
Review

Functions of Institutional Research in Iran and Universities of Medical Sciences around the World: A Systematic Review

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Abstract

Introduction: Institutional research (IR) refers to the process of guiding academic research works and its relation with policy and practice, so as to enhance the quality of university. The present research is aimed at investigating functions of IR across universities of medical sciences in Iran and the world.

Methods: In this review study, the required resources were collected by systematically searching Google Scholar, ScienceDirect, AIR, and ERIC databases using the following keywords: Institutional, Research, Association for Institutional Research, and Institutional Research. For this purpose, firstly, a total of 186 papers related to IR were considered, of which 35 IR-related papers published during 1966-2017 period were finally selected.

Results: Results of investigations performed at national and international levels show that IR not only provides its four main functions as information authority, spin doctor, policy analyst, and scholar and researcher but also offers other functions such as knowledge management, information management, strategic planning, accreditation, and university-industry interaction facilitation.

Conclusion: Decision-making units in universities of medical sciences in Iran include centers for studies and development of medical science education as well as policy-setting councils. Activities of these centers indicate that six out of 18 IR activities proposed by Volkwein were covered, and for other activities no particular task was planned for either these two units or other units of the university, and most likely, no particular precedent study is performed to support policy analysis and researching. This conclusion can serve as a guide for thinking and taking action for establishing an office of institutional research in every university across the country.

Keywords: Institutional research, Medical education, Higher education, Decision-making, Policy-making

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Introduction

Rapid technological evolutions and increased investment in the production of goods and services, and subsequent fast economic growth, particularly in mid-20th century, led to the development of universities and institutions of higher education, an increased number of academic majors of study, and remarkable growth in the population of students in developed countries. Fortunately, this trend has been paid attention to in Iran as well, and policies on quantitative development of higher education in all aspects and at all levels have been incorporated into the country's development plans. The quantitative development of higher education in Iran has been an inevitable necessity, not to mention that the great scientific and technological achievements attained today root deeply into previous investments on human resource in recent years. Despite all of such achievements, one may not ignore the fact that the qualitative development policies have affected other pillars of the higher education system, making Iran's higher education system face several challenges (1). One of such challenges is that the quality of higher education in the Iranian system of higher education is far behind many standards deployed in higher education systems at developed countries. One of the demonstrations and also causes of the lack of quality in Iranian system of higher education is organizational underdevelopment of Iranian universities. This underdevelopment not only is evident on the macro scale (e.g. weaknesses related to academic independence, scientific liberty, culture of scientific community, and human resources), but also can be investigated by observing its micro, more comprehensive, more objective indicators. One of such well-objective and practical aspects is the lack of institutionalization of "institutional research (IR)" across Iranian universities (2). Office of institutional research (OIR) is a fundamental and efficient part of a university which carries the responsibility for guiding academic research from the research formation to its evolution to policy and executive guidelines so as to improve internalities and external accountability, and can play an important role in the development and qualitative enhancement of universities and higher education system via targeted research activities (3).

The concept of IR was first recognized in 1869 when the US government surveyed American universities. The term IR had been well established in higher education literature

by 1950 (4). According to Peterson (1999), IR refers to the investigations designed to generate the required information for planning, policy development, resource allocation, and management across all areas wherein a university may deliver functions (5).

History of IR evolution as a systematic executive process roots back to the 1960s. Peterson (1999) investigated the trend of evolution of and changes in IR during the 1950-1990 period. According to him, four fundamental evolutions in the history of American higher education resulted in the formation and development of IR. These four changes included: (I) rapid growth during the 1950s and 1960s, (II) public discontent and distortions in the 1960s and 1970s, (III) retrogression and limitations in the 1970s and 1980s, and (IV) financial crises and dropped demands during the 1980s and 1990s. As of current, one may further add the millennium changes in technology and globalization to the above-mentioned causes (5).

