

Original Research

Evaluation of Professor Jafar Mehrad's Scientific Collaborations in Library and Information Science from 1974 to 2021

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Abstract

Communication is the most fundamental process in research; therefore, scientific communication is the main center of the growth and development of the scientific community. Scientific communication means how scientists in each discipline can disseminate their information and knowledge through formal and informal channels. This is usually done through various media such as books, articles, conference papers, etc. This research has been conducted to investigate the scientific collaborations of Dr. Mehrad, "as an impressive specialist" of knowledge and information science in Iran, using the bibliometric method. The findings showed that about 180 works (including 57 books, 52 Persian articles, 22 English articles, 11 research projects and 38 dissertations) had been published by him. The study of Dr. Mehrad's scientific collaborations showed that 27.8% of the works were published as single authors and 72.2% as the group works. Dr. Dayani is at the top of his scientific colleagues with the publication of 9 works. The journals "Library and Information Science", "Social Sciences and Humanities of Shiraz University", "Information Processing and Management," and "Journal of Academic librarianship and information research" were the four journals in which most of Dr. Mehrad's works were published. The fields of "Library and Information Science", "Databases", "Shiraz University", and "Evaluation" are the core topics in which most of his works have been published.

Keywords: Scientific collaborations, Research activities, Dr. Jafar Mehrad, Co-authorship, Lexical coincidence.

Introduction

Measuring any country's development and progress is its scientific products; the number of scientific publications is the most crucial quantitative indicator. The study of scientific production and its impact on various research topics is one of the most important policy tools

for developing science and technology in different countries. It can provide a clear view of its status and play an essential role in future decisions and policies (Zamani, Maleki & Borjloo, 2021). Research productivity is a crucial indicator for evaluating effectiveness in research production. Research is like an input-output process; results can be intangible (e.g., knowledge, skills, and consulting activities) and tangible (e.g., publications, patents). Universities and research institutes often use the number of publications and citations to measure the performance of researchers and research teams. (Paphawasit & Wudhikavn, 2022).

For this reason, the activities of the scientific system have always been the focus of policymakers, and scientometrics is the most common method of evaluating it. This method quantitatively examines scientific productions, scientific policy-making, scientific relations of scholars, scientific plans and maps of different fields of knowledge, drawing science maps, and so on. In addition, scientific communication and methods of production, dissemination and use of scientific information are studied indirectly by examining their references (Osareh, Heydari, Zare Farashbandi & Hji Zeynolabedini, 2009).

One of the most common methods of scientific communication is co-authorship. The phenomenon of co-authorship is the most comprehensive network of knowledge sharing and collaboration of researchers to produce science. It is formed when two or more authors collaborate. This collaboration can occur in a scientific work's production stages, such as data collection, analysis, and conclusions. The application of this phenomenon in the texts grew slowly until the First World War, and it grew faster. Studies show that scientific collaboration among writers and researchers has grown exponentially recently, especially co-authorship. Scientific cooperation can be considered a reflection of the activities and approaches of the scientific community. Studying this category can also help the sociology of science. It is one of the most tangible and documented forms of scientific cooperation. Each aspect of scientific collaboration networks can often be reliably tracked by analyzing co-authorship networks using bibliometric methods (Soheili, Osareh & Farajpahlou, 2013). Using network analysis methods, it is possible to gain a useful perspective on the status of a scientific field. Scientifically, it is possible to identify authors who have a strategic position in the network and are the connection point of different groups of researchers. They can establish a connection between these groups or obtain high scores based on the types of centers (Heydari, Zavareqi & Mokhtarpour, 2020).

In Iranian librarianship, famous and influential people such as Dr. Hoshang Ebrami, Dr. Abbas Hori, Mrs. Noushafrin Ansari, Dr. Mohammad Hossein Dayani, Iraj Afshar, Dr. Asadullah Azad, Dr. Jafar Mehrad, etc. and they have provided valuable services to the society. Therefore, a scientometric analysis of their works seems necessary. But since Dr. Mehrad is the founder of scientometrics in Iran, the scientometric analysis of his works is discussed in this article .

