In search of a world-class university in Iran

Mohsen Nazarzadeh Zare
Faculty of Psychology and Education, University of Tehran, Tehran, Iran
Javad Pourkarimi
University of Tehran, Tehran, Iran
Gholamreza Zaker Salehi
Institute for Research and Planning in Higher Education, Tehran, Iran, and
Sahba Rezaeian
University of Tehran, Tehran, Iran

Abstract
Purpose – The purpose of this paper is to examine faculty members’ views about the assessment of world-class university components in Iran’s comprehensive universities.
Design/methodology/approach – This study adopted a descriptive methodology by using a survey method. The statistical population consisted of 8,548 faculty members of comprehensive universities all over Iran. Considering the large size of the population, the comprehensive universities were categorized into five clusters (North, South, East, West and Center). The authors selected the faculty members from different clusters using Cochran’s formula. A total of 367 faculty members were selected from five clusters. For data gathering, a researcher-designed questionnaire was used. In data analysis, statistical procedures including the Confirmatory Factor Analysis, Kolmogrov-Smirnov test, one-sample t-test, and Friedman test were performed.
Findings – The findings of the research showed that except for academic freedom, other components of world-class university in Iran’s comprehensive universities were lower than the mean.
Practical implications – The case study showed how Iran’s comprehensive universities can become world-class universities. The methods of this case study can also be used in other fields.
Originality/value – This study adds to the knowledge of a world-class universities. Therefore to reach a desired level in comprehensive universities’ preparation for converting to a world-class university, it is essential that the policy makers and organizers of Iran’s higher education system pay greater attention to items such as research motivation, research innovation, research budget increase, authority reduction on various university departments, internet bandwidth increase and laboratory facilities increase.
Keywords Academic freedom, Adequate facilities, Excellence in research, Governance of the institution, Iran comprehensive universities, World-class university
Paper type Research paper

Introduction
In human history, the university has been one of the great institutions that has emerged and endured. Its structure, however, has changed over the centuries (Altbach and Salmi, 2011, p. xiii). Nowadays, universities exist in the context of transformations which are out of their control. The increasing number of students and university volunteers, the development and variety of educational organizations, globalization, internationalization of higher education, increase in the quality and quantity of competition among the large number of actors and beneficiaries, rapid and wide transformation of technology and context, change in expectations and values of volunteers, customers, financial increase, complexities of policy making and decision making, cultural changes, increased complexities in the social, economic and political
contexts and other factors have caused universities to encounter uncertainty (Farasatkhh, 2010, p. 170). Universities and higher education institutions in Iran like other world universities can be affected from the current changes and transformations; i.e. in addition to the influence of the environmental changes they encounter challenges such as:

- ineffectiveness of academic courses and lack of quality in offered knowledge alongside low economic growth, unemployment and quality of higher education;
- decrease in the quality of higher education and decrease in the growth of capable faculty members alongside increasing number of students;
- lack of financial facilities and its direct relation with economic problems and the extent of Iran’s development;
- the large number of university volunteers and the university’s limited capacity;
- mismatch of university curriculum with current needs of society;
- insufficient use of information technologies in teaching and learning processes;
- large gap between higher education and international standards;
- inflexibility of higher education structure and need for specialized human resources; and
- immigration of talented human resources and the brain drain phenomenon (Enayati et al., 2014).

Therefore, institutes of higher education should constantly modify and upgrade their educational programs and technologies, and update equipment and lecturers’ professional development. In addition, the institutes of higher education should react adequately to external environment challenges, switch to innovative development, follow the market and anticipate (or even create) it as specific circumstances warrant (Artyushina and Troyan, 2009, p. 219).

One of the strategies in the organization’s development and prevention of serious damages to organizations, particularly to higher education institutions, is getting familiar with the concept of world-class organization and its characteristics, because once familiar with this concept and its characteristics, comparison and evaluation of current organizations with those characteristics will be possible. In other words, the extent to which the organizations are similar to the world-class organization can be estimated from the world-class organization characteristics. And gradually the context gets ready for necessary development (Farsijani, 2008, pp. 3-5). World-class organizations are a modern phenomenon of organizations, which tend toward improvement of human resources, requirements and systems. Thus, to achieve these goals, they frequently study and analyze different world organizations to design a model based on different aspects (Nazarzadeh Zare et al., 2015a).