Considering the historical trend, IR was originally focused on data collection and application of data analysis results to support planning, organizational management, and organizational subsystems to address legal requirements. In recent years, with educational institutions becoming more complex and the acceptance of profitability role for higher education, IR has played a more extended role in educational institutions and universities (6). In recent decades, IR has been established and promoted at credible universities around the world to contribute to the process of decision-making and undertaking extensive targeted studies and research works to provide academic managers with the information required for making effective decisions, problem-solving, and ensuring optimal performance of different parts of university to enhance the quality of functions, processes, and outputs of such an influential entity in the society (7). Volkwein (1999) used a matrix model to describe objectives and role of IR; the model was developed around two axes, namely evaluation (from internal assessment to external accountability) and management (from administrative and bureaucratic levels to academic and professional levels). Therefore, IR plays four roles or functions in a university as (I) information authority, (II) spin doctor, (III) policy analyst, and (IV) scholar and researcher (8) (Figure 1).

ORGANIZATIONAL ROLE AND CULTURE	PURPOSE AND AUDIENCE	
	Formative and Internal for Improvement	Summative and External for a accountability
Administrative and Institutional	To describe the institution IR as information authority	To present the best case IR as spin doctor
Academic and Professional	To analyze alternative IR as policy analyst	To supply impartial evidence of effectiveness IR as scholar and researcher

Figure 1. Four purposes and roles of IR (Volkwein 1999).

With the emergence of knowledge-based economy in the 21st century, Serban (2002) referred to knowledge management as the fifth role of IR in a university. He believed that, the four main functions of an OIR will be achievable and practical only once knowledge management is realized (9). In addition to these five roles, Bagshaw (1999) placed an emphasis on the role of IR as a learning mediator at the learner university and expressed that the main asset of OIR in relation to this function was knowledge and recognized the university as a learner entity (10).

The main objective of medical education is to train skillful forces who can deliver services in healthcare systems desirably, so as to enhance the quality of people's health. The level of medical education is measured based on the needs of a society. OIR at universities of medical sciences can not only address knowledge management and transfer but also play a significant role in driving the healthcare system towards its goals by troubleshooting, information communication, and formulating solutions to design and implement healthcare programs as well as other functions referred to by Volkwein.

Considering the crucial position of medical sciences in higher education system, the subject matter of validation has gained a great deal of attention across scientific communities in the domestic medical science education system. The significance of paying attention to quality enhancement becomes even more evident when one considers that, according to World Federation for Medical Education (WFME), medical education has been excessively developed (at the level of general medicine at least) all around the world during the last two decades. Meanwhile, increased awareness of societies has been translated to an increasing trend in the level of general public's expectations from doctors (11). Indeed, institutes of higher education are now faced by a dual-aspect issue. On the one hand, they need to be adapted to the

requirements of the evolved external environment, and on the other hand, innovative inconsistency with external evolutions necessitates a change in the attitude toward internal issues. All by all, these are related to the subject matter of quality (2). In order to maintain their effectiveness, efficiency and productivity while building trust and attaining regional and international credibility, universities should address the issue of quality, and this adds to the importance and materiality of the philosophy behind the presence of OIR in academic and higher education literature, to the point that today credit assessment associations recognize the presence of an effective and efficient OIR as one of the criteria indicating effectiveness of a university (12).

Healthiness of a society can contribute to economic, political, social, and cultural development of that society. Given that ultimate goal of healthcare system at any country is to enhance the level of health among general public and establish health justice across various groups of people, research can play a significant role in driving the healthcare system towards the goal by troubleshooting, information communication, and formulating solutions to design and implement healthcare policies and programs. According to investigations performed across the US and Netherland, researchers estimate that 30-45% of patients receive no healthcare according to scientific evidence, and 20-25% of them receive an unnecessary or potentially harmful level of healthcare. It is further estimated that cancer implications can be improved by up to 30%, and available treatment methods can be used to reduce cancer-resulted fatalities by at least 10% using evidence-based research. Filling in the gap between research and practice in the scope of healthcare by for example delivering better clinical care by service providers or decision-making and policy-setting in healthcare system requires establishing a link between research and practice to bring researchers' and decision-makers' worlds as close together as possible (13,

14). The present research is aimed at investigating functions of IR across universities of medical sciences in Iran and the world.