Dr. Jafar Mehrad is one of the famous professionals in knowledge and information science in Iran. He received his master's degree in library science in 1974 from the University of Tehran. Between 1972 and 1995, he worked in the Faculty of Law and Political Science library at the University of Tehran, and soon after, he established the library of the Ministry of Social Welfare. In 1976, he was sent to Case Western Reserve University in Cleveland, Ohio, to continue his studies for a Ph.D. degree using the Shiraz University Scholarship. He continued his studies in systems and management of public libraries and returned to Iran after graduation. During this period, he did not neglect teaching, studying and updating his knowledge. In the summer of 1989, he was sent to the University of Los Angeles, California (UCLA) for a year

to study bibliographic databases. After returning to Iran in 1990, at the suggestion of the Minister of Science, Research and Technology, he established the Shiraz Regional Library of Science and Technology and became its director. This professor received the award of Farabi International Festival in 2008 in honor of his collection of scientific and research services, and a year later he was selected and introduced as 'Distinguished university professor' of information science and technology.

Dr. Mehrad has been a member of the Academy of Sciences since 2013 for four years. He was honored to retire from Shiraz University in 2017 with a professor degree. This outstanding professor, who in collaboration with Dr. Dayani from Ferdowsi University of Mashhad, was the founder of the Ph.D. program in librarianship at public universities (Hayati, 2000), has trained a significant number of students and researchers during his period of activities. This article aims to review Dr. Mehrad's scientific collaborations to determine his scientific collaborations and identify his research interests.

Addressing the phenomenon of scientific collaboration is vital in several aspects:

First, the phenomenon of co-authorship or scientific collaborations has attracted the attention of many researchers, and this phenomenon has entered the field of scientometrics from sociology (Price 1963, quoted in Rahimi & Fattahi, 2009). Poly authorship is one of the most important developments in the recent trends of individuals and scientific texts, and its study is necessary. Now, a few decades after Price's theory, it seems that the era of monographs is over.

Second, due to the change in approach, the number of joint scientific productions has increased dramatically, and scientometrics seeks to identify common patterns in joint productions by measuring and comparing criteria for measuring and evaluating the extent of scientific collaborations. Co-authorship should be considered one of the most important indicators for measuring scientific cooperation. Hori (quoted in Rahimi & Fattahi, 2009) believes that these collaborations have accelerated the growth of science, increased citation, and increased the use of other researchers' forces.

The third issue that doubles the importance of scientific collaborations in Dr. Mehrad's works is the type of scientometric research. In general, scientific research related to scientific collaborations or co-authorship was classified into four categories:

A) Studies that have dealt with the history, philosophy, nature, function and advantages and disadvantages of scientific collaborations, such as "Research on the structure of co-authorship networks" (Soheili & Osareh, 2012), "The Centrality Measures in Co-authorship Networks: Synergy or Antagonism in Researchers' Research Performance" (Tajedini, Soheili & Sadatmoosavi, 2019).

B) Studies that examined the scientific collaborations of researchers in articles published in a specific journal, such as "A Survey of Centrality in the Co-Writing Network of Articles in Information Science Journals" (Osareh, Soheili, Farjapahlou & Maarefzadeh, 2012) "Citation Analysis and the Relation of Co-authorship in the Journal of Iranian Association of Arabic Language & Literature" (Ahmadi, Salimi & Fathi, 2014), "The co-authorship networks of published Articles in the journal of Psychology of Exceptional Individuals Allameh Tabataba'i University and Journal of Exceptional Children" (Osareh & Baba'i, 2015) "Citation analysis and co-authorship of the authors of articles in the Journal of Educational Innovation" (Eini, 2017) and so on