Universities can be categorized into three generations. In the First Generation University, the university’s role is to train highly qualified specialists (Education). In the Second Generation University, this role is supplemented with research tasks (Education and Research) (Skribrans et al., 2013). These characteristics of Second Generation University include: two objectives, research and education, and no interest in the use of the knowledge created; operating on the local market, other universities are seen as colleagues; stand-alone institutions with no formal links with other organizations; monodisciplinary research and dominance of faculties; mainly elite
education for well-to-do students; national university; and important role of state financing and state interference (Demir, 2013). The Third Generation University defines university as an innovational generation, transfer and implementation center, while maintaining the traditional university functions (Education, Research and Know-how to exploitate) (Skribans et al., 2013). These characteristics of Third Generation University include: exploitation of knowledge as core business, which becomes the third objective; operation in an international, competitive market; open universities, collaboration with many partners; transdisciplinary research and rise of university institutes; multicultural organizations; mass and elite education; cosmopolitan university; and no direct state financing, and no state interference (Demir, 2013).

Therefore, within the higher education system, world-class universities (WCU) – considered as education and research universities – play a critical role in training the professionals, high-level specialists, scientists, and researchers needed by the economy and in generating new knowledge in support of national innovation systems (Liu et al., 2011, p. ix).

Obviously, one of the obstacles and problems in the organizational transformation, particularly in educational and research organizations, is the traditional thinking of organizations. So before making any decision about those aspects of university which need change and transformation, identifying and assessing the university’s readiness to transform to a WCU is essential (Nazarzadeh Zare et al., 2015b). Thus, the aim of this research is twofold. First, this paper tries to develop a conceptual framework to transform a university to a WCU. Second, it tries to evaluate the components of the WCU model in the comprehensive universities[1] of Iran. The rest of this paper is organized in four parts. In the first part, WCU literature was reviewed to develop a conceptual framework for transforming a university to a WCU. In the next part, higher education in Iran is described. In the third part, the researchers’ validation of the conceptual framework model based on empirical data from Iran is described. In the end the results are discussed, and corrective suggestions are proposed.

Theoretical background

The WCUs are regarded as the optimal type of universities for facing contextual transformations and complexities; thus, development of WCUs is on the agenda of policy makers and various beneficiaries across the globe. Therefore, in the “world-class” movement in recent years, an increasing number of nations, regions and higher education institutions in both developed and developing countries have joined the same race for academic excellence and have adopted a range of development strategies and implemented various reforms (Cheng et al., 2014, p. 1). In the following a few of these strategies are listed.

The Mainland Chinese Government has adopted a national policy advocating the building of globally prominent universities over the past decade, and has launched a group of specific national initiatives and competitive funding programs, such as the 211 and 985 Projects. The 211 Project aims at developing about 100 universities and a number of key disciplines by the early twenty-first century. To further strengthen the development of excellence, the 985 Project, launched in 1998, emphasizes the exploration of new mechanisms for higher education governance and developing a path to transform a selected few top universities into world-class status. The Japanese Government has put in place policies to foster WCUs through competitive funding schemes since early 2001, such as the twenty-first century Centers of Excellence,
the Global Centers of Excellence and the World Premier International Research Centre Initiative. Similar trends and developments are also taking place in South Korea, Taiwan, as well as in Singapore and Malaysia. One of the earliest strategic funding programs in Europe was the Excellence Initiative implemented by the federal and state governments in Germany in June 2005. This program intended to enhance research in Germany, to support and promote elite institutions, and ultimately to improve its higher education performance. Realizing its universities’ relatively poor performance in global higher education, the Russian Government has initiated a series of reforms since the 1990s, including the Innovative University Programme, the Federal Universities Project, and the National Research Universities Initiative. These projects focus on strengthening their research capacity. In Russia, the government after recognizing the weak performance of its universities in the global higher education initiated a series of reforms in 1990, such as establishing technological universities, and federal, national and research projects, all of which concentrated on enhancing research capacities. Similar excellence initiatives are also observed in Denmark, Finland, Norway, and Spain (Cheng et al., 2014, pp. 2-3).

For a better understanding of WCUs in higher education, it is necessary to become familiar with the concept of WCU. In dictionaries “world class” is defined as “ranking among the foremost in the world; of an international standard of excellence.” The concept of a WCU reflects the norms and values of the world’s dominant research-oriented academic institutions especially those of the USA and major Western European countries. The idea is based on the German research university that came to dominate academic thinking at the end of the nineteenth century, especially after the USA, Japan, and other countries accepted the model (Altbach, 2004).

