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Original Research

Challenges of Research Performance Evaluation in Iran: A Qualitative Study

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Abstracts

Measures the researchers' activities can be used in research and financial policy-making, as well as the promotion of researchers and universities in a country. Therefore, the purpose of this study is to investigate the challenges of research performance evaluation in Iran. Participants in this qualitative study were selected using a purposive sampling method. 11 Out of 21 experts from the two areas of the Ministry of Science, Research, and Technology and the Ministry of Health and Medical Education were interviewed face-to-face, by telephone, and WhatsApp social media based on an interview guide. Interviews were analyzed with MaxQDA software version 10. Most of the participants were male (54%), had a Ph.D. degree in library and information science (54%), and had at least four years of research management and scientometric experience (36%). The analysis of the interviews included 143 codes in the form of six main categories and 50 sub-categories. The most important challenges included lack of normalization in research evaluation, lack of suitable scientometric training, lack of importance of scientometrics in research management, the necessity to change the scientometricians role, absence of scientometrician in research policy-making, the focus of universities ranking systems on research indicators, the emphasis of universities ranking systems on quantity, the over-focus on quantitative indicators, the incompleteness of scientometric indicators, the lack of proper application of scientometric indicators,

the role of scientometricians in improving the research quality, and the need for balanced attention to the quantity and quality of research. Overall, the research performance evaluation in Iran is facing the challenges of globalization of research performance measurement, providing sufficient research infrastructures, the position of scientometrics in research policy, university ranking systems, application of scientometric indicators, and inefficiency of the research management.

Keywords: Research Performance Evaluation, Challenge, Scientometrics, Research Management, Research Policy-Making.

Introduction

Today, countries' development is increasingly dependent on research and science production. Education was a major issue in the twentieth century. However, the importance of research and technology has increased since the middle of the twentieth century until now (Hashemi Daran, 2012). Universities and research institutions are responsible for developing knowledge and research under their facilities, capabilities, and scientific experiences. In this regard, universities should consider research as an integral part of their performance as education (Jahanshahi, Hassanpour & Ahmadi Ghavami, 2012). However, in the last 50 years, developing and developed countries have tried to strengthen and improve their research and technology indicators by allocating human resources, infrastructures, and budgets (Hashemi Daran, 2012).

Besides, paying attention to research and development in any country leads to its improvement and progress, self-sufficiency, and independence. It is the first step to organizing research in that society, gaining correct knowledge about existing capabilities and facilities, as well as the strengths and gaps of research (Sabzevari, Mohammad Alizadeh & Aziz Zadeh Foroozi, 2000). Given the importance of scientific and technological development of countries in recent years, scientific evidence indicates that developed countries devote 1.5 percent of their Gross Domestic Product (GDP) to science and technology, while this number for Iran is about 0.5 percent despite the scientific growth policy after the Islamic Revolution in Iran (Abdollahi, 2010; Butler, 2006; Malekzadeh, Mokri & Azarmina, 2001; Moin, Mahmoudi & Rezaei, 2005). Keeping pace with the global advancement of science and technology requires adequate funding based on results earned from research performance evaluations of universities and research institutions (Franceschini & Maisano, 2011).

In this regard, research performance consists of two components, "research activity" and "performance," as the result of research activity that can be used by other researchers. In another definition, research performance is the obvious research outputs such as publications, scientific position, individual perception, and societal impact. Thus, research performance metrics include bibliometric indicators, research budgets, awards, patent revenue, research activity, medium and long-term impact, and other indicators that increase competition (Feng, 2020). For evaluating research performance, different citation-based indicators such as citation, H-index, citation per paper, exergy, etc., can be extracted from citation databases, including Clarivate Analytics Web of Science Core Collection, Scopus, and Google Scholar (Eskrootchi & Sanee, 2018; Sanee, Mohammadi & Ghazi Mirsaeid, 2016). Also, too many university ranking systems have been created based on special criteria. The university ranking systems have been introduced in nearly the last two decades, and each has a lot of strengths and weaknesses (Pooryazdian & Karami, 2019; Sani'ee N, 2022). The research performance evaluation has a

main role in scientific growth and promotion, staff recruitment, funding, and getting rewards. This evaluation in any country can face many challenges due to changes in political, economic, technological, social, and even environmental aspects. Changes in research needs, innovative developments of citation databases, and the emergence of new web-based platforms and systems will transform this type of evaluation (Sani'ee, Nemati-Anaraki, Sedghi, Noroozi Chakoli & Goharinezhad, 2022).

