be Fārsī/Feasibility Study of the Compilation of Agricultural Thesaurus in Persian*, was prepared by Zahraa Musavizade in 1990. In this study, the researcher stated the problems of translation of AGROVOC into Persian (Musavizade, 1990).
4. ‘Ali Jalāli Dizaji surveyed Barrasi-ye tatbiqi-ye do estelāhname-ye keshāvarzi: AGROVOC va CAB/A Comparative Study of Two Thesauri in Agriculture: AGROVOC and CAB. In this work, the researcher has provided a model for the compilation of an agricultural thesaurus in Persian. The author has compared the hierarchical relations in these two thesauri (Jalāli Dizaji, 1991).

5. Māziyār Amir Hoseini submitted his dissertation, in 1993, entitled Tarh-e pishnahādi barāye taddvin-e estelāhname-ye jangaldāri be Fārsī/A Proposal for the Compilation of a Persian thesaurus in Forestry. The author has made a model for compiling a thesaurus in Persian in the field of Forest and Forestry. He has suggested that a committer should undertake the responsibility of the compilation of Persian Thesauri (Amir Hoseini, 1993).

6. Similarly Minu Hadādiyān submitted Tarh-e taddvin-e estelāhname-ye Fārsī barāye zaminšenāsi/A proposal for the Compilation of Persian Thesaurus in Geology. She suggests that the work be completed under the supervision of the concerned organization (Hadiyan, 1994).

7. The other dissertation that was submitted about thesaurus is Barrasi-ye mizān-e qowat va za‘f-e ravābet-e selsele marātebi dar estelāhname/A Survey of the Strength and Weakness of Hierarchical Relations in Thesauri. Khāju‘i undertook this study in 1994.

8. Maryam Kazerānī investigated the observance of ISO standard 2788 in four Persian thesauri, viz.; ASFA, NAMA, Persian Medical Thesaurus, and Imam Khomeini Subject Thesaurus. The author intended to evaluate the qualifications and characteristics of these thesauri. This research entitled Evaluation of Persian Thesauri according to ISO Standards, submitted to the School of Management and Medical Information Science,
Iran University of Medical Science and Health Services in 1999. The researcher confirmed that the thesauri have followed ISO standard. Finally the author has suggested (a) to define such standard that are required for the compilation of thesauri in Persian, and (b) to evaluate the efficiency of Persian thesauri in information storage and retrieval on the basis of end users applications and viewpoints of the indexers (Kazerani, 1999).

Some writers have criticized Persian thesauri. Among them are Khorramshahi (1994) who wrote an article about Persian Medical Thesaurus, entitled Sar‘onvânhâ-ye Fârsi-ye Pezeshgî/Persian Medical Thesaurus; and Akbarinezhad (1996) wrote about NAMA Thesaurus. The author has reviewed the thesaurus in detail and presented its drawbacks and weaknesses. He noted that NAMA has not used cross-references for linking synonyms together. Also, he mentioned that NAMA suffers from lack of “Scope Notes” and “Modifiers”. In some cases, modifiers are used but these are not consistent and coordinate. In some cases translation of terms into Persian is not correct. For example, for “Sociology of Religion” and “Industrial Engineering” Persian equivalents are not used properly (NAMA Thesaurus is a translation of SPINES Thesaurus into Persian).

The third category, mentions works that deal with the documentation centers in Iran as a whole. The first such work is dissertation of Mo’taref entitled Barrasi-ye marâkez-e madârek dar Iran/Survey of Documentation Centers of Iran. It was submitted to the University of Tehran in 1975. This is about ten documentation centers, but emphasizes on IRANDOC as the major documentation center of Iran.

In 1990 Azarang prepared Gozâreshi ejmâli az vaz‘iyat-e ettelâ‘ rasâni dar Iran/A Brief Report of Information Situation of Iran. This report dealt with history of documentation centers and information services, and mentioned 13 centers, which are significant.
The next is a research report compiled by Morteza'i (1993), entitled *Barrasi-ye āmāri-ye vaz‘iyat-e ettelā’ rasani dar Iran/Statistical Survey of Information Science in Iran*. According to this report, less than 30% of 280 libraries use indexing for information retrieval, 47 libraries (16.8%) use indexing for organizing dissertation, 58 of them (20.7%) for reports, one (0.4%) for maps, and 12 (4.3%) for other materials. The author points out lack of qualified indexers is responsible for this situation. Finally the researchers suggested a provision of indexing and abstracting courses to improve the capabilities of indexers, employment of information specialists, and establishment of the national information system for the coordination of information services on the basis of a national policy to improve information systems and services throughout the country.

