

### An assessment of the current status of the organizational structure and its dimensions in medical universities for transition to the third generation university

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**Background:** In today's competitive world, it is hardly possible to achieve strategic goals without having a well-structured organization. Therefore, universities need to focus on improving their organizational structure in order to achieve their goals and sustain their activities. The purpose of this study was to assess the current status of organizational structure dimensions in universities of medical sciences for transition to the third-generation university.

**Methods:** This was a descriptive-analytic study. The statistical population included all managers and healthcare management specialists in universities of medical sciences of the 9th Planning Macro-Region of the country totaling 614 individuals. Using Cochran's formula, 265 people were selected randomly via stratified random sampling method. To collect data, a researcher-made questionnaire was used, which held 52 items on the 5-point Likert scale. The questionnaire was confirmed by faculty members in terms of formal and content validity, and its reliability was obtained through Cronbach's alpha coefficient as 0.95. SPSS14 software and descriptive and inferential statistics were used to analyze the data.

**Results:** The results showed that the mean scores for all structural dimensions in the universities of medical sciences were lower than average (score=3) in the present situation, including informal relationships ( $2.43 \pm 0.63$ ), trust-based relationships ( $2.57 \pm 0.61$ ), interaction-based relationships ( $2.52 \pm 0.49$ ), emotion-based relationships ( $2.72 \pm 0.54$ ), formalization ( $2.82 \pm 0.64$ ), complexity ( $2.99 \pm 0.52$ ), concentration ( $2.83 \pm 0.49$ ), and professionalism ( $2.90 \pm 0.50$ ). These relationships were statistically significant ( $p = 0.0001$ ).  
**Conclusion:** According to the results, universities of medical sciences require a fundamental change in their current organizational structure in order to transition to the third-generation university.

**Keywords:** Organizational structure, Transition to the third generation university, University of Medical Sciences

### ارزیابی وضعیت موجود ابعاد ساختار سازمانی دانشگاه های علوم پزشکی در گذار به دانشگاه نسل سوم

**زمینه و هدف:** در دنیای رقابتی امروز دستیابی به مقاصد استراتژیک بدون داشتن سازمان یا ساختار مناسب امکان پذیر نیست لذا دانشگاه ها برای تحقق اهداف و استمرار فعالیت شان باید توجه خویش را به اصلاح و توسعه ساختار سازمانی خود معطوف سازند. هدف پژوهش حاضر ارزیابی وضعیت موجود ابعاد ساختار سازمانی دانشگاه های علوم پزشکی در گذار به دانشگاه نسل سوم بود.

**روش:** پژوهش حاضر از نوع توصیفی تحلیلی می باشد جامعه آماری شامل کلیه مدیران و متخصصان مدیریت خدمات بهداشتی و درمانی دانشگاه های علوم پزشکی کلان منطقه 9 آمايشی کشور به تعداد 614 بودند. که با استفاده از فرمول کوکران، 265 نفر به روش طبقه ای - تصادفی به عنوان نمونه انتخاب شدند. برای جمع آوری داده ها از پرسشنامه محقق ساخته 52 گویه ای بر حسب طیف پنج درجه ای لیکرت استفاده شد. روایی پرسشنامه به صورت صوری و محتوایی به تایید اساتید متخصص رسید و پایایی آن از طریق ضریب آلفای کرونباخ 0/95 بدست آمد. برای تحلیل داده ها از نرم افزار آماری SPSS14 و آمار توصیفی و استنباطی استفاده شد.

**یافته ها:** نتایج آزمون نشان داد که میانگین همه ابعاد ساختاری دانشگاه های علوم پزشکی شامل روابط غیر رسمی ( $2/43 \pm 0/63$ )، روابط مبتنی بر اعتماد ( $2/57 \pm 0/61$ )، روابط مبتنی بر تعامل ( $2/52 \pm 0/49$ )، روابط مبتنی بر عاطفی ( $2/72 \pm 0/54$ )، رسمیت ( $2/82 \pm 0/64$ )، پیچیدگی ( $2/99 \pm 0/52$ )، تمرکز ( $2/83 \pm 0/49$ ) و حرفه ای گرای ( $2/90 \pm 0/50$ ) در وضعیت موجود کمتر از حد متوسط (3) بود که این رابطه ها از نظر آماری، معنی دار بود ( $p/0/0001$ ).