Therefore the WCUs are national and global leaders in teaching, research, innovation and in producing graduates who become leaders in public and private sectors. They are institutions recognized for their distinct reputations in research outputs and faculty prestige. In fact those are institutions which are widely recognized by higher education administrators, scholars and policy makers as being among the leading research universities in a global region (Jacob et al., 2015). As the WCUs and the necessary strategies for establishing them, understanding the characteristics and the differences of these universities in three missions of education, research and services with other universities in the national and local levels (Shin, 2012). Therefore, the leading universities in most of the countries should achieve certain characteristics to become WCUs (Marginson, 2012, p. 15). These characteristics were reviewed by the present researchers.

According to Nazarzadeh Zare et al. (2015a), the national contexts and organizational models for establishing the WCU are very wide, and therefore each country should select a strategy based on its strengths and weaknesses among the various trajectories.

Salmi (2009) has referred to three complementary sets of factors that have been found to play a significant role among top universities, namely:

1. a high concentration of talent;
2. abundant resources to offer a rich learning environment and conduct advanced research; and
3. favorable governance features that encourage strategic vision, innovation and flexibility, and enable institutions to make decisions and manage resources without being encumbered by bureaucracy (Figure 1).
According to AbuBakar (2006) in Bin Zakaria et al. (2009), a world-class university should have twelve characteristics. These 12 characteristics cover a broad range from lecturers, students, and administrative staff to all aspects involved in the development of the university. The characteristics include, among others, government-accredited niche programs, research and cross-border research collaboration, availability of staff and student mobility programs, enrollments and the number of registered international students, international awards from international institutions, good governance and global recognition of graduates.

Altbach (2004) has referred to characteristics of the WCU as:

- excellence in research;
- academic freedom;
- governance of the institution; and
- adequate facilities.

Fang (2005) believes that a WCU is considered a first rank university when it includes the first majors, first-class education, first student recourses, first talent development, the first rank in academic research, first-class operational structures and executives, strong financial capacity and also a strong technological basis. First-class universities should also contribute a considerable ratio to a country’s development.

According to Niland (2000) the ten characteristics of a WCU include:

1. quality of faculty;
2. research reputation;
3. talented undergraduates;
4. international presence;
5. proper usage of resources;
6. alliances and networks;
(7) embracing of many disciplines;
(8) technological advancement;
(9) practising the art of good management; and
(10) internationalism of all aspects of the university.

The conceptual model
A review of the related literature contributed to our understanding about WCU characteristics. The conceptual model of a WCU is presented in Figure 2. The conceptual model here is based on WCU characteristics according to Philip Altbach (2004). This model includes the following components.

Excellence in research
Excellence in research underpins the idea of world-class research that is recognized by peers and that pushes back the frontiers of knowledge. Such research can be measured and communicated. But if research is the central element, other aspects of a university are required to make outstanding research possible. Top-quality professors are, of course, central. And to attract and retain the best academic staff, favorable working conditions must be available. These include arrangements for job security, which many countries call tenure, and appropriate salaries and benefits, although academics do not necessarily expect top salaries. The best professors see their work as a “calling”, something to which they are committed by intellectual interest, not just a job (Altbach, 2004).

Academic freedom
Academic freedom and an atmosphere of intellectual excitement are also central to a WCU. Professors and students must be free to pursue knowledge wherever it leads and to publish their work freely without fear of sanction by academic or external authorities. Some countries permit unfettered academic freedom in the nonpolitical hard sciences but place restrictions on it in the more sensitive social sciences and humanities. In most countries, academic freedom extends to expression of opinions by members of the academic community on social and political issues as well as within the narrow confines of professional expertise (Altbach, 2004).

The governance of the institution
The governance of the institution is also important. WCUs have a significant measure of internal self-governance and an entrenched tradition, often buttressed by statutes,
ensuring that the academic community (usually including professors, but sometimes also students) has control over the central elements of academic life – the admission of students, the curriculum, the criteria for the award of degrees, the selection of new members of the professoriate, and the basic direction of the academic work of the institution (Altbach, 2004).