In 1999, Zahrā Gharib conducted a survey about indexing in libraries and information centers located in Tehran. She submitted this study as a dissertation for Master in Library and Information Science to Āzād-e Eslami University. By surveying 70 libraries and information centers, she found that six university libraries and 17 special libraries used indexing for information storage and retrieval. She arrived at the following conclusions:

- In all 67 persons were involved in indexing work in 23 centers and libraries. 54% of them had LIS education (one had PhD, 12 MLIS, and 22 BLIS), while 33% were subject specialist. 13 centers had provided for refresher course in indexing for the indexers working there.
- 9 centers or libraries followed post-coordinate indexing method and 3 had chosen pre-coordinate, while 10 centers used both the methods.
- 16 centers used controlled vocabulary as indexing language; and three centers used natural language in addition to vocabulary control in indexing process.
• Libraries and information centers in Tehran did not pay due attention to indexing activity. It may be because of the problems these centers faced. In fact, they were not interested in using indexing as a means of information storage and retrieval. They prefer to exploit cataloguing and classification rather than indexing.

• Lack of Persian thesauri was the greatest hindrance.

The researcher had recommended that:

• These centers should publish their own thesauri or list of accepted descriptors for the use by other centers.

• These centers needed to employ some information specialists to undertake indexing work.

• And finally, to control and coordinate indexing services under a uniform policy, a national information system should be laid down in the country (Gharib, 1999).

As far as literature about individual centers is concerned, most of it pertains to IRANDOC, its functions and activities. It includes one article in English, two in Persian, one dissertation, and the proceeding of a seminar. The article in English was published in volume 13 of the *Encyclopaedia of Library and Information Science*, under the title *Iranian Documentation Center (IRANDOC); Origin, Development, and the Present Organisation* by Sina’i (1975). Ching-Chih Chen (1979) in his article *Scientific and Technical Libraries*, published in volume 27 of the Encyclopaedia also discussed IRANDOC and mentioned its major functions and activities.

In 1976 Sina’i delivered a talk about IRANDOC, which was published in *Ketābdārî; journal of Central Library and Documentation Center of University of Tehran*, under the title *Kārkhā-ye Pāzhuhesti va khadamātī-ye markaz-e madārek-e ‘elmī/ Research Function and Services of IRANDOC*. 

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Another article about IRANDOC by Abdolrahmani (2000) was published in *Namāye pazhuhesh/Research Index* under the title *Āsheñāʾi ba markaz-e ettelāʿāt va madāre ke ‘elmi-ye Iran/Introduction to Iranian Information and Documentation Center* and gave detailed organization of the center, its services and publications.

In 1980, IRANDOC held a seminar on *Barrasi-ye masaʾel va moshgelāt-e markaz-e madāre ke ‘elmi-ye/Limitations and problems of IRANDOC*. In this seminar, professionals working in the Center presented several papers about the Center’s activities, its programmes and services. Among these papers, one was devoted to indexing in Iran (Āzādiān, 1980), and another to abstract and abstracting (Mosāvāt, 1980). Recommendations of the Seminar included: (a) to restrict IRANDOC’s scope to science and social sciences, (b) all functions should lead to the publishing of indexes, abstracts, bibliographies, and thesauri, (c) to establish a referral center in information science, (d) to compile, translate, and publish texts, standards, and so on in the field, (e) to train documentalists, and (f) to coordinate archives, documentation centers, and special libraries throughout the country.