**نتیجه گیری:** با عنایت به نتایج بدست آمده دانشگاه های علوم پزشکی برای گذار به دانشگاه نسل سوم نیاز به تغییر اساسی در ساختار سازمانی موجود دارند.

**واژه های کلیدی:** ساختار سازمانی، دانشگاه علوم پزشکی، گذار به دانشگاه نسل سوم

### تقييم الوضع القائم للهيكل التنظيمي للجامعات الطبية في الانتقال إلى جامعة الجيل الثالث

**الخلفية والهدف:** في العالم التنافسي الحالي، لا يمكن تحقيق الأهداف الإستراتيجية دون تنظيم منظمة ذات هيكل جيد، لذلك يجب على الجامعات التركيز على تحسين هيكلها التنظيمي من أجل تحقيق أهدافها والحفاظ على أنشطتها. كان الغرض من هذه الدراسة هو تقييم الوضع القائم لأبعاد الهيكل التنظيمي لجامعات العلوم الطبية في الانتقال إلى جامعة الجيل الثالث.

**الطريقة:** هذه دراسة وصفية تحليلية، حيث شمل السكان الإحصائيون جميع المديرين والمتخصصين في الرعاية الصحية في المراكز الصحية في جامعات العلوم الطبية في مدينة كلان في الدائرة التاسعة من البلاد، وكان عددهم 614. باستخدام صيغة كوكران، تم اختيار 265 شخصاً بطريقة العينة العشوائية الطبقية. لجمع البيانات، تم استخدام استبيان مكون من 52 بنداً بناء على طيف ليكرت ذو الخمس درجات. تم تأكيد صحة الإستبيان ومحتواه من قبل أعضاء هيئة التدريس رسمياً وتم الحصول على موثوقيتها من خلال معامل ألفا كرونباخ من 0.95. و تم استخدام برنامج SPSS14 وإحصاءات وصفية واستدلالية لتحليل البيانات

**النتائج:** أظهرت نتائج الإختبار أن متوسط جميع الأبعاد الهيكلية لجامعات العلوم الطبية شملت العلاقات غير الرسمية ( $2.43 \pm 0.63$ )، والعلاقات القائمة على الثقة ( $2.57 \pm 0.61$ )، والعلاقات القائمة على التفاعل ( $2.52 \pm 0.49$ )، العلاقات العاطفية ( $2.72 \pm 0.54$ )، إضفاء الطابع الرسمي ( $2.82 \pm 0.64$ )، التعقيد ( $2.99 \pm 0.52$ )، التركيز ( $2.83 \pm 0.49$ ) والحرفية ( $2.90 \pm 0.50$ ) في الوضع الحالي كانت أقل من المتوسط (3) وكانت هذه العلاقات ذات دلالة إحصائية ( $p = 0.0001$ ).

**الاستنتاج:** وفقاً لنتائج الجامعات الطبية، يتطلب الانتقال إلى جامعة الجيل الثالث تغييراً جوهرياً في الهيكل التنظيمي الحالي.

**كلمات البحث:** الهيكل التنظيمي، جامعة العلوم الطبية، الانتقال إلى جامعة الجيل الثالث

### ایران میں میڈیکل یونیورسٹیوں کا موجودہ آرگنائزیشنل ڈھانچہ تیسری نسل کے تناظر میں

**بیگ گراؤنڈ:** آج کی دنیا میں شدید مسابقت کے پیش نظر بغیر عمدہ آرگنائزیشنل ڈھانچے کے اپنے اہداف تک پہنچنا ممکن نہیں ہے۔ اسی مقصد کے تحت یونیورسٹیاں اپنے اہداف حاصل کرنے نیز اپنی سرگرمیوں کو جاری رکھنے کے لئے اپنے آرگنائزیشنل ڈھانچہ کو زیادہ سے زیادہ ترقی یافتہ بنانے پر زور دیتی ہیں۔ اس تحقیق کا ہدف ایران کی میڈیکل یونیورسٹیوں کے موجودہ آرگنائزیشنل ڈھانچوں کا جائزہ لینا ہے کیونکہ اب یہ یونیورسٹیوں کی تیسری نسل ہے۔