However, the literature showed different obstacles to effective research in universities, including the need for more researchers, financial and personal motivations, and the low quality of the research (Jahanshahi et al., 2012). The most common type of research barriers includes individual and organizational obstacles (Alamdari & Afshoun, 2003; Badrizadeh, Gholami, Birjandi, Beiranvand & Mahooti, 2009; Sabzevari et al., 2000). Another study indicated the role of individual barriers (lack of research interest and experience, individualism), organizational barriers (poor administration, irresponsible actions, lack of efficient researchers, lack of comprehensive approach, improper research reports, and the complexity of the research), environmental barriers (lack of appropriate relationships between researchers, lack of scientific and research atmosphere and culture), underdeveloped society, the significant role of government in decision-making, inadequate funds and financial resources, technical barriers for research, and political challenges in the country (Moradi, Dustar, Ghaderifar & Zanjani, 2013). Therefore, it requires investigating the barriers to research performance evaluation in different research organizations (Hashemi Daran, 2012).

In addition to the importance of the research performance evaluation, the small share of the research budget in GDP, and the inadequate impact of research in a country like Iran, faculty members' promotion regulations are challenging issues that can be effective in the research performance evaluation of researchers and universities. Another factor influencing the research performance evaluation is too much emphasis on quantity. However, in addition to quantitative measurement, qualitative evaluation methods have been used to assess research activities. The choice of indicators for research performance evaluation or the combination of them depends on the purpose of the university's research and the nature of the performance of faculty members (Shafiee, Naderi Roshanavand, Abili & Sobhani, 2018). Due to the lack of an appropriate evaluation system for the research activities or the marketing system of the research findings, the results of the research budget allocation have never been examined. Therefore, achieving the first economic, technological, and scientific position among other Asian countries, according to the Iranian 20-year Vision Document, depends on research investment and increasing research units' productivity (Farhoodi & Bastehnegar, 2004). So, the current study aimed to investigate the challenges of research performance evaluation in Iran.

Materials and Methods

In this qualitative study, the research population consisted of experts in research management and policy-making, scientometric staff, and faculty members. They were selected from three levels (supervisors or macro, colleagues or medium, and subordinates or micro) based on the purposive sampling method. The main criteria for including the participants in the study were:

- At least three years experience in the field of scientometrics and research performance evaluation, research management, and policy-making
- Availability and responsiveness during the research

• Having education, experience, and scientific publications in the field of scientometrics and research performance evaluation

The semi-structured interview was performed based on the interview guide that it was prepared through a literature review. The interview guide consisted of eight questions. Five questions were about personal characteristics and work experience. Three questions were assigned to identify the challenges of research performance evaluation in Iran. The informed consent was obtained from the participants before the interview. One of the researchers (N.S.) interviewed experts in 2020. The experts' workplace includes the National Research Institute for Science Policy (NRISP), the deputy of research and technology in the Ministry of Health and Medical Education, and the scientometric units located in universities. Also, WhatsApp social media, and telephone were used to interview the experts because of the COVID-19 pandemic and the impossibility of face-to-face interviews. The voice recording program installed on the mobile phone was used to record the interviews. The interviews continued until the data saturation and the repetition of the information expressed by the participants. Finally, after 11 interviews, no more information was obtained. Six Out of 11 interviews were face-to-face, three were done by telephone, and two through WhatsApp social media. Table 1 shows the characteristics of the participation.