Also, two MLIS dissertations have been devoted to IRANDOC. The first was submitted in 1977 to the School of Library Science of Shiraz University by Iraj Rahmāni., entitled *Barrasi-ye faʿāliyātā va vazāyef-e bonyāni-ye markaz-e madāre ke ‘elmi/IRANDOC’s Basic Functions and Activities; A Review of the Iranian Documentation Center* (Rahmāni, 1977). The second submitted by Mahmud Bābāʾi in 1995 to the University of Tehran. This study surveyed information storage and retrieval in databases of Iranian Information and Documentation Center, and Iranian Research Organization for Science and Technology. While surveying IRANDOC’s databases the researcher studied their structure, information sources, storage and retrieval, and
overlap among them. He concluded that there was non-conformity and inefficiency in databases; because of inconsistency in indexing, non-informatics descriptors, insufficient number of indexers, and overwhelming inputs. Moreover, scattering of indexers in different units of the Center and application of various thesauri as well as natural language in indexing process caused inconsistency in indexing. The researcher suggested: (1) setting up of a uniform indexing policy to be followed by all databases, (2) centralization indexing process under a department, (3) revising all descriptors and selection of one term for one concept only, (4) restricting coverage of each database to avoid overlapping, (5) to bring all databases under the management of a single director (Bābā'i, 1995).

Last part of this review includes two articles and seven MLIS dissertations pertaining to indexes and abstracts published in Iran.

The first article Mo'arrefi-ye fashnāme-ye chekide-ye pāyānnāmeha-ye Iran/Review of Iran Dissertation Abstracts was published in Eltalā' rasani/Information Science Journal (Tafaqodi Jāmi, 1996). In this review, five issues of the Abstract of IRANDOC were analysed on the basis of their scope, information given in each entry, and indexes provided to facilitate access to information. Finally, the author suggested that IRANDOC needed to be strengthened by financial aids and professional personnel. Also he recommended that all universities in Iran should assist IRANDOC to complete the coverage of the Abstract.

Morteza'i (1998) at the 49th FID Conference and Congress, New Delhi, presented the next article. In this paper entitled Education Database of Iran, the author detailed the results of her experiences in designing the first subject database in Iran. The major problems faced by her included: (1) lack of specific thesaurus or any controlled vocabulary in Persian language, and (2) lack of efficient software appropriate for the processing of bilingual information.
The dissertations in the field are mentioned hereunder:

1. Ja'far Khosraviyānī investigated databases of Computerized Research Center in Islamic Sciences in 1996. The center maintains several Arabic full text databases with the aim to facilitate access to Islamic literature. Most of these databases provide index and abstract in addition to full text. However some of them are retrievable through natural language only. This dissertation entitled Barrasi-yey vaz'iyat-e Pāyγāhhā-ye ettelā'ati-ye markaz-e tahqiqāt-e kāmpiyuteri-ye 'olum-e Eslami/A Comprehensive Study of Words and Subjects Databases of Islamic Sciences Computerized Research Center examined characteristics of the databases and evaluated their capabilities and drawbacks in information retrieval. The researcher concluded: (1) using diacritical marks would increase precision ratio of retrieving Arabic text, (2) including Persian translation to the databases would increase their efficiency and utility, (3) elimination of similar records to avoid overlap in various databases, and (4) indexing of all full text databases to increase recall ratio (Khosraviyānī, 1996).

2. A dissertation under the title Survey of Medical Sciences' Researchers Views on preparing Medical Index of Iran submitted to the School of Management and Medical Information Science; Iran University of Medical Sciences and Health Services by Samadzāde (1996). The purpose of this study was to find out the points of view of medical science researchers about the necessity of an indexing service for the literature on medical sciences in Persian. To conduct this study, the author contacted the writers who had published articles in Iranian journals between 1992 and 1994. He concluded that as many as 96% of the respondents believed such a source was necessary and useful, and 81% of them could not access the desired materials while conducting their research due to lack of an appropriate indexing service in Persian. So, he recommended...
that an information center in medical science should undertake the responsibility of the preparation and publication of an indexing service on medical literature produced in Persian language.

3. In this regard, another dissertation entitled *A Survey on the present Condition of Medical Information Retrieval Tools and a proposal for Iranian Index Medicus* was presented by Mo'arrefzæde (1987). The researcher submitted this dissertation to the School of Management and Medical Information Science, Iran University of Medical Sciences and Health Care Services, for the Master's degree in medical librarianship and information science. The study aimed at investigating the kind of information produced about medical sciences in Iran and the tools available for retrieving this information, such as index, abstract and subject bibliography. For this purpose, the researcher consulted *Index Medicus* and *Excerpta Medica* to find out if they covered Iranian medical literature as well. The result showed that none of these sources had covered literature produced in Iran, comprehensively. So, the researcher concluded that no source was available to access Iranian literature in the subject, and that there was a pressing need to introduce such a tool to enable researcher to retrieve existing materials. To identify an appropriate indexing method, the researcher collected a sample of literature including articles, theses, research reports, and papers presented at various seminars; and examined KWIC, KWOC, and KWAC methods of indexing. The analysis revealed that KWAC indexing would give a better result in information retrieval in this field.