**روش:** اس تحقیق میں ایران کے ترقیاتی منصوبوں میں شامل کئے گئے نویں ریجن کی یونیورسٹیوں کے سربراہوں، اور میڈیکل شعبہ سے وابستہ ماہرین نے شرکت کی۔ ان کی تعداد چھ سو چودہ تھی۔ ان میں سے کوکران 'فارمولے' کے ذریعے دو سو پینسٹھ افراد کو ریڈم طریقے سے چنا گیا، ڈیٹا کی جمع آوری کے لئے ایک علمی سوالنامہ دیا گیا جس میں لاکرٹ اسکیل کے مطابق باون سوال تھے۔ ڈیٹا کا تجزیہ کرونباخ آلفا کو ایفی شینٹ نیز ایس پی ایس ایس چودہ سافٹ ویئر سے کیا گیا۔

**نتیجے:** اس تحقیق سے پتہ چلتا ہے کہ آرگنائزیشنل ڈھانچہ کے لحاظ سے ایران کی میڈیکل یونیورسٹیاں معیار پر نہیں اترتی۔

**سفارش:** اس نتیجے سے معلوم ہوتا ہے کہ ایران کی میڈیکل یونیورسٹیوں کو آرگنائزیشنل ڈھانچے کے لحاظ سے ترقی کرنے کے لئے بنیادی اقدامات کرنے ہونگے کیونکہ اب یونیورسٹیوں کی تیسری نسل کا زمانہ آپہنچا ہے۔

**کلیدی الفاظ:** میڈیکل یونیورسٹی، آرگنائزیشنل ڈھانچہ، متوسط سے کم

## INTRODUCTION

Universities, as the center of science, thinking, and innovation, have important duties and responsibilities such as the development and promotion of science and education, and the training and supply of specialized human resources (1), and act as the basis for the socio-economic, political, and cultural development of the country. Along with the advancement of societies from traditional entities to industrial and informational communities, the roles played by universities have also transformed, and universities have changed from a mere transmitter of knowledge to the strength and power of nations in the production of knowledge and technology and knowledge-based economies. Researchers consider future universities as organizations for fostering creativity and innovation, so that universities are predicted to have structures and templates that promote creativity, innovation, and entrepreneurship by 2050 (2).

Creativity and innovation, which are referred to as the attributes of future universities by researchers, are now being pursued through training of the third-millennium students and third-generation universities. A third-generation university is a university that simultaneously highlights the development of sciences and is sensitive to the educational, research, and consultation needs of the environment. By developing creativity and intelligent thinking techniques, such a university not only fulfills rapid and accurate accountability, but it also helps to define, formulate, and solve community problems independently or collectively and prepare for sustainable development across the country (3). In today's competitive world, strategic goals cannot be achieved without an organization with a proper structure (4). Therefore, universities must focus on developing and strengthening their organizational structure in order to continue their activities (5). The structure of an organization is the framework by which the activities of the organization are divided, organized, and coordinated. Organizations create structures to coordinate the activities of the consecutives and control the activities of the members (6). The structure of the organization is affected by structural dimensions. Structural dimensions reflect the internal characteristics of the organization, and the severity and weakness of each dimension is conducive to the overall formation of the organizational structure (7).

Hall believes that organizational structure has three fundamental tasks: helping to generate output to achieve organizational goals, minimizing the effects of the individual diversity of the organization's members, and providing the necessary framework for organizational decision making and enforcement (8). Daft believes that effective structures must be identified to design an appropriate structure. In some theories, these factors are divided into two categories: structural and content. Content dimensions include size, organizational technology, environment, goals, strategies, and culture; structural dimensions include formality, expertise, standardization, hierarchy, authority, complexity, focus, professionalism, and staff ratio (9). Mintz Berg's structural dimensions include administrative components,

independence, focus, complexity, authorization, formality, composition, professionalism, control, specialization, standardization, and the general domain (10). Jeffrey et al. concludes that complexity, formalization, and focus are more important than other structural dimensions in creating an effective structure (11).