Table 1
The characteristics of the involvement in the interview

Stakeholder levels	Executive position	Number
Supervisor level (research managers and policy-makers at the national level)	Ministry of Health and Medical Education	2
	Ministry of Science, Research, and Technology	4
Level of colleagues (faculty members)	Vice-chancellor for research and technology, medical sciences university	1
	Faculty members in non-medical university	1
	Scientometrics staff in non-medical university	1
Subordinate level	Scientometrics staff in medical sciences universities	2
Total individuals		11

The time allocated for the interviews ranged from 13 to 51 minutes. Data collection and analysis lasted five months (February to June 2020). Most of the participants were male (6 people, 54%), had a Ph.D. in library and information science (6 people, 54%), and had at least four years' experience in research management and scientometrics (4 people, 36%). We excluded the experts from the study at any time if they were not interested in continuing the interview. Each interview was coded by the letter "I" and the number based on chronological order. The interview text files were sent to the interviewees to ensure validity. Finally, the MAXQDA software edition 10 was used for thematic analysis of interviews. Braun and Clark's model was used for thematic content analysis. The analysis steps include getting to know the data, creating primary codes, finding semantic units in the text, reviewing semantic units, defining and naming semantic units, and reporting (Braun & Clarke, 2012). Based on data

analysis, 143 codes were determined using the open coding method. We classified and merged similar codes based on the research objective. Finally, 143 codes in six main themes and 50 sub-themes were classified.

Results

Table 2 shows the challenges of the research performance evaluation in Iran. As Table 2 shows, among 50 subcategories with four codes or more, the most important challenges included the following: Lack of normalization in research evaluation, superficiality of scientometric training, the importance of scientometrics in research management, the need to change the role of scientometricians, the absence of scientometricians in research policy-making, the focus of university ranking systems on research indicators, the emphasis of university ranking systems on quantity, focusing too much on quantitative indicators, incompleteness of scientometric indicators, incorrect use of indicators, the role of scientometricians in improving the research quality, and the need for balanced attention to the quantity and quality of research. The following provided the interpretation of each main theme and sub-themes.

Table 2
The challenges of research performance evaluation in Iran

Main theme	Sub-themes	Number of codes	number of participants
The global challenge of research performance evaluation	The importance of balanced and scientific development of research evaluation systems	1	1
	Reducing the number of research evaluation systems in the world	1	1
	The universality of research evaluation issue	1	1
	The need for global participation in research policy-making	1	1
	Multiple models of research performance evaluation in the world	1	1
	Lack of a comprehensive model for research performance evaluation in the world	2	2
	Lack of normalization in research evaluation	10	4
	Different attitudes about scientometrics in the world	1	1
	Different methods in research performance evaluation in the world	2	2
The challenge of providing research infrastructures	Balanced infrastructure for all scientific disciplines	3	1
	Using technology in research performance evaluation	1	1
The challenge of scientometricians' position in research policy-making	The superficiality of scientometric education	5	4
	The importance of scientometrics in research management	8	5
	The need to change the role of scientometricians	5	3
	Lack of concordance with scientometrics changes	1	1
	Absence of scientometricians in research policy-	13	7

Main theme	Sub-themes	Number of codes	number of participants
	making		
	The role of scientometricians in improving the research quality	4	4
	Lack of self-confidence of scientometricians	1	1

Table 2 (cont.)
The challenges of research performance evaluation in Iran

The main category	Subcategory	Number of codes	number of participants
The challenge of university ranking systems	The commercial nature of academic ranking systems	1	1
	The focus of university ranking systems on research indicators	5	1
	Emphasis of university ranking systems on quantity	9	6
	Similarities of Iranian university ranking systems to international ones	2	2
	Lack of concordance of Iranian university ranking systems to the country's goals	3	2
	Multiplicity and multifaceted university ranking systems in the world	3	3
	The focus of university ranking systems on reputation	1	1
The challenge of scientometric indicators	Focusing too much on quantitative indicators	8	4
	Lack of attention to innovation and technology indicators	2	2
	Incompleteness of scientometric indicators	7	6
	The need to use combined indicators	1	1
	The need for using interdisciplinary research indicators	1	1
	The need to use native indicators	3	2
	Multiplicity of scientometric indicators	2	2
	Lack of standard quality indicators	1	1
	Incorrect use of indicators	5	1
	Easy-to-use indicators	2	1
	Constant updating of scientometric indicators	3	3
Inefficiency of management in research performance evaluation	The inefficiency of scientific diplomacy	1	1
	Independence of research management of a specific field	1	1
	Failure to determine the desired point in research performance evaluation	2	2
	High focus on presence in global university ranking systems	1	1
	Lack of attention to the research impact	3	3
	The need for balanced attention to the quantity and quality of research	4	4
	The need to revise research regulations	2	2
	Difficulty of research performance measurement	2	1
	High focus on research evaluation output	1	1

The main category	Subcategory	Number of codes	number of participants
	Multiplicity of regulation in research performance evaluation	2	1
	Multiplicity of supervisory bodies in research performance evaluation	1	1
	The need to determine the data access policy	1	1
	Lack of attention to proper research training	1	1
	Lack of expertise in research management	1	1
Total 6	50	143	11

The global challenge of research performance evaluation

Surveying the experts' point of view showed that the research performance evaluation is a global challenge, and all countries are dealing with the creation and using appropriate methods and indicators for the optimal research performance evaluation. Therefore, they should participate in research policy-making and create a general view.