4. In 1995 Mazinâni submitted his Master's dissertation under the title *Back-of-the-Book Indexing of Medical Science Persian Books Published in Iran During 1989-1993* to Iran University of Medical Sciences and Health Care Services. In this study, he surveyed 1118 titles that were published for the first time. Out of these books, only 123
titles had indexes, and five of them had followed more than 75% of British Standards (BS 3700) and standards of American Society of Indexers (ASI). The researcher concluded that 29 titles used cross-reference system, 81 titles had accurate alphabetic ordered index, and 85 titles used modifiers wherever necessary. Finally, he concluded that back of the book indexing of the medical science Persian books was not efficient. So, he suggested that all academic and scientific books should have back-of-the-book index.

5. Also, Hojat Ābădtalab submitted his dissertation for Master in Library and Information Science, entitled *Back of the Book-Indexing of Persian Books on Engineering and Technology Published in Iran Between 1988 and 1997* to Āzād-e Eslami University. He found that out of 2620 books published during this period, only 198 titles had index. Among these, eight titles had followed more than 75% of BS 3700 standard and ASI standards (Ābădtalab, 1999).

6. Similarly, Davud Sharifīyān surveyed *Back-of-the-Book Indexing of Books on Persian Language and Literature Published in Iran During 1991 to 1995*. He discovered that out of 802 titles, only 82 had index. Out of these, three indexes had been prepared by following more than 75% of the foresaid standards. The researcher suggested (a) publishers should request the authors to add index for their works, (b) holding indexing training courses, (c) standardization and coordination of back-of-the-book-indexing (Sharifīyān, 1999).

7. Another dissertation that is related to the present study is a Master’s dissertation entitled *A Survey in Persian Periodicals’ Indexes Published in Tehran during 1978-1994*. This study was conducted by Fāteme Rahāmipur and submitted to the Iran University of Medical Science and Health Care Services, in 1995. The researcher attempted to find responses to the following questions:

- Number of Persian periodicals, which are indexed.
- Subjects in which were periodicals are indexed.
• Frequency of publication of the indexes.
• Qualifications of the indexers involved in indexing of Persian periodicals.
• Methods of indexing followed in indexing of Persian periodicals.
• Means of indexing (Indexing language and thesauri used).

For this study, the researcher consulted *Directory of Iranian Periodicals* and *National Bibliography of Iran*. She discovered that out of 1361 Persian Periodicals (461 dailies, 900 journals and magazines) only 17 periodicals had a single index. Also among other indexes, abstracts and bibliographies published between 1978 and 1994 in Tehran, 108 covered articles of periodicals. So, in all 125 indexes for Persian periodicals were prepared during the period. The researcher concluded that out of 125 indexes, 42(33%) titles were currently published. One was being published monthly, four quarterly, 20 annually, and 17 irregularly. On the basis of subject coverage, the largest number of indexes (i.e. 13 and 10) were devoted to Economics and Culture respectively. 53% of these indexes were prepared by indexers who had Library and Information Science qualifications, while the others were graduates of various other disciplines. 32 indexes (26%) used controlled vocabulary, 91 indexes (73%) used natural language, and two (1.6%) used both the languages for indexing. Out of 125 indexes, only 13(10.4%) used subject thesauri as a means to selecting index terms. Finally, the researcher concluded that the indexing of Persian periodicals was not satisfactory. She mentioned some factors in this regard: (a) lack of knowledge of the indexers of the principles of indexing and the form of presentation of printed indexes, (b) lack of appropriate standards, (c) lack of proper Persian thesauri, and (d) lack of a comprehensive database to access all Persian periodicals published in the country. In order to improve the situation, the researcher suggested: (1) Holding of refresher courses for indexers, (2) standardization of indexing of Persian periodicals, and (3) provision of subject thesauri in Persian (Rahāmipur, 1995).
METHODOLOGY

This work is an attempt to establish the state of the art of indexing and abstracting position in Iran. Due to the nature of the descriptive research both quantitative and qualitative perspectives have been used.