Aghajani and Alizadeh showed that the existing organizational structure of the university tends to take the middle ground (an in-between state between mechanical and organic structure). Nonetheless, knowledge-based organizations tend to be organic, and this discrepancy between the current structure and the preferred structure from employees' perspective seems to create a kind of give-and-take between the existing structure and the preferred structure; that is, either the existing structure is adjusted to the demands of the employees or the demands of the employees towards the existing structure (12).

Izadi Yazdanabadi and Behrangi showed that there is a significant difference between the characteristics of the current organizational structure and the desired one. While employees are demanding more specialization and less formalization, these features are only relatively present in the status quo; in other words, employees expect the organizational structure of the university to move beyond the current state of focus towards change and "professional bureaucracy" (13). Marshall et al's study indicated that the dimensions of organizational structure (complexity, formalization, and focus) had an important impact on procedural, distributive, and interactive fairness (14). Katsikea et al. concluded that formalism and focus had a positive impact on job feedback, whilst the focus on job independence and job diversification are negatively associated (15).

The literature review on organizational structure in higher education suggests that the current framework cannot meet the needs of higher education in the future. What third-generation universities need to do is create a structure in which factors such as creativity, innovation, knowledge-based economy, entrepreneurship, trust, and sense of collective identity are important. In such a context, systems are needed that distance from vertical communication and hierarchical structure (16). The Ministry of Health has highlighted the importance of this issue to the extent that it is formulated, in October 2015, as the second package, "with a focus on reviewing and revising the structure and functioning of universities of medical sciences in the transition to the third generation university", as part of twelve packages under the title of the Plan for the Development and Innovation of Medical Science Education. So far, little action has been taken in the Ministry of Health and Medical Education to modify the organizational structure in order to achieve this goal. The review of the theoretical background does not show a research that has identified the dimensions of organizational structure in the universities of medical sciences. Alongside this, this research aimed to determine the status quo of organizational structure dimensions in universities of medical sciences for transition to the third generation university.

**METHODS**

The present study is a cross-sectional, descriptive-analytic, and applied study. The statistical population comprised of 614 individuals including the managers of medical universities (members of the board of trustees, the board of directors, and the council of the university as well as chief executives) and health care management specialists of universities in the 9th Macro-Region. A total of 265 individuals was determined as the sample based on Cochran's formula. They were selected via stratified random sampling method. The study went through a library research to determine the theoretical foundation and history of the study. To collect the research data, a 52-item researcher-made questionnaire was employed based on organizational structure dimensions including informal relationships (items 1-6), trust-based relations (items 7-10), externally-oriented

interactive relationships (items 11-14), emotionally inclusive relationships (items 15-18), formalization (items 19-27), complexity (items 28-33), focus (items 34-45), and professionalism (items 46-52). The items were on a five-point Likert scale (I totally agree to I totally disagree).

After obtaining permission to implement the Ph.D. thesis from the authorities of the 9<sup>th</sup> Planning Macro-Region of the country, all the participants were assured of confidentiality and anonymity and the fact that the results would be announced to them at the end of the study. In order to determine the face and content validity of the tool, the questionnaire was provided to 10 healthcare management specialists. After receiving their comments, necessary corrections were made in the questionnaire. Cronbach's alpha method was used to determine the reliability of the questionnaire where the overall reliability coefficient was 0.95. SPSS software version 14 was used to analyze the data. The data were analyzed at descriptive (abundance, percentage, mean, standard deviation) and inferential (t single sample) levels.