“In my opinion, the research evaluation situation is the same in different countries. As much as we are arguing with different aspects of research evaluating the same challenges that we have, others also have” I1.

On the other hand, despite the multiplicity of research performance evaluation systems in the world, the number of these systems is declining and moving towards a more balanced and scientific growth of research evaluation systems. This is to pay attention to research and other functions of universities and higher education institutions.

“For example, the RAE in the UK has evaluated the only research in universities for many years. These research-based evaluation systems are now dwindling in the world because research is one of all aspects of a university. The balanced and reasonable growth of research performance evaluation systems in the coming years will be more than international academic ranking systems” I5.

Also, Iran has a different point of view regarding scientometrics and its application than other countries in the world. This has led Iran to act differently than other countries in research performance evaluation.

“You know that scientometrics is defined only in the field of library and information sciences in Iran. Research management can also be done by any professional. Read the signatures of those who are in this position and different countries. In my opinion, scientometrics is a tool that can help different fields, and it is an interdisciplinary field. So, it is reasonable that it doesn't have a strong position in Iran. Apart from research management, this position is related to a scholar librarian in the world, and there is no job as scientometric staff in universities” I1.

Another issue that most experts have mentioned is the need for more normalization in the research performance evaluation and using scientometric indicators based on various aspects. In addition to a balanced infrastructure for all disciplines and different applications of scientometric indicators worldwide, we need to have an integrated research performance evaluation system that measures the performance of individuals and universities from all aspects.

“The challenge is that everything isn't the same when we evaluate the performance. These evaluations should be normalized. The normalization of performance evaluation is a new

research topic. Subject normalization is a required action in the research performance evaluation…" I6

The challenge of providing research infrastructures

One of the essential issues identified in the interview was the provision of a balanced research infrastructure for all scientific fields, including the use of technology in research evaluations. One of the infrastructures is to create an integrated research system.

"For example, in the comprehensive scientific map of Iran, when we look at priorities A, a series of areas are among our priorities, like nanomaterials. The budget has been set for them, supporting the dissertations and research projects." I2

The challenge of scientometricians' position in research policy-making

A survey of the experts' views showed that 10 of them agreed with the presence of scientometricians in research management and policy-making, which is the basis of this profession in the library and information science, as well as medical library and information science. Only one expert believed that scientometrics was defined in the field of library and information science only in Iran. Other professionals can play this role as research managers. Information science and scientometric specialists can introduce new indicators like native research, participate in research policy-making, data extraction, and analysis, and prepare scientometric reports to assist research managers. The reason is that research policymakers extract only a set of scientometric indicators and apply them to all disciplines. They need to be aware of the strengths and weaknesses and the normalization of these indicators in different scientific fields. So, this requires the presence of scientometrics and information science specialists in research performance evaluation.

"I believe these scientometrics experts only use a series of indicators currently introduced by others worldwide. These indicators are applied in special situations in the world. However, in Iran, we face a problem that some research policy-makers take an indicator and generalize to all disciplines, universities, and departments. The reason is that they don't have scientometric knowledge enough." I7

On the other hand, the main issue is the superficiality of scientometric training and the need to comply with changes in this field. New educational methods and improved knowledge of information science and scientometric specialists in research performance evaluation are required. These specialists should improve their self-confidence in performing their duties, change their roles as technologies and research evaluation methods transform, and increase the quality of research.