Sources of Data Collection

Information relating to this study has been obtained through a number of sources:

1. Literature Search. To identify documentation centers Directory of Documentation Centers, Specialized and University Libraries in Iran (1992) has been consulted. To ascertain indexes and abstracts produced and published in Iran several bibliographic sources such as National Bibliography of Iran; Directory of Iranian Periodicals and Newspapers; Bibliography of Bibliographies; and other guides, which contain descriptions of Persian indexes, and abstracts were consulted. Also professional journals; other literature in the field; and other surveys about Iranian documentation centers, indexing and abstracting services, and Persian thesauri undertaken by LIS students or conducted by other researchers were reviewed.

Furthermore, the researcher visited reference sections of the National Library of Iran, IRANDOC's Library and the Central Library of University of Tehran, to access to the recent sources and retrospective materials published in Persian so far. Detailed information about each source was obtained by consulting, reviewing, and evaluating indexes and abstracters per se.

2. National Book Fairs and Exhibitions. To introduce current trends in information services of information centers in Iran, a part of book fair, held annually in Tehran is devoted to information services. Also an exhibition is held biannually in Qom to demonstrate Islamic software and databases. The researcher visited these fairs and exhibitions to get familiar with these activities of concerned centers, recent products and publications.

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3. **Visit to documentation centers.** During the study, the researcher visited all centers covered by her. After closely observing the indexing processes, interviewing most of the directors and professionals working in the institutions, she filled up a questionnaire to record data so collected by her.

4. **Direct communication and discussion.** Wherever necessary, the author also discussed the problems and issues with the teachers of LIS and experts associated with the field.

### Outline of the Study

The research has been divided in six chapters. Chapter I – Introduction – states the problem, objectives of the study, scope of the study, Literature Review and Methodology. Chapter II consists of history and development of indexing and abstracting in Iran and details Persian thesauri produced so far. To introduce Persian thesauri, *Thesaurus Guide: Analytical Directory of Selected Vocabularies for Information Retrieval* was adopted as a model. Chapter III presents Iranian documentation centers which produce abstracting and indexing services and contains following information about each center: name of the center (transliterated into Roman script and translated in English), address, telephone and fax no., e-mail address, parent body, date of establishment, name of the director, scope of activities, a brief description of the center’s activities, its publications and databases, indexing method and indexing language used, and other information about indexing and abstracting process. The centers have been listed alphabetically according to their name in Persian. In this chapter *Encyclopedia of Information Systems and Services* has been followed as a model. Chapter IV describes indexes and abstracts produced in Iran. Most of these are in Persian and are divided in four groups. Group one consists of current indexes and abstracts. In this part discontinued services have been presented separately. Group two includes indexes to single periodicals, either current or cumulative indexes which cover previous publications of periodicals. Group three contains indexes and concordances to
individual works, authors, and special collections. It would be relevant to clarify that indexes and concordances under examination are such which pertain to important and outstanding works and have been published as independent works. Though a large number of standard books generally have an index – which is called back of the book index – on the contrary, the study is limited to indexes and concordances which are comprehensive and exist as independent works prepared for Islamic sacred books and classics of Persian literature, due to their widespread applications. Group four covers retrospective indexes and abstracts. Each entry in this chapter gives the following information: title of the index or abstract (transliteration into Roman script and translation in English), name of the sponsor or publisher, name of the compiler, date of publication, scope, a brief description, arrangement, information contained in each entry, coverage, currency, vocabulary, consistency, accuracy and access points. Entries in this chapter have been organized on the basis of Abstracting and Indexing services Directory, and are arranged in each part according to the title.

In chapter V of the study, data so collected has been analyzed. The data pertaining to documentation centers has been analyzed on the basis of the date of establishment, the scope and the kind of activities, indexing method and indexing language used, management and personnel of the centers. Data related to indexing and abstracting services has been analyzed on the basis of the currency, frequency, sponsor, scope, form, and year of publication. In Chapter VI the main points have emerged from the study have been outlined. It is followed by the description of general needs and deficiencies in indexing and abstracting activities. At the end of this chapter suggestions to improve the present scene have been made. Finally, it gives Bibliography and Indexes. The Bibliography is arranged alphabetically by authors' name. It is organized according to the Publication Manual of the American Psychological Association (1994).
CHAPTER I - REFERENCES


 Director of Iranian Periodicals and Newspapers (1968–). Tehran: National Library of Iran.