**Table 1. Frequency distribution of the statistical sample**

| Variable            | Dimension        | Frequency  | Percentage |
|---------------------|------------------|------------|------------|
| Gender              | Male             | 227        | 85.6       |
|                     | Female           | 38         | 14.4       |
| University          | Mashhad          | 50         | 18.8       |
|                     | Birjand          | 43         | 16.1       |
|                     | Bojnurd          | 40         | 15         |
|                     | Gonabad          | 28         | 11         |
|                     | Sabzevar         | 27         | 10.1       |
|                     | Neyshabour       | 26         | 10         |
|                     | Torbat Heydarieh | 19         | 7          |
|                     | Esfarayen        | 17         | 6.4        |
|                     | Torbat-e Jaam    | 15         | 5.6        |
|                     | Academic rank    | Instructor | 29         |
| Assistant professor |                  | 119        | 44.9       |
| Associate professor |                  | 66         | 25         |
| Full professor      |                  | 18         | 6.8        |
| Others              |                  | 33         | 12.4       |

**RESULTS**

Of the 265 participants, 227 were men (85.6%) and 38 were women (14.4%). The mean age of the participants in this study was  $45.32 \pm 8.7$  years (table 1).

Table 2 shows that the mean scores of the components of organizational structure are less than average (score 3), and that the relationship is statistically significant ( $p < 0.05$ ). Therefore, it can be said that the current status of organizational structure for transition to the third generation university is not desirable.

**DISCUSSION**

The structure of each university has been designed over time usually on the basis of objectives and according to the strategies developed to achieve the goals of the university. Since universities are involved with an atmosphere of turbulence, complexity, and ongoing change, the organizational structure is expected to provide a coherent framework for coordinating, controlling, and optimizing university systems and processes [17]. Therefore, there needs to be harmony between these two categories. By reforming, revising, and restructuring the organizational

**Table 2. Status of the components of the organizational structure of the third generation university in the universities of the mental sciences in the 9<sup>th</sup> Macro-Region**

| Dimensions of organizational structure        | Mean±SD   | Significance level |
|---|-----------|--------------------|
| Informal relationships                        | 2.43±0.63 | 0.0001             |
| Trust-based relationships                     | 2.57±0.61 | 0.0001             |
| Externally-oriented interactive relationships | 2.52±0.49 | 0.0001             |
| Emotionally inclusive relationships           | 2.72±0.54 | 0.0001             |
| Formalization                                 | 2.82±0.64 | 0.0001             |
| Complexity                                    | 2.99±0.52 | 0.0001             |
| Concentration                                 | 2.83±0.49 | 0.0001             |
| Professionalism                               | 2.90±0.50 | 0.0001             |

structure of the university, the ground is paved for the survival and compatibility with the external environment whereby the goals of this social institution is ultimately achieved.

The result of the study showed that the mean score of informal relationships in the universities of medical sciences in the 9<sup>th</sup> Macro-Region was below average. This indicates the low levels of mobility and freedom of the staff and faculty members beyond the official structure. The activities of third-generation universities largely depend on the nature of informal relationships, since the source of power and authority lies with the faculty and the staff. Moreover, individuals need interactive leaders rather than top executives, whereby the ability and dynamic capabilities can be created that will lead to a competitive advantage in knowledge economies. The present study is consistent with the results from Monavarian (18), Mortazai et al. (19), and Mohammadi Kangrani and Ghonchepour (20). However, Bagheri's study suggests that informal relationships disrupt organization's functioning, which is not consistent with the current study (21).

Also, in the Macro-Region universities of medical sciences, the average score of trust-based relationships was less than average. This finding suggests that managers have failed to create a culture of trust in the university. Factors such as fulfillment of promises made to members, paying attention to employee benefits, and ensuring fairness and equity are among the strategies to enhance trust in the university. The leader should be sensitive to the needs and interests of the staff, to consider their interests in the meetings, and to be benevolent to them. Claver et al. in a research study showed that the trust-based exchange of knowledge leads to knowledge creation; the existence of trust, cooperation, coordination, and coherence among the employees would create new ideas. Knowledge-based structures must be trust-based rather than control-orientedness, because of the strong need for knowledge sharing (22). Davidson showed that there is a significant association between the level of trust and organizational entrepreneurship. At high levels of trust among members of the organization, there is a positive impact on innovation through the exchange of information. Accordingly, trust develops in an organization when the channels of information are open (23). Our finding was not consistent with the results from Baba'i's study (24).