Adequate facilities

Adequate facilities for academic work are essential as the most advanced and creative research and the most innovative teaching rely on access to appropriate libraries and laboratories, as well as to the internet and other electronic resources. The increasing complexity and expansion of science and scholarship make the cost of providing full access high. Although the internet has given rise to some cost savings and has eased access to many kinds of knowledge, it is by no means a panacea. The facilities needed go beyond labs and libraries – staff and professors must have adequate offices as well. In addition, adequate funding must be available to support the university’s research and teaching as well as its other functions, and the support must be consistent and long term (Altbach, 2004).

Higher education in Iran

In Iran, higher education is provided at universities (dâneshgâh) and colleges/institutions. Iran has over 100 universities and higher education institutions. Some of these are private educational institutions. State-run institutions offer free education. The degrees awarded by private educational institutions are regarded as equal to those from public institutions and are officially recognized by the Ministry of Science, Research and Technology (MSRT). The universities offer both university and vocationally oriented education (EP-Nuffic, 2015, p. 9). The number of universities and higher education institutions was 2,390 in the academic year 2011-2012. It is important to note that the share of non-public universities and higher education institutions was 78.3 vs 21.7 percent for public universities (Ameri, 2015). The number of Higher Education students was 4,685,386 in the academic year 2014-2015. It is important to note that the share of non-public higher education was 41.52 vs 58.48 percent for public HE. Also, the share of female students was 47.26 vs 52.74 percent for male students. Furthermore, the number of Higher Education faculty members was 2,87,970 in the academic year 2014-2015. It is important to note that the share of female faculty was 29.77 vs 70.23 percent for male faculty (Institute for Research and Planning in Higher Education, 2014). The main active institutions of higher education in Iran are discussed below.

Public sector

Providing specialized human resources for Iran is the major responsibility of the MSRT. However, other ministries and governmental organizations also take part in achieving this goal. By delegating medical education to the Ministry of Health and Medical Education (MHME), all responsibilities and tasks of MSRT in medical majors were transferred to a new ministry, MHME. At present, in addition to universities and institutions of higher education affiliated with MSRT and MHME, other institutions are also active in higher education, such as colleges of vocational training and teachers, education affiliated with the Ministry of Education, along with other institutions affiliated with other ministries and governmental organizations (Ameri, 2015).
In order to increase public contribution to higher education, to relieve the government’s financial burden, and to meet the increasing demand for higher education, non-public (private) universities and institutions of higher education have also been established. The non-public universities and institutions in Iran are listed below.

**Islamic Azad University (open university)**
In 1982, after the triumph of the Islamic Revolution, the Islamic Azad University was established as the first non-public (private) university. During its early years, the university benefited from the help and support of local authorities and benevolent people providing buildings, equipment and the like. Currently, Azad University has over than 300 branches all over Iran (Ameri, 2015).

**Non-public institutions of higher education**
Given the experience of the Islamic Azad University, the increasing demand for higher education, as well as the tendency of the private sector to contribute to higher education, the Supreme Council of Cultural Revolution approved bylaws for establishing non-public universities and institutions of higher education in 1985. The bylaws aimed at mobilizing all possibilities for Iran to develop higher education. Nowadays more than 260 non-public institutions are active in Iran (Ameri, 2015).

**Distance education**
In 1988, Payam Nour University was established with a particular structure differing from that of typical universities in order to provide distance education. It aimed at promoting the knowledge and culture of Iran, expanding higher education in different areas, providing educational opportunities for more people, as well as the efficient use of all potentials and facilities for higher education. The programs of the university are based on the integration of education and information technology. Payam Nour University has over 300 branches throughout Iran (Ameri, 2015).

**Methodology**
In this study, the researchers aimed to develop a systematic and objective view of faculty members about the components of the WCU; thus the study used a descriptive methodology by applying a survey method to achieve its aim. The statistical population of this study consisted of 8,548 faculty members of the comprehensive universities (see footnote 1) all over Iran. Considering the large size of the population, the comprehensive universities were categorized into five clusters as the follows.

The North cluster (University of Guilan and University of Mazandaran), the South cluster (Shahid Bahonar University of Kerman, Shahid Chamran University of Ahvaz and Shiraz University), the East cluster (Ferdowsi University of Mashhad), the West cluster (Bu-Ali Sina University, Razi University, University of Tabriz), and the Center cluster (University of Tehran, University of Isfahan, Tarbiat Modares University, Shahid Beheshti University). Then we selected the faculty members from different clusters using Cochran’s formula. A total of 367 faculty members were selected from five clusters.