Methods

This study was conducted via systematic review. A total of 186 papers were included in the study in the first stage. Later on, omitting irrelevant papers to the subject of interest as well as those published on non-credible journals and also the papers focusing on disciplines other than medicine, we were left with a total of 35 papers for further investigation. Considering the main components of IR, namely (I) information authority, (II) spin doctor, (III) policy analyst, and (IV) scholar and researcher, the keywords "Institutional", "Research, Association for Institutional Research" and "Institutional Research" were extracted. In order to achieve the required resources, data collection from Google Scholar, ScienceDirect, AIR, and ERIC databases was performed via systematic search method. Selected for this purpose were IR-related papers published during 1966-2017 period. The initial criterion considered for selecting the papers was their relevance to IR. Inclusion and exclusion criteria were the investigation of the paper in printed credible journals or valid educational websites such as ERIC in the form of theses focused on IR as their core axis. The investigations reporting IR in non-medical universities were omitted. In the present research, data analysis was characterized and extracted using categorical classification of content of documents and evidence of categories (themes).

Results

In the systematic review of the papers, a total of 35 papers on the considered subject were considered, including 8 domestic and 27 foreign papers on the subject of interest.

Domestic studies

- Saketi (2005) refers to five roles for IR, including (I) information authority, (II) troubleshooting and problem solving, (III) analysis of policies and strategies, (IV) researching and fair assessment, and (V) knowledge management (evolution). The researcher describes one of the functions of IR as attracting participation of other units or groups in making operational decisions (4).

Entezari (2006) refers to investment on development and productivity of knowledge as the most significant challenge faced by Iranian universities in relation to IR. As a solution, he recommends moving the universities toward becoming learner and knowledge-oriented organizations (15).

- Farasatkah (2010) refers to organizational underdevelopment of universities in Iran as a cause of quality deficit in the country's higher education system, and investigates the underdevelopment in both macro and micro scales. He recognizes lack of institutionalization of IR in Iranian universities as a well-objective and practical aspect of the problem. He further believes that institutional researchers can effectively contribute to the solution of problems and crises faced by the Iranian system of higher education (2).

- Amin Bidokhti et al. (2012) investigated all intra-university and external requirements for the realization of IR out of theoretical fundamentals and background from the viewpoints of experts, researchers, and professionals at Ministry of Science, Research and Technology and associated scientific-research centers in the scope of IR. Findings of the research indicated that the sample members confirmed all of the mentioned requirements. The results further showed that building beliefs in top management and attracting their participation and support serve as an inevitable necessity in successful implementation of objectives or new plans in any organization in general, and universities, in particular (16).

- Nemati et al. (2014) stated that even though patterns of university-industry interaction are defined largely under the influence of internal and external factors in the university and industry, with different countries experiencing different approaches in this respect, but for most parts, emerging and effective currents such as growth parks and centers are developed, which can contribute to the development and excellence of OIR in the process of national development by once combined with permanent and stable elements of universities including IR unit. Placing an emphasis on its function to improve internal affairs, OIR results in the acceptance and a more consistent joint between growth parks and centers, in one hand, and the body of university, on the other hand, increasing effectiveness and success of these multi-aspect centers. OIR can also establish a more dynamic communication and link among university, society, and industry by delivering its external accountability function (3).

- Nemati & Musavi Amiri (2015) summarized challenges, barriers, and limitations against the realization of IR in Allameh Tabataba'i University into six axes: (I) academic culture, (II) managerial-structural, (III) scientific-professional, (IV) financial-credit, (V) statutory-legal, and (VI) information technology; they further developed a casual model based on these six axes. The results obtained in this research indicated that from the viewpoint of faculty members, managers, and experts

serving at Allameh Tabataba'i University, the managerial-structural challenges were of higher priority than other challenges (17).

- In 2016, Nemati defined the mission of OIR in Iranian universities as guiding academic research works and establishing a link among the research works and policy and practice, so as to enhance quality of universities via (A) consistent improvement of internal functions and processes, and (B) effective accountability to environmental evolutions and needs (18).

- Toroghi et al. (2016) refer to the continuation of the trend of policy formulation at universities as a missed part of the process through which academic policies are set. As such, they state that establishing OIR in Iranian universities can set the stage for consistency of four communities, including "policy researchers, policy-setters, decision-makers, and policy implementers" (19).