"We analyzed research data and found that Scival and Dimension are doing much better. So, the information science and scientometric experts must not only participate in research evaluation. They also can introduce new scientometric indicators because this is not something a robot can do. Otherwise, this field will not have any application in the next five years." I1

"The scientometrics colleagues working in these fields need to go a little further than they learned in their academic education." I5

Challenge of university ranking systems

An examination of the expert views showed that many ranking systems in the world are based on different aspects of education, research, and technology; apart from the fully

educational systems that are mostly used to choose an accredited and suitable university or educational institution, other multidimensional systems are based on reputation, research indicators, and more commercial ones. Among the research indicators, most of these ranking systems are based on scientific productions and pay less attention to qualitative and interdisciplinary indicators. On the other hand, a mere emphasis on research can lead to ignoring education and scientific influences in society. Therefore, most experts believe that all aspects of a higher education institution should be considered in the ranking system. Most of the university ranking systems don't cover the various aspects of a higher education institution, and this causes problems, especially in developing countries such as Iran, which in recent years has emphasized the presence of these university ranking systems more than before. None of these ranking systems are complete, and each has some strengths and weaknesses. Thus, the emphasis on quantity has caused the top ten universities to be the same in most of these systems, and there is no place for universities in developing countries due to a lack of enough reputation and quantitative indicators.

"Each of these evaluation systems has its criteria and indicators. Despite the similarity, they are different. Most of them focus on research indicators. The education in these systems is ignored and not evaluated. Our higher education system now is weakened in terms of scientific ethics and the quality of education because of the increasing importance of attendance in these university ranking systems…" I2

"For example, 50% of indicators in the QS ranking system are just the reputation of one university. Reputation means the international reputation of your institution in the world. You cannot compare the United States with India, Iran, and other developing countries" I9.

On the other hand, national ranking systems are the same as international ones and are not localized based on the country's needs and goals. So, they are another version of international university ranking systems that combine different aspects.

"On the other hand, look at our national evaluation systems, such as ISC, that are a localization of the international ranking systems. It isn't designed to meet our country's goals and government documents roadmap. Our ranking systems must be on our country's capabilities, not that we compare ourselves with developed countries. Maybe it is better to compare our universities in the country." I2

The challenge of scientometric indicators

The survey of research experts' views showed that we use different scientometric indicators to evaluate the research performance. The multiplicity of these indicators is, on the one hand, an advantage and, on the other hand, a threat. It needs a proper basis for accurately evaluating research performance. These indicators are constantly updated, and each new indicator covers the weaknesses of the previous ones. But it also has a weakness that we should expect to be resolved in the future. Therefore, none of the scientometric indicators can claim to fully and accurately evaluate the research performance. On the other hand, according to the establishment of third- and fourth-generation universities, scientometric indicators must be more than just research-based. Other aspects, including entrepreneurship, must be considered new indicators for research performance evaluation.

"Altmetrics is a good method. Currently, existing scientometric indicators in university evaluation aren't comprehensive at all. We are now moving from an educational and research university to a third-generation university. So, these indicators should also be suitable for third-

generation universities. These indicators should not be just research-based ones" I9.

Besides, these indicators are more focused on quantitative criteria. It is necessary to use combined, interdisciplinary, qualitative, technology, and innovation-based indicators due to the developments in technology and the third and fourth-generation universities, as well as the importance of interdisciplinary sciences, the position of gray literature, and the quality of research. So, it can be the duty of scientometricians to use their knowledge and skills to introduce new indicators for research performance evaluation.

"For example, it has been focused on article numbers instead of technology and innovation indicators in Iran. Our evaluation system is called a science, technology, and innovation evaluation system. So, introducing and using the interdisciplinary, combined, and new indicators are essential." I1

Research experts believe that an important feature of scientometric indicators is their ease of use, which in turn raises challenges such as their improper application by universities for evaluating research performance. Therefore, each country must localize these indicators according to its needs and priorities to evaluate research performance efficiently.

"We must localize the indicators. In different situations, we suggest what indicators can be used or what adjustments can be made to the existing indicators." I7

Inefficiency of management in research performance evaluation

The research experts have raised several challenges regarding the inefficiency of research management in Iran that affect research performance evaluation. These include the difficulty of research performance measurement, the multiplicity of regulation in research performance evaluation, the multiplicity of supervisory bodies in research performance evaluation, the high focus on research evaluation output, and the high focus on presence in global university ranking systems.