A researcher-designed questionnaire was used in this study, but at first the researchers verified the conceptual model of the WCU through confirmatory factor analysis (CFA). The CFA is a special form of factor analysis which is used to test
whether measures of a construct are consistent with a researcher’s understanding of the nature of that construct (or factor). As such, the objective of the CFA is to test whether the data fit a hypothesized measurement model (Lu, 2015, p. 259). This hypothesized model is based on theory and/or previous analytic research. Findings as shown in Table I reflect that the fit indexes of the model in the CFA support WCU components and are suitable in the designed model. The Chi Square ratio to degrees of freedom is 1. The RMSEA$[2]$ amount is 0.000 and the SRMR$[3]$ amounts to 0.0044, hence being acceptable in the model fit. Other fit indexes such as NFI$[4]$, CFI$[5]$, IFI$[6]$, and RFI$[7]$ with higher amounts of 0.90 are considered as acceptable indexes of model fit. Also the GFI$[8]$ index amount of 1.00 and AGFI$[9]$ index amount of 0.98 confirm the WCU model.

The path coefficients marked in the model diagram (Figure 3) indicate that the excellence in research with a path coefficient of 0.58 has the highest coefficient in comparison with other components and after the governance of the institution component and the adequate facilities component with a coefficient of 0.55 and finally

<table>
<thead>
<tr>
<th>Amount of obtained Fit Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>0.000</td>
</tr>
<tr>
<td>0.0044</td>
</tr>
<tr>
<td>1.00</td>
</tr>
<tr>
<td>1.00</td>
</tr>
<tr>
<td>1.00</td>
</tr>
<tr>
<td>0.98</td>
</tr>
<tr>
<td>1.00</td>
</tr>
<tr>
<td>0.98</td>
</tr>
</tbody>
</table>

Table I. Fit indexes the factorial analysis of research variables

Figure 3. Confirmatory factor analysis of WCU model

$\chi^2=1.00$, df=1, p-value=0.31733, RMSEA=0.000
the academic freedom component with a coefficient of 0.33. Also the $R^2$ amount or the amount of changes of the predictor variable (components) can change the criterion variable (WCU), and the $\lambda$ coefficient shows that among the components of this study (Table II) the component of excellence in research scored the highest $\lambda$ coefficient ($\lambda = 0.50$) and the highest determination coefficient ($R^2 = 0.67$). Also the academic freedom component scored the lowest with the Lambda coefficient ($\lambda = 0.18$) and lowest determination coefficient ($R^2 = 0.29$) in comparison with other components. And it is followed by components of governance of the institution and adequate facilities.

After confirming the conceptual model of the research, the researchers framed the questionnaire in four components: excellence in research, academic freedom, governance of the institution and adequate facilities. The questionnaire consisted of 45 closed-ended questions in a five-point Likert scale (quite disagree/disagree/not disagree not agree/agree/quite agree) and was divided into five parts. The first part dealt with demographic characteristics (such as gender, academic degree, and field of study), the second part with excellence in research (question number 1-11), the third part with academic freedom (question number 12-26), the fourth part with institution governance (25-37), and the fifth part with the component of adequate facilities (questions number 38-45). The face and content validity of the questionnaire was evaluated by the experts and some items were modified.

To assess the reliability and consistency of the instrument, a pilot study was conducted among 30 of the sample, who were randomly selected, and the obtained Cronbach $\alpha$ coefficient was 0.925; it should be mentioned that the Cronbach $\alpha$ coefficient for each component was calculated and it was 0.854, 0.807, 0.861, and 0.829 for excellence in research, academic freedom, governance of the institution, and adequate facility, respectively. After assessing the reliability and validity of the questionnaire, the researchers e-mailed the questionnaires to the faculty members of the 13 comprehensive universities; among them, 216 responded to the questionnaire in five months.

### Findings

The descriptive findings showed that 72.2 percent of the participants were male and 27.8 percent were female. According to academic degree, 67.6 percent of the participants were assistant professors, 22.2 percent were associate professors and 10.2 percent were professors. Also 12 percent of the participants were from Technical and Engineering field, 15.3 percent from Basic Sciences field, 1.9 percent from Veterinary field, 7.9 percent from Agricultural Sciences and Natural Resources field, 2.3 percent from Art-related majors field, and 60.6 percent from Human Sciences field.

**The first research question**

**RQ1.** To what extent from the viewpoint of the faculty members has excellence in research received due attention in the comprehensive universities of Iran?