International studies

- Perry (1972) elaborated on strict insistence of universities on the third force (which is IR) and its duties, and explains the effective role played by OIR in reinforcement of higher education planning management systems (20).

- Chalker (1981) argues that the data obtained from IR can be applied as a tool to strategic planning process (21).

- In his study, Fincher (1985) concludes that research-oriented assessment should be undertaken by institutional researchers based on organizational intelligence (22).

- In his study, Ewell (1989) defines the role of IR as supporting decision-making by providing the required information and states: whether the data generated at institutions of higher education are used for the purpose of decision-making has become a concern for IR experts. Study of the application of organizational data has been often related to the application of evaluation results. In contrary to IR, program evaluation has attracted an extensive deal of research studies, wherein the effect of applying the results of program evaluation on decision-making contributing to improved quality of the programs has been discussed (23).

- Matsen (1993) refers to the presentation and interpretation of information as the main characteristic of IR. Despite the general perception regarding the value of statistics and figure, Matsen noticed that qualitative data are much more important than quantitative data in decision-making process. Many of the researchers who use both qualitative and quantitative data have noticed

that both categories are of particular importance. In an ideal case, combination of these two brings about very useful and unique results (24).

- Harrington & Chen (1995) recognize the following as applied activities led by IR: enrolment management, student retention, investigation of alumni's viewpoints, budget development and allocation, support of operational and strategic planning, reviewing the university program, assessment of education procedure, and faculty exploitation (25).

- Tosh (1996) observed no significant relationship between the application of data and decision making processes. According to him, lack of data alone may not inhibit decision-making, and some decisions are made solely based on subjectivity and the information obtained from events, stories, and accidents (26).

- In their study, McLaughlin et al. (1998) proposed a change strategy including five stages titled as denial, hostility, bargaining, depression, and acceptance (27).

- In his study, Middaugh (1990) expresses that the main function of IR is to formulate analytical strategies for supporting the university management in decision-making process (28).

- Terenzini (1999) compares the required merits to establish OIR with organizational intelligence in three categories: 1. Technical/Analytical intelligence, 2. Issues intelligence, and 3. Contextual intelligence. He finally concludes that research-based evaluation should be undertaken by IR experts based on organizational intelligence and three merits: 1. Methodological and analytic skill, 2. Information analysis and statistical measurement, and 3. Methodology of empirical, quasi-empirical, survey-based, and qualitative research works, introducing IR expert as an information reference (29).

- Zikopoulos & Hourigan (2001) referred to the followings as principle duties of instructional researchers: (I) gathering and preserving valid information and application of the information as a reliable source of academic data for domestic and foreign purposes, (II) retaining enough deal of data and information about the results of evaluations, enrolment, student retention, graduation, and drop off rate, and (III) participation in the implementation of self-evaluation (30).

- In their study, Ferren & Aylesworth (2001) recognized three important areas in the scope of the application of IR-derived data by university officials. The areas were related to making crucial decisions about faculties, making decisions about productivity of curriculum, and

decision-making regarding the improvement of consequences of learning by students. As reasoned by these researchers, a deputy of academic affairs requires the data to be produced by OIR for making decisions regarding faculty selection, faculty preservation and evaluation. In this study, it was further found that qualitative and quantitative data are required for making the faculty-related decisions such as those related to wages and compensations including base salary and salary improvement. Other decisions across the faculty which required the data to be produced by OIR were those related to workload of professors and their performance improvement (31).

- Borden & Thoms (2001) state that IR experts play a very significant role in the process of portfolio development because they enjoy a great deal of knowledge and awareness regarding academic data along with the required skills for measurement and analysis as well as experiences in delivering quantitative information (32).

- Elaborating on his research results, Augustine (2001) argues that academic managers use IR-obtained findings for decision-making (33).

- Presenting a review study, Dodd (2004) expressed the importance of accreditation and the role of IR through the accreditation cycle, describing IR as a self-organizational study of universities (34).

- In his study, Crossen (2004) concluded that information obtained from IR plays a significant role in strategic decision-making process. According to him, one can use the information obtained from IR to determine gaps and differences, ending up with strategic decision-making (35).