C) Studies that examine the scientific collaborations of researchers from universities or

educational and research institutes; such as "Co-authorship Collaboration between the Scholars of Tehran Universities and Qom Seminary (Howzeh)" (Asadi, Aghamollae & Malakooti Khah, 2016), " Analyzing Scientific Outputs of Qom University Emphasizing Co-authorship of Researchers" (Zamani et al., 2021), and so on

D) Studies that examine the scientific collaborations of researchers in a particular subject area, such as: " Social network analysis co-authored by information science researchers" (Soheili et al., 2013), " Co-authorship network analysis of Iranian medical science researchers " (Soheili, Cheshme Sohrabi & Atashpaykar, 2015), "Authorship and Co-Authorship Structure of Knowledge and Information Science: Status of Presence and Influence outside the Borders"(Heydari et al., 2020), " Co-authorship Network of Institutions in Iranian Knowledge and Information Science Papers" (Erfanmanesh & Arshadi, 2015) and so on

As is clear from the above resources; the study of scientific collaborations in research activities of a particular researcher has not happened before, and so the present research can be considered as a kind of initiator of such activities, especially since Dr. Mehrad is one of the pioneers in scientometrics in Iran. Also, he launched the *International Journal of Information Science and Management (IJISM)* and established a citation database of the Islamic World for the spread of scientometrics in Iran.

Overall; due to the scientific power and the effectiveness of Dr. Mehrad in the field of knowledge and information science and his valuable services to the Iranian scientific community, we decided to show his services, scientific orientation and study methods in addition to enumerating research activities and Reviewing his scientific collaborations.

According to the above approach, the main purpose of this article is to evaluate Dr. Mehrad's published works in terms of scientific collaborations and thematic aspects. In addition, the following can be considered as sub-objectives of the article: Determining

- The information formats of his scientific products
- The trend of his scientific productions during different years according to the type of source
- His scientific collaborations during 47 years of scientific activity in the library and information science
- The core authors in his scientific contributions
- The core publications in publishing his works
- The thematic contexts of his published works

Research questions

1. Dr. Mehrad's research works in what formats, including books, magazines, dissertations, and research projects, have been done?
2. What has been the process of Dr. Jafar Mehrad's scientific productions during different years, according to the type of works
3. What were the numbers of his scientific collaborations?
4. Who were his co-authors in writing and compiling research works?
5. In which journals have his research articles been published?
6. What were the main themes of his published research?

Materials and Methods

The present study is a type of applied research that has been done using a bibliometric approach. First of all, through data available in databases such as Noormagz, Irandoc, Magiran,

SID, Ganj, Comprehensive Humanities Portal, Regional Information Center for Science and Technology (RICeST), all of Dr. Mehrad's works, including books, articles Theses, research projects were identified and their bibliographic information was analyzed using Excel. The map of scientific collaborations is drawn through Visio software.

Results

The research's first question was dedicated to studying the formats of published scientific works. Table 1 shows the frequency distribution of productions by type of information media.

Table 1

The frequency distribution of Dr. Mehrad's research works by type of information medium

Type of information material	Frequency	%
Books	57	31.7
Persian article	52	28.9
English article	22	12.2
Thesis	38	21.1
Research projects	11	6.1
Total	180	100

As the data in Table 1 show, Dr. Mehrad has published 180 works during his career, including 57 books (31.7%), 52 Persian articles (28.9%) and 38 dissertations (21.1).

The research's second question is to study the works published during different decades (Figure 1).