<table>
<thead>
<tr>
<th>RMSEA</th>
<th>$p$-value</th>
<th>df</th>
<th>$\chi^2$</th>
<th>Amount of $R^2$</th>
<th>Amount of $\lambda$</th>
<th>The research variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000</td>
<td>0.31733</td>
<td>1</td>
<td>1</td>
<td>0.67</td>
<td>0.50</td>
<td>Excellence in research</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.29</td>
<td>0.18</td>
<td>Academic freedom</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.61</td>
<td>0.32</td>
<td>Governance of the institution</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.58</td>
<td>0.32</td>
<td>Adequate facilities</td>
</tr>
</tbody>
</table>

**Table II.** $R^2$ amount and $\lambda$ amount of research variables
For conducting parametric tests on data, as the usage acceptance of parametric tests is the presumption of variable normality, this acceptance was studied with the help of the Kolmogorov-Smirnov test. Findings from the Kolmogorov-Smirnov test for normality indicated that the variable distribution in all WCU components was normal ($p < 0.05$). Therefore for exploring other questions, parametric tests were used. By considering the comparison of a group with an assumed amount of three, we used the one-sample $t$-test. The findings for each question are presented.

The findings presented in Table III indicate that the mean of the first component (excellence in research) is lower than the assumed mean of 3, and the $p$-value (significance level) is lower than 0.05; therefore the test was meaningful. In other words, the faculty members believe that the level of application of the excellence in research component in the comprehensive universities is lower than the mean level.

**The second research question**

RQ2. To what extent from the viewpoint of the faculty members has the academic freedom component received due attention in the comprehensive universities of Iran?

The findings in Table IV show that the mean of the second component (academic freedom) is more than the assumed mean of 3, with the $p$-value (significance level) lower than 0.05; therefore the test was meaningful. In other words, the faculty members believe that the level of application of the academic freedom component in the comprehensive universities is higher than the mean level.

**The third research question**

RQ3. To what extent from the viewpoint of the faculty members has the governance of the institution component received due attention in the comprehensive universities of Iran?

The findings in Table V show that the mean of the third component (governance of the institution) is lower than the assumed mean of 3, with the $p$-value (significance level) lower than 0.05; therefore the test was meaningful. In other words, the faculty members believe that the level of application of the governance component in the comprehensive universities is lower than the mean level.

### Table III.
The comparison of the mean of excellence in research in the comprehensive universities

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>$t$</th>
<th>Significant level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellence in research</td>
<td>2.65</td>
<td>0.708</td>
<td>−7.134</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Note:** The comparison of the mean of excellence in research in the comprehensive universities with the assumed mean of 3

### Table IV.
The comparison of the mean of academic freedom in the comprehensive universities

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>$t$</th>
<th>Significant level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic freedom</td>
<td>3.53</td>
<td>0.609</td>
<td>12.907</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Note:** The comparison of the mean of academic freedom in the comprehensive universities with the assumed mean of 3
lower than 0.05; therefore the test was meaningful. In other words, the faculty members
believe that the level of application of the governance of the institution component in the comprehensive universities is lower than the mean level.

The fourth research question

RQ4. To what extent from the viewpoint of the faculty members has the adequate facilities of the institution component received due attention in the comprehensive universities of Iran?

The findings in Table VI show that the mean of the fourth component of this research (Adequate facilities) is lower than the assumed mean of 3, with the p-value (significance level) lower than 0.05; therefore the test was meaningful. In other words, the faculty members believe that the level of application of the adequate facilities component in the comprehensive universities is lower than the mean level.

In order to compare faculty members’ views on different fields (the WCU components) and ranking of each component, and considering the ordinal scale of this study, the Friedman test, the non-parametric alternative of the $f$ test, was conducted. Therefore, the normal distribution and equality of variances were not necessary. As shown in Table VII, the faculty members of this study believed that academic freedom in comparison with other WCU components is at a and is sequentially followed by adequate facilities, excellence in research and governance of the institution.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>$t$</th>
<th>Significant level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance of the institution</td>
<td>2.64</td>
<td>0.701</td>
<td>$-7.33$</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Note:</strong> The comparison of the mean of governance of the institution in the comprehensive universities with the assumed mean of 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>$t$</th>
<th>Significant level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate facilities</td>
<td>2.82</td>
<td>0.719</td>
<td>$-3.61$</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Note:</strong> The comparison of the mean of adequate facilities in the comprehensive universities with the assumed mean of 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WCU components</th>
<th>Mean rank</th>
<th>Group rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic freedom</td>
<td>3.72</td>
<td>1</td>
</tr>
<tr>
<td>Adequate facilities</td>
<td>2.35</td>
<td>2</td>
</tr>
<tr>
<td>Excellent in research</td>
<td>2.00</td>
<td>3</td>
</tr>
<tr>
<td>Governance of the institution</td>
<td>1.93</td>
<td>4</td>
</tr>
</tbody>
</table>