In addition, in the dimension of externally-oriented interactive relationships in the 9<sup>th</sup> Macro-Region universities, the mean score was below average. This finding showed that the Macro-Region universities did not act as an open and dynamic system for the exchange of information in the environment and did not seek to establish connections with the environment and society. The degree of external interactions reflects the openness of organizational structure, the diminution of organizational boundaries, and, at the same time, the competitive nature of the environment. According to Wissema, the increase of externally-oriented interactive relationships can lead to improved outsourcing collaboration, increased relationship between university and industry, and the commercialization of research results (25).

The findings of this study showed that the dimension of emotionally inclusive relationships in the Macro-Region universities is lower than average. This finding suggests less importance devoted to the provision of freedom of action, constructive communication, and opportunities for creativity in these universities. In the structural approach of the third-generation university, the existence of emotionally inclusive relationships allows the faculty and the staff to respond to academic values and academic capabilities in an organized manner. This cultural context creates opportunities for creativity and innovation, while at the same time results in coherence. Marshale et al. showed that the dimensions of organizational structure had an important impact on procedural, distributive, and interactive fairness (14). Katsikea et al. concluded that formalization and focus had a positive effect on job feedback, whilst the focus on job independence and job diversification were negatively associated (15).

In this study, the degree of formality in the universities of medical sciences is near average. This finding suggests that, at the universities of medical sciences of the 9<sup>th</sup> Region, both the implementation of laws and regulations and, to a lower degree, the freedom of action and independence of the staff are taken into consideration. The result of this study is consistent with that of Aghajani in this regard, where the structural dimensions of knowledge-based organizations have a high organizational formality (24).

Also, the results of the research findings showed that the mean score of the complexity dimension in the universities of medical sciences of the 9<sup>th</sup> Region was close to the average. This reflects the nature of the activities of medical universities, which operate on the basis of the two indicators of "specialization of duties" and "social specialization". The complexity of these two types of specializations has different effects on organizational structure. The complexity increases when the organization needs a lot of knowledge and skills. Aghajani's research indicates the existence of a median structure (a state in between the mechanical and organic structure) in a university that is consistent with the results of the present study (12). However, a recent study showed that the organizational structure of educational hospitals affiliated to Arak University of Medical Sciences is highly complicated, which is not consistent with the present study (26).

In addition, the findings of this study showed that the focal point of the 9<sup>th</sup> Macro-Region universities of medical sciences is close to the average. This finding suggests that decision-making in the 9<sup>th</sup> Macro-Region universities of medical sciences is semi-centralized and managers are less committed by delegation. In other words, in addition to the accumulation of a great deal of authority at higher levels of universities in this Region, the transfer of some powers to lower levels and the formation of a participatory culture is also considered. The result of this study is not consistent with the research by Aghababaei (24) and Yadollahi Farsi (27).

The results of this research showed that the level of professionalism in the 9<sup>th</sup> Macro-Region universities of medical sciences was lower than average. It was high in terms of "having high educational levels" but low in terms of

"having professional skills and ability". This is in line with the results of Bernardo's study (28) and Vaezi and Sabzikaran's (29) study, but inconsistent with the result of Nasiri Velik Nabi and Shaygani's study (30). Among the limitations of the present study was the workload of the managers at the time of completion of questionnaires, which could affect their responses to questions. This was beyond the control of the researchers.

Based on the results of this study, the dimensions of the organizational structure of medical universities are not consistent with the structure of third-generation universities, because the desirable structure of a third-generation university of medical sciences is one in which the average scores of the informal relationships, trust-based relationships, interactive extraterrestrial relationships, and inclusive emotional relationships are high, and those of formalism, focus, professionalism, and intermediate

complexity are average. Therefore, the authorities of universities in the 9th Macro-Region need to amend their organizational structure consistent with the results of this study in order to move towards the third generation universities.

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