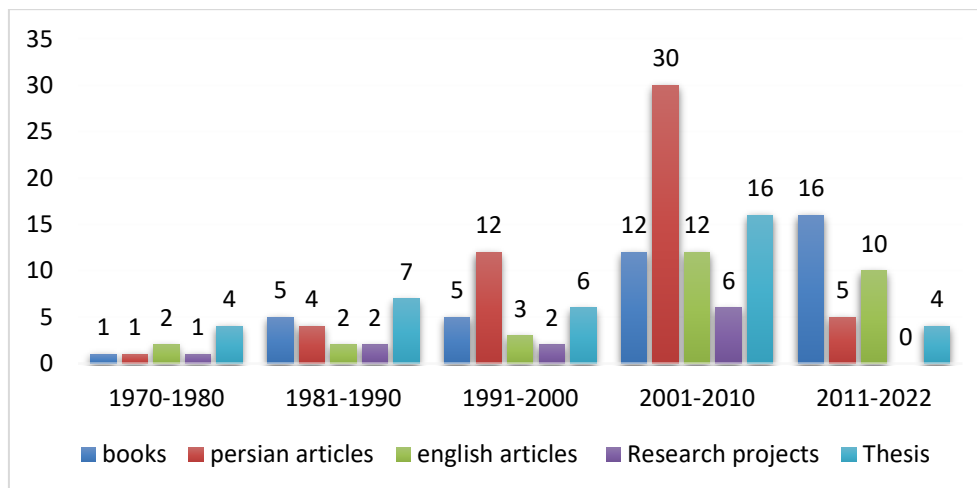


Figure 1: Frequency distribution of Dr. Mehrad's scientific products by type of information carrier

As shown in Figure 1, Dr. Mehrad had busy scientific decades during 2001-2010. During this decade, he has written 12 books, 30 Persian articles, 12 English articles, six research projects and 12 dissertations. Of course, in addition to his scientific activities, he was also involved in administrative work, especially the establishment of two international research institutes, i.e., RICeST and the Islamic World Citation Center (ISC), located in one place, and was founded by him.

The third question of the research deals with determining the extent of Dr. Mehrad's scientific collaborations (Figure 2).

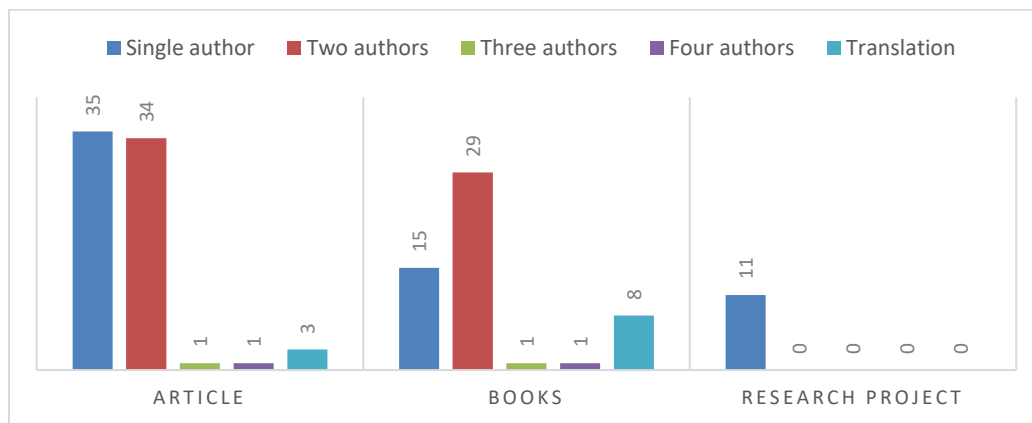


Figure 2: Frequency distribution of Dr. Jafar Mehrad's scientific collaborations in various scientific productions

Dr. Mehrad's scientific works have mainly been produced through research collaborations (Figure 2). So 88 authors collaborated with him in publishing works. And only 35 titles of articles and 15 titles of books (a total of 50 titles, 27.8%) have been published by a single author and 72.2% of works were co-authored.

The fourth question determined the scientific collaborators in the published works. Figure 3 shows Dr. Mehrad's scientific collaborators with the extent of their cooperation in publishing the results.