Table V. The comparison of the mean of governance of the institution in the comprehensive universities

Table VI. The comparison of the mean of adequate facilities in the comprehensive universities

Table VII. Mean ranking of the WCU based on Friedman test
Discussion

In the present study, the components of the WCU in comprehensive universities of Iran were explored. The results indicated that from the faculty members’ viewpoint, the comprehensive universities were placed at a lower than average level in the application of WCUs in order to become a university at world-class level. One component, i.e. academic freedom, was an exception and was more widely considered.

Regarding the excellence in research component (the first research question), the findings show that in the faculty members’ point of view, comprehensive universities cannot be placed at the level of the WCU considering the component of excellence in research. As mentioned earlier, the WCU has been established as one of the dimensions in global competition among knowledge-based societies. The competition between these universities in quality and quantity is different from that in previous periods because the recent competition between them is mainly concentrated on research productivity instead of education (Shin and Kehm, 2013, p. 1). Thus, in WCUs, the focused attention is on the research aspect and not on the education aspect, and this requires employment of talented human resources (the faculty members and students), adequate research budget, and innovation in research. Unfortunately, our universities, regardless of the considerable quantitative growth, have not been very effective in contributing to science (publication of papers). In the aspect of excellence in research as one of the requirements of WCUs, the comprehensive universities of Iran did not have outstanding performance. Definitely one of the main reasons for research apathy in the higher education system of Iran is inadequacy of the allocated research budget. The index of this issue, the ratio of the allocated budget of per capita income to research projects in developed countries, demonstrated that the basis and bankroll of these countries’ development is the emphasis on the importance of research and the allocation of a large budget for it, so that, unlike underdeveloped countries, they receive the greatest output from research projects. On the other hand, researchers, who are the most important resource in the process of research, do not receive adequate support. Another prominent problem regarding the research done in our universities is that the results of the research have not been applied outside the research setting. One of the reasons for this lack of application of the research findings, and the documentation of these findings in our universities, is the uselessness of the results. These findings often do not have the adequate quality to be applied in action because some of the research projects have not been done in relation to a specific need in society (Sedaghatifard, 2008). In addition to the above-mentioned obstacles, in the report of the research councils of Iran, some of the obstacles to research and innovation in Iran are mentioned, some of which are described:

The existing obstacles in management, policy making and the research system of Iran, lack of an adequate scientific-research management model in the academic research centers, lack of a systematic approach to the analysis and explanation of the research needs and priorities, the scientific and technical gap between Iran and the world, improper transfer of the distinguished researchers’ experiences to new researchers, lack of strategies for brain drain and the return of Iranian scientists with international reputation, lack of space and cultural capacity for international cooperation inside and outside Iran (Islamic Parliament Research Center, 2016).

In relation to the academic freedom component (the RQ2), the findings revealed that from the viewpoint of the faculty members, the comprehensive universities are to some extent at the level of the WCU. These finding were in contrast to the previous
research findings in the field of academic freedom. For example, in the study of Dehghani et al. (2012), the faculty members’ academic freedom in research, educational, organizational and intellectual aspects, particularly considering their academic status, is reported to be low. Perhaps one of the reasons for this is the conservatism of the faculty members in responding to the items of the academic freedom component. The other reason for these findings can be the positive events that have occurred in the recent two years after the new government, which have led to an improvement in the academic freedom component in universities all over Iran, compared to the past. As it was declared formerly, one of the other adequate requirements for having a WCU is the existence of academic freedom of the faculty members and students for having the creative initiations and the global connection in all the majors (Marginson, 2012, p. 17). The academic freedom of the academic community and universities as the subsystem of culture and society cannot be imagined without the logical interaction with the context, meta-system, and the contiguous systems (Farasatkhah, 2010, p. 50). Therefore academic freedom is one of the requirements of higher education in the modern higher education system (Karimian et al., 2012). Academic freedom will not happen in a vacuum and requires cultural and economic factors. One of the cultural requirements of academic freedom is the discourse analysis with regard to the ontological and intellectual aspects, such as academic freedom, circulate in that society. On the other hand, the economic requirement of academic freedom is of high importance because the laws and freedom and the intellectual and cultural diversity requires a variety and diversity of economic resources and work culture and creative competition. Thus in societies like Iran where universities are accustomed to life under the guardianship of the government and oil dollars, liberal and academic freedom can be scratched to some extent.