- Romero et al. (2005) stipulate in their study that individuals tend to use research data to better understand the states of other faculties, understand policies, undertake informed planning, and develop new programs. The researchers further pointed out that they have found some research areas as valuable to them, indicating the best practices and programs in terms of learning consequences for students, the university itself, teaching and training, academic planning, and responsive enrolment management (36).

- Walton (2005) concluded that IR data influence the way managers think or act when making decisions, with the best managerial decisions being primarily based on data (37).

- Voorhees (2008) raised the role of IR in strategic planning and urges the necessity of establishment and development of OIRs. This researcher explains that IR can contribute to strategic planning for making value-added, and discusses techniques to be considered by universities as a fundamental basis for strategic planning (38).

- In his research, Whitchurch (2008) found that those who "cross boundaries" and contribute to development serve as a "third space" connecting professional and academic scopes (39).

- According to Volkwein (2008), some of newly developed applications of OIRs include acceleration of the process of data collection and conversion to information and then the information to organizational knowledge, acceleration of the process of the implicit knowledge held by employees to an explicit organizational knowledge, and facilitation of the process of creating, setting, and adopting the organizational knowledge in universities. Volkwein refers to strategic planning as a function of IR and presented 18 activities in the scope of IR. The activities include 1. Benchmarking, 2. Strategic planning, 3. Students' outcome assessment, 4. Accreditation, 5. Institutional effectiveness, 6. Academic and administrative program, 7. Instructional analysis, 8. Faculty development, 9. Students' life and campus climate, 10. Evaluation of comprehensive quality management and continuous quality improvement, 11. Curriculum development, 12. Enrolment management and retention, 13. Knowledge management and technology, 14. Resource management, 15. Admissions recruitment, 16. Fundraising, 17. Alumni relations, and 18. Accountability and performance measures (40).

- Leimer & Terkla (2009) express that from a transitional point of view, the individuals who work as researchers in research universities can be characterized by possessing organizational intelligence. They further believe that such individuals should enjoy social intelligence and emphasizes that the decisions made should be based on evidence. As the primary characteristic of IR, they refer to information gathering and analysis (41).

- Delaney (2009) seeks to address the question how institutional researchers can achieve the mentioned goal by extending their role in policy-setting, strategic planning, evaluation, accreditation, program assessment, and academic research studies (42).

- Knight (2010) stipulates that an IR expert should carry out novel functions such as serving as a designer, planner, and counselor in academic affairs, with all academic

decisions (e.g. decisions made about students, faculty members, staff, and other academic affairs) to be made on the basis of the studies and investigation performed by OIR and counseling with the experts at this office. The researcher further places an emphasis on information engineering and management by OIR (12).

- In his study, Terenzini (2013) expresses that as of today, OIR is not only an information gathering unit, but also serves as a source of evolution within the university by analyzing and establishing links between the collected data and information and internal and external issues faced by the university in order to describe complexity of the surrounding environment and continuously interact with it while finding effective and strategic solutions at the same time (43).

Discussion

Considering the investigations studied herein, one can discuss IR functions in two groups, namely traditional and newly developed functions, as is elaborated in the following.

A. Traditional functions

From Volkwein's point of view, one of the primary and traditional functions of IR is information authority. Aiming at organizational development of university and performing extensive studies and research works to provide the university managers with the information needed for making effective decisions, OIR can recognize opportunities and ensure optimal performance of different parts of the university. Being composed of informative and organizational researchers, OIR can turn raw data into meaningful information for planning and policy-setting purposes so that universities are empowered to adapt the evolving environment of today and build the future (46). In this respect, Knight (2010) recognized all decisions made in the context of university as being based on OIR studies and investigations while placing an emphasis on the necessity of information engineering and management by the honor of OIR (12). Moreover, Saketi (2005), Terenzini (1999), Zikopoulos & Hourigan (2001) and Leimer & Terkla (2009) recognize this function as necessary (4, 29, 30, 41).

Policy analysis is another traditional function of IR. IR data represent a requirement for academic decisions related to organizational effectiveness and improvement. Throughout their routine activities, universities deal with various types of data. Decentralized organizational data management involves IR and planning in wide spectrum

- In their research, Borden et al. (2013) recognized special interactions between OIR and the surrounding environment as an effective factor on the development of university (44).