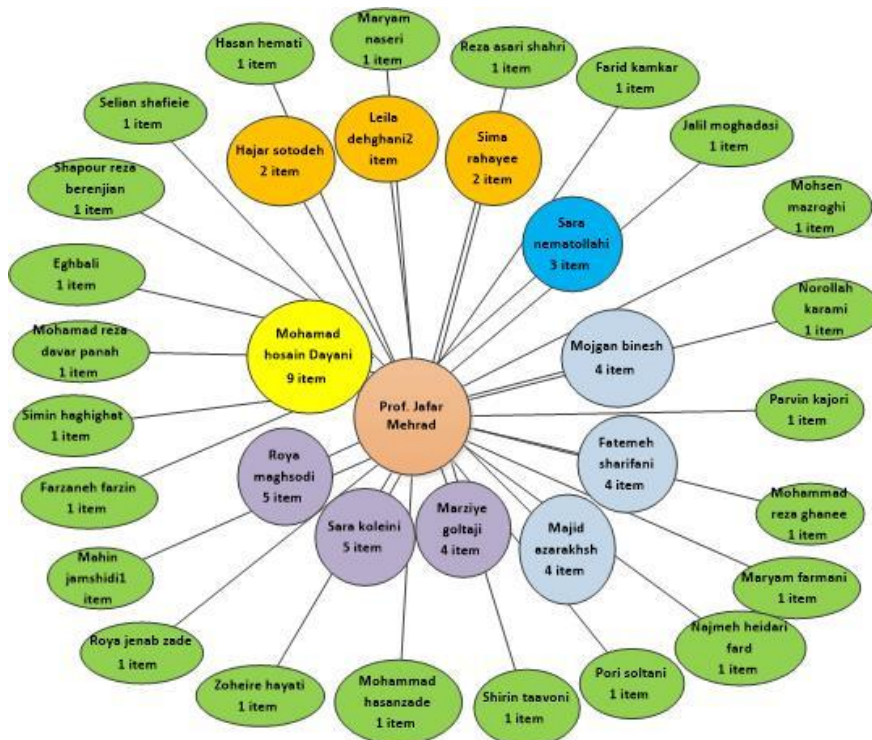


Figure 3: Frequency distribution of scientific collaborators based on the number of published works

His scientific collaborations mainly were with professors and students of the Department of Library and Information Science. He co-authored with Dr. Dayani with nine works. He has published with Roya Maghsoudi, Sara Kolini, Marzieh Goltaji (5), Seyedeh Mojgan Binesh,

Fatemeh Sharifani and Majid Azarakhsh (4). He has also published two joint works with Leila Dehghani, Hajar Sotoudeh and Sima Rahaei (Figure 3).

Question 5 examined the journals that have published his articles (Table 2).