"The measurement of research performance is not an easy task, and at present, most evaluations are based on research output and, to some extent, input and process. Their main weakness is that, firstly, they place more emphasis on output; secondly, they are quantitative; and thirdly, they are short-term evaluations. Therefore, research results are usually considered at a short-term level and very close to when research was conducted." I9

Another important factor that affects the evaluation of research performance is the need for more expertise in research management. In addition, one of the experts believed that research management should be wider than a specific field because for research evaluation, only certain indicators and citation databases such as Web of Science and Scopus are used, and everyone can do it. However, there is a need for scientometricians in policy-making and research management. This point of view was accepted by most experts in this research, even persons outside the information science and scientometric fields. These two conflicting perspectives highlight the need to review research policies and improve scientometric training.

"Unfortunately, most research managers are from other fields in our country. In medical universities, for example, the research manager is a physician, or in engineering schools, he or she is an engineer. One problem is that many research managers and policy-makers are unfamiliar with scientometrics." I9

Other main issues from the expert's point of view were failure to determine the desired goal in research performance evaluation, lack of attention to the research impact, lack of attention to

proper research training, and the inefficiency of scientific diplomacy due to political issues. It requires sufficient attention to the quantity and quality of research and determining the policy of access to data that should be considered by research managers and policy-makers.

"One of the four main indicators to evaluate the research performance is international collaboration, which, unfortunately, due to the political issues in our country, is decreasing day by day, and of course, political issues are everywhere. It seems that now the rate of seeing and citing our articles is also declining due to political issues." I5

"A few years ago, evaluation systems were mainly based on quantitative criteria, leading to the fact that quantitative indicators were insufficient for the research evaluation of universities and individuals. So, qualitative indicators were tried to be added to it. Qualitative indicators do not have accurate measurement criteria, which makes it difficult to evaluate research performance." I1

The results of this study showed the challenges in research performance evaluation in six categories in Iran. These results require the research managers and policy-makers to pay attention to each category and its related issues.

Discussion

This qualitative study analyzed the challenges of research performance evaluation in Iran by interviewing experts. The results showed that out of 50 sub-themes with four codes or more, the most important challenges based on the expert perspectives included lack of normalization in research evaluation, the superficiality of scientometric training, the importance of scientometrics in research management, the need to change the role of scientometricians, the absence of scientometricians in research policy-making, the focus of university ranking systems on research indicators, the emphasis of university ranking systems on quantity, focusing too much on quantitative indicators, incompleteness of scientometric indicators, incorrect use of indicators, the role of scientometricians in improving the research quality, and the need for balanced attention to the quantity and quality of research.

Examining the views of research experts showed that the evaluation of research performance is a global challenge, and all countries are dealing with the creation and use of appropriate methods and indicators for an effective research performance evaluation. Therefore, it requires the participation of all countries in research policy and creating a general view in this regard. In countries such as the United States, the United Kingdom, and the Netherlands, Faculty members with quality research are promoted and receive higher salaries. It indicates the universality of research performance evaluations and their greater importance than educational evaluation (Cadez, Dimovski & Zaman Groff, 2017).

On the other hand, attention to research and other duties of universities and higher education institutions has led to a balanced and more scientific growth of research evaluation systems. Also, the research performance evaluation method in Iran differs from other parts of the world due to its distinct view regarding scientometrics. According to the research experts, in addition to providing balanced infrastructures for all disciplines and differences in the use of scientometric indicators in the world, there is a need for an integrated system that measures the performance of researchers and universities based on distinct dimensions (Farhoodi & Bastehnegar, 2004). Also, it needs to use new technologies and methods such as big data, artificial intelligence, and data mining for research performance evaluation. According to

research experts, creating an integrated system for entering research information is one of the essential issues in research performance evaluation in Iran.

Noroozi Chakoli, Ghazavi and Taheri (2016) stated that it isn't possible to compare the research performance of different disciplines due to their distinct characteristics. However, active research and technology policy-making institutions must always compare researchers and institutions in various dimensions based on their capability, efficiency, productivity, effectiveness, etc. Therefore, we can use the normalized values and ratios of publication indicators to achieve accurate and adjusted results, as well as objective policy-making. It indicates the requirement of field normalization consistent with the current study's interview results.