In relation to the governance of the institution component (the RQ3), the findings revealed that from the viewpoint of faculty members, comprehensive universities do not enjoy the desired governance at the level of a WCU. It should be mentioned that organizational independence for taking the initiative and making strategic decisions and also for outside governance and wide organizational culture is considered the optimum condition for a WCU (Marginson, 2012, p. 17). Thus the governance of the WCU includes university independence in absorbing students, employing staff and faculty members, choosing university presidents and college deans and making other strategic decisions. Therefore, endowment of independence to universities is the principal policy for increasing responsibility, accountability and stability. In concentrated academic systems, such as Iran, the government dictates all of the educational policy making, planning, management and execution; thus there is restriction in modern thinking and creativity in academic management. On the other hand, if all university dimensions are governed centrally and bureaucratically by the government, accountability will gradually vanish (Karimian et al., 2012). In order to solve this problem, in clause A of article 20 of the fifth development plan of Iran, the issue of university independence was given due importance. Thus, execution of this issue in Iran universities requires a new governmental approach to functions, duties and status of universities, integration and resolution of conflicts in past rules and regulations, needs assessment for planning and predicting the proper rules and regulations in accordance with the issue of university autonomy and specifying the authority of local and organizational as well as the authority of state and MSRT (Zakersalehi, 2009).
With regard to the adequate facilities component (the fourth research question), the results showed that from the viewpoint of faculty members, comprehensive universities are not at the level of the WCU. To explain the findings of this study, provision of adequate facilities is one of the requirements of world-class knowledge, because these universities should receive large budgets, laboratory and research facilities and high-speed internet connections. The results of this study are in line with the results of some of the researchers in our universities (Hosseinpour, 2011; Karimian et al., 2011; Saeedi, 2014), who also agreed that some of the comprehensive universities are faced with lack of adequate facilities. Among these drawbacks we can refer to the limited access to scientific resources, low speed of internet connection in most of the universities and dormitories, limited access to the latest published resources, lack of laboratories and materials, and above all a lack of resources and budget decrease.

Suggestions
The following suggestions are made based on the findings of this study for achieving the goals of WCUs and with the hope of transforming Iran comprehensive universities to WCUs:

- Considering the fact that excellence in research in the WCU needs creativity in research, adequate budget, and talented faculty members and students, it is recommended that the policy makers of higher education try to train competent researchers, motivate and encourage innovation in researchers, establish international cooperation centers with other higher education institutions with the aim of engaging in joint projects, increase the research budget, and apply research findings for solving the problems of Iran.

- Since academic freedom in universities, particularly in WCUs, can improve the creativity of the faculty members and students and also the development of free-thought chairs in universities, it is suggested that the policy makers and trustees of higher education system reduce their own authority and help bolster academic freedom in universities.

- Since one of the requirements of the desired governance in the WCU is university independence, it is recommended that the policy makers and the trustees of the higher education system make arrangements to correct execution of article 20 of the fifth development plan which has particularly referred to university independence.

- Since one of the requirements of the WCU is adequate facilities, it may be recommended that the policy makers and trustees of the higher education system try to increase the university budget, as well as the bandwidth of the university internet, renovate the laboratory equipment, and provide more access to both electronic and printed resources.

Notes
1. In this research the comprehensive university refers to the public university that uses public budget, and educating students in the degrees of Associate, Bachelor’s, Master’s, and PhD and included all academic disciplines such as, Humanities Sciences, Basic Sciences, Engineering, Agriculture and Natural resources, Veterinary and Art.

2. Root Mean Square Error of Approximation.
4. Normed Fit Index.
5. Comparative Fit Index.
6. Incremental Fit Index.
7. Relative Fit Index.
8. Goodness of Fit Index.
9. Adjusted Goodness of Fit Index.

References


**Corresponding author**

Mohsen Nazarzadeh Zare can be contacted at: Nazarzadehzareh@gmail.com

For instructions on how to order reprints of this article, please visit our website: www.emeraldgrouppublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com