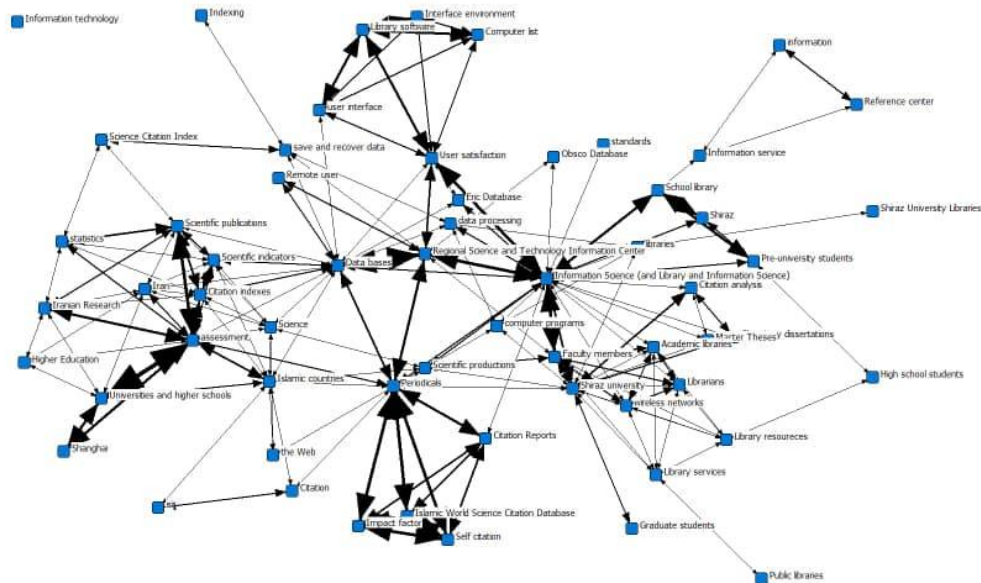
Table 2

Frequency distribution of journals published Dr. Mehrad's articles

Journals	Number
Library and Information Science	13
Information Processing and Management (Information Science and Technology)	8
Social Sciences and Humanities, Shiraz University	5
Academic Librarianship Information Research	4
Book Quarterly (National Library and Information Studies Studies)	3
Rahyaft	2
Educational and psychological studies of Ferdowsi University of Mashhad	2
Library Message	1
Sharif	1
Fars Disciplinary Knowledge	1
Book of the Year	1
Civil Engineering.	1
Letter from the Iranian Librarians Association	1
Health Information Management	1
Social Science Book Review	1
Mother's message	1
Science Survey	1
International Journal of Information Science and Information Management	1
Journal of the Faculty of Literature and Humanities, Ferdowsi University of Mashhad	1
Letter of the Association (Newsletter of the Iranian Library and Information Association - Fars Branch).	1
Sum	50

Dr. Mehrad published 52 articles. Unfortunately, it is not possible to access two issues of the journal. According to Table 2, most of Mehrad's articles (13 titles) have been published in the journal "Library and Information science", eight articles have been published in "Information Processing and Management", and 5 in "Social and Humanities of Shiraz University", 4 in "Academic Librarianship Information Research", the rest of the articles have been published in other journals.

The sixth research question determined the thematic contexts of Mehrad's published works. Map (1) shows the subject areas of his scientific collaborations.



Map 1: Subject areas of Dr. Mehrad's scientific collaborations

"Library and information" is the core subject area of Mehrad's research. Other topics include "databases", "scientific information", "evaluation" and "Shiraz University". Other topics that are less emphasized include "citation" and "citation analysis", "information retrieval" and "publications (print)", "indexes", "collections", "public libraries" and "electronic journals".

Discussion

Scientific collaboration is the process by which two or more authors collaborate scientifically through a defined partnership. The process of Dr. Mehrad's scientific collaborations showed that his collaborations began in 1974, and during this period, he paid more attention to increasing scientific growth in library and information science. At the beginning of forming a library and information science in Iran, most of the training was done by American teachers. So there were few resources in the Persian language. Therefore, in this period, most efforts were focused on producing Persian resources; perhaps this is one of the reasons why the number of published books is more than other works.

He has published 57 books. In the 50's, there were not many specialized journals. The level of communication with foreign journals was not easy as today, and it had its difficulties and complexities, so it is natural that researchers chose to publish books or research projects.

The second question of the research considered the publication of Dr. Mehrad's works during different decades. The data showed that his first research work was in 1974. Translation of an article titled "Book Therapy" by Tiffers M. Roth. After that, he continued to write the book "Study of how to choose a book in the libraries of Shiraz University". As Figure 1 shows, little was done in the 50s, 60s, and 70s due to the lack of facilities and communication. With the advent of information technologies and the Internet, Dr. Mehrad's scientific activities have grown significantly since the 1980s. Twelve books, 42 scientific articles in Persian and Latin and six research projects are the product of this period. Nevertheless, in these decades, there was a need to study the theoretical foundations of librarianship, and like other researchers, he published works for this purpose.