- Victoria et al. (2017) explain the importance of knowledge management in IR, and, in line with the knowledge management, recognize particular merits and capabilities as necessary for growth and development of this unit (45).

To sum up, the review on the studies performed so far indicates that functions of IR not only includes the four dimensions referred to by Volkwein (1999) but also encompasses such new functions as knowledge management, information management, strategic planning, validation, and university-industry communication (8).

of areas such as admission and enrolment, student investigations, planning and analysis, space management, alumni department, etc. The important thing to note is the production of targeted, rapid and up-to-date data. Schmidtlein (1985) believes that most of institutes of higher education have centralized OIRs wherein organizational data are collected to provide decision-making processes with information at different levels (47). Ewell (1989), Middaugh (1990), Ferren & Aylesworth (2001), Borden & Thoms (2001), Matsen (1993), Augustine (2001), Walton (2005), Crossen (2004), Delaney (2009), Knight (2010), Toroghi et al. (2016), and Saketi (2005) have emphasized this function (4, 12, 19, 23, 24, 28, 31-33, 36, 37, 42). In the meantime, Tosh (1996) observed no significant relationship between the application of data and decision-making processes. Indeed, lack of data alone may not inhibit decision-making, and some decisions are made solely based on subjectivity and the information obtained from events, stories, and accidents (25).

Another primary foundation of IR is its function as a researcher. Altbach & Kelly (1986) recommend research-based decision-making to academic managers. A requirement of this decision-making approach is the research and evaluation or what is referred to as "research-based evaluation" (48). Considering such a function, Fincher (1985) introduced IR as organizational intelligence (22). On the same line, Terenzini defined research-based evaluation by IR experts based on organizational IR (29). Saketi (2005) and Farasatkah (2010) emphasized organizational intelligence, but presented different interpretations (2, 4).

B. Newly developed functions

Whitchurch (2008) discusses a reformation in the nature of IR function, which is the impact that IR practitioners can impose on sustainable development of higher education via interactions with the surrounding environment (39). In his research, he discusses "crossing through borders" and development of a "third space" interconnecting industrial and academic spaces. These changes along with the ongoing reformation in higher education imply that the individuals administering these professional functions are becoming more active in their occupational and responsibility contexts. In order to be more effective in their scope of work, IR practitioners need to look beyond the immediate surrounding environment and consider how a wide spectrum of external factors contributes to survival and sustainability of institutions of higher education by affecting the society and economy. As of today, OIR is no more seen as an information gathering unit only (43). On this basis, Borden et al. (2013) recognized special OIR-environment interactions as a more effective factor in the development of universities (44). In this respect, Volkwein (2008) proposed 18 IR activities in addition to the four main aspects of IR (40).

Volkwein (2008) refers to strategic planning and decision-making as a novel function of IR (40). The studies performed by Crossen (2004), Delaney (2009), Voorhees (2008) and Toroghi et al. (2016) further emphasize this function (19, 36, 38, 42). Institutional researchers can provide the largest contribution to higher education in the 21st century by extending their current functions and accepting new roles to adopt further authority and influence on the decision-making process (42). In this regard, Terezini (1999, 2013) places an emphasis on organizational intelligence of IR experts (29, 43) and Saketi (2005) defines IR as knowledge-based management (4). Bagshaw (1999) highlights the learner university and knowledge roles (10), and Serban (2002) further emphasizes the issue (9).

Of the newly developed functions of IR, one can refer to quality assurance and accreditation. Institutions of higher quality provide the required basis for retaining flexibility and adaptability, and this is why these institutes exhibit faster responses to environmental changes, guiding the changes through the desired direction. Nemati (2016) defines IR as guiding academic research works and linking them with policy and practice, so as to enhance the quality of university (18). Farasatkah (2010) refers to failure to institutionalization of OIR in Iranian universities as a cause of quality deficit in higher education system of the country (2). Knight (2010) recognizes accreditation and evaluation of educational

results of students as a duty for OIRs (12). On the same line, Dodd (2004), Zikopoulos & Hourigan (2001), and Delaney (2009) highlighted the importance of accreditation and IR (30, 34, 42).