Regarding the importance of using new technologies in research performance evaluation, the existing social network analysis software such as VosViewer can be used in research performance evaluations (Hamidah, Sriyono & Hudha, 2020; Shah, Lei, Ali, Doronin & Hussain, 2019). The literature shows that the application of new technologies in research performance evaluation needs to be addressed, and it requires in-depth research. On the other hand, the majority of experts agreed with the presence of scientometricians in research management and policy-making, which the basis of this profession is in information science and medical librarianship. Information science and scientometric specialists can introduce new indicators like the native ones, conduct research policy-making, extract and analyze data, and prepare scientometric reports to help research managers. The reason is that the policy-makers extract only one set of indicators and apply them to all areas. They need more knowledge about indicators' strengths, weaknesses, and field normalization. It requires the presence of information science and scientometric experts in the research performance evaluation. Therefore, educating new topics and methods of scientometrics and research performance evaluation can effectively increase the importance of these people's presence in research management (Atash Deligani, Asadi & Noormohammadi, 2017).

Also, the study showed numerous university ranking systems worldwide based on different aspects of education, research, and technology. Apart from universities' educational ranking, most of these systems are based on reputation and quantitative indicators, followed by more commercial ones. Most experts believe that all aspects of a higher education institution should be considered in the university ranking systems. It causes a fair ranking of universities in developing countries. National ranking systems are another version of international ones and aren't localized based on the country's needs and characteristics (Çakır, Acartürk, Alaşehir & Çilingir, 2015; Johnes, 2018).

Other essential challenges in research performance evaluation in Iran are the multiplicity and misuse of scientometric indicators and the over-focus on research quantity. The constant updating of these indicators has many strengths and weaknesses, so the completeness of each indicator cannot be confirmed. The changing universities to third and fourth-generation ones highlight a need to use technology and industry-based indicators in research performance evaluation. It had been ignored in most national and international university ranking systems and academies' promotion regulations. So, scientometricians can introduce composite, interdisciplinary, qualitative, technology, and innovation-based indicators due to the growing importance of interdisciplinary sciences, gray literature, and the quality of research. Therefore, each country must localize scientometric indicators based on its priorities and different dimensions of university performance in research, education, and entrepreneurship (Foroughi,

Tahmasebi Limooni & Ghiasi, 2020; Waltman & van Eck, 2019).

Also, the research experts pointed out that the main challenges of inefficiency in research management were the difficulty of research performance measurement, the multiplicity of regulation in research performance evaluation, the multiplicity of supervisory bodies in research performance evaluation, high focus on research evaluation output, and high focus on presence in global university ranking systems. Another essential factor is that research managers need more scientometric and research policy-making knowledge and expertise. The challenges related to the role of scientometricians in research management showed the need for scientometric experts in policy-making and research management. The majority of research experts, even those outside the field of information science and scientometrics, accepted this idea. It requires a review of research policies and improvement of scientometric training in line with technological and research developments, as well as the needs of society.

Based on the results of this study, research managers and policy-makers need to look critically at each category and take steps to improve the current situation of research performance evaluation and address potential challenges. One of the study's limitations was the onset of the COVID-19 pandemic and the impossibility of conducting face-to-face interviews with Iranian authorities in research and technology policy-making. To overcome this constraint, we interviewed the lower-ranking officials in the Ministry of Health and Medical Education, the Ministry of Science, Research, and Technology at the university, and the National Research Institute for Science Policy. Call recording programs installed on mobile phones and WhatsApp social media were also used in case of the impossibility of face-to-face interviews.

Conclusion

The results indicated six major challenges in the research performance evaluation in Iran, including the global challenge of research performance evaluation, providing research infrastructures, the position of scientometricians in research policy-making, university ranking systems, applying scientometric indicators, and inefficiency of management in research performance evaluation. The most important issues in this regard were lack of normalization in research evaluation, superficiality of scientometric education, the importance of scientometrics in research management, the need to change the role of scientometricians, the absence of scientometricians in research policy-making, the focus of university ranking systems on research indicators, the emphasis of university ranking systems on quantity, focusing too much on quantitative indicators, incompleteness of scientometric indicators, incorrect use of indicators, the role of scientometricians in improving the research quality, and the need for balanced attention to the quantity and quality of research. Therefore, the research managers and policy-makers, to effectively evaluate the research performance in their countries, must critique the most important issues in each dimension and then change their university promotion regulations and research assessment rules to improve the current situation of research performance evaluation.

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