The data show that in 61 of his articles and books (33.9%), he did not have co-authors; in

the rest of his works (66.1%), he had co-authored. Among them, the share of two authors was more than three or four. According to Heidari, Zavareghi & Mokhtarpour (2020, p. 73), who believed that the dominant writing pattern in the records of knowledge and information science in Iran is a pattern of two authors, can be considered accurate in the works of Dr. Mehrad.

Research collaboration was previously the result of researchers' autonomous behavior. Researchers decide when and with whom to collaborate without outside contributors' intervention. Important goals such as increasing research capacity, building the country's competitiveness, dealing with challenging problems in the global society, and maintaining good international relations have become crucial for research cooperation (Paphawasit & Wudhikavn, 2022).

The data also showed that Dr. Mehrad has had scientific relations with many scientists, researchers and students during his 47 years of scientific activity. His scientific partner was Dr. Diani, with nine joint works in the early years. This relationship has been described as well as by Hayati in establishing the Ph.D. course (Hayati, 2000). Perhaps another reason for their cooperation is that they both focused on critical issues in knowledge and information science in Iran. As the data shows, the first and most important area that has been addressed is the subject of librarianship. Most of Dayani's works are in the field of essential topics in the library. He has published his collection of notes in two books: "History of Education in Library and Information in Iran" (Dayani, 2010) and "Short Writings on Library and Information Science" (Dayani, 2011). Collaboration with people like Maghsoudi, Kolini and Gol Taji with five works, and with people like Majid Azarakhsh and Fatemeh Sharifani with four works is also in Dr. Mehrad's scientific record. Their official collaboration with the World Science Citation Center and the Regional Information Center for Science and Technology can be one of the reasons for their scientific connection and cooperation. Paying attention to the scientific development of colleagues and creating research fields for their colleagues can be one of the reasons for their research relationship with these people. The rest of his works with other authors such as Sara Nematollahi, Sima Rahaei, Leila Dehghani, Hajar Sotoudeh, Zahair Hayati, Farzaneh Farzin, Pouri Soltani, Shirin Taavoni are other prominent examples of scientific collaborations.

Another research question is related to the study of the thematic contexts of Dr. Mehrad's published works. The data show that the subject of "librarianship", "databases", "Shiraz University", "evaluation of the regional center of science and technology," and "scientific publications" and "scientific journals" are the most favorite topics. The subject of "citation", "self-citation," and "impact factor" are new topics in scientometrics, and he has published several works in this field. Paying attention to "indexes" on various topics, "ranking systems" and "fundamentals of information technology", "National Atlas of Science and Technology," and "information technologies" are the topics that can be seen in Dr. Mehrad's writings. Dr. Mehrad is considered a pioneer in scientometrics and information technology. In the field of quantitative research, the most popular implemented method is thematic analysis. Thematic analysis analyzes, identifies, and finally reports the data set's most probable and significant theme. It further interprets essential aspect of research topics and hence, describe research data in an organized and rich format (Majumdar, 2019)

Conclusion

According to the topics discussed above, Dr. Mehrad is one of the pioneers in library and

information science who has served the library community for many years in one of the most important information centers. He has raised issues related to scientometrics in the country and has published several books on the evaluation of the science and technology system of universities. He is an influential person in the field of library and information science. Writing the indexes and reviewing the higher education center and RICeST shows his impact on the educational system of universities in Iran.

In the end, it is suggested that according to his expertise, high-ranking officials in the highest decision-making centers in science and technology in Iran, such as the Supreme Council of the Cultural Revolution, the Board of Trustees of the National Library, the Public Libraries, the Ministry of Science, Research and Technology and the Ministry of Health and medical treatment and education, Islamic world citation database, etc. use his presence to use these valuable experiences for the growth and prosperity of the holy country of the Islamic Republic of Iran.

It is also suggested that similar research should be done on other knowledge and information science pioneers to show the system of their scientific cooperation, educational and research developments and their role in this field, so the younger generation and students will become more familiar with the influential personalities of this profession.

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