The most important institution for producing knowledge and technology to realize knowledge-based economy and development of knowledge-based companies in the country is supposed to be the university. OIRs play a key role in this respect. Emphasizing the role of external accountability, these offices tend to make this relationship even stronger and firmer. Research works need to be in a direct relationship with the industry and raise their budgets directly from the industry. In this regard, OIRs are of very important position within the institutions of higher education, and tend to improve their position continuously (3). Howard et al. (2012) believed that in order to enhance its guiding position toward realizing knowledge-based development, the institution of university should itself enjoy optimal and efficient structures, processes, and functions, so that it can play its key role along the path appropriately (49). In other words, one needs to define a unit in the university to continuously monitor weaknesses, deficits, and limitations existing within the structure, processes, and functions of the university, and turn the university into a dynamic and efficient institution that moves along its key roles in the surrounding society via a continuous diagnosis process.

Decision-making units in universities of medical sciences in Iran include centers for studies and development of medical science education as well as policy-setting councils. Activities of these centers indicate that six out of 18 IR activities proposed by Volkwein were covered by these centers, and for other activities, no particular task was planned for either these two units or other units of the university, and most likely, no particular precedent study is performed to support policy analysis and researching.

The following are six items of the official set of duties assigned to Kermanshah University of Medical Sciences in the scope of IR: 1. Evaluation of students' performance, 2. Assessment of education and managerial programs, 3. Rehabilitation of faculty members, 4. Evaluation of comprehensive quality management and continuous quality improvement, 5. Enhancement of curriculum, and 6. Accreditation.

Respecting the independence of universities, the decision-making process follows an outstanding process and position in the academic system. The decisions related to this process are made inside the university and encompass various dimensions such as education and curriculum planning, faculty member hiring system, student

admission system, qualification exams, authentication and graduation certification system, quality evaluation and validation, and finally, resource allocation scheme. This is while, when put together, dependence of universities and current major policies comprise a special paradox, because decision-making centers in Iranian universities of medical sciences are defined and set per Regulations on Organization and Formation of Universities and Institutes of Higher Education and Research adopted by the Ministry of Science, Research and Technology. Inconsistency in the decision-making system established in the Ministry of Science, Research and Technology serves as a significant defect in decision-making. According to Article 2 of the Comprehensive Regulation on University Administration, pillars of Iranian universities include the university board of trustees, dean, board of managers, and university council. Even though the structure of pillars indicates that the council is officially engaged with the decision-making process, but the board of trustees enjoys a veto right, as per the mentioned regulations, which makes the board the final decision-maker as far as major academic affairs are concerned. Even though the role and position of the board of trustees in the decision-making is set on top of the management pyramid of university based on the official duties of universities and institutions of higher education, codification of the regulations on official duties of universities and institutions of higher education indicates further use of a bureaucratic model, i.e. to follow governmental regulations related to employment, promotion, legal structures, and programs. While confirming the large power of the management pillars for imposing their own tendencies, professors and educational managers of these institutions of higher education are sole executors (with only few chances for contributing to making policy-related and strategic decisions, i.e. collective agreement or faculty model). These reasons tend to double the necessity of establishing OIRs in Iranian universities.

Conclusion

As a matter of fact, findings of this research indicate that six out of 18 activities related to IR are already undertaken in the process of decision-making about academic development. This conclusion can serve as a guide for thinking and taking action to begin with IR activities in every university across the country. A fundamental issue in the process and structure of decision-making by the management of Iranian universities of medical sciences is the deficit and inefficiency of the decision-making institutes, mainly because of the absence of a decision-maker institution. Indeed, it seems that there is a missed chain in the process of decision-making on academic management which has

resulted in a gap between decision-making researchers and academic decision-makers mainly because of lack of individuals or institutions who can support the academic managers in making decisions about policy-making, planning, and current affairs of the university by providing them with research findings of adaptive studies and data analysis. IR is the missed chain. As such, it is recommended to undertake accurate investigations to design an indigenous model for IR structure and define an appropriate position for OIR in the structure and context of management across universities of medical sciences in Iran.

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