The Investigation of Challenges in Developing and Implementing New Academic Disciplines in Iranian Universities: Views of the Faculty Members

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Abstract

The move on decentralization of curriculum development in recent decade has become one of the major tasks in developing scientific fields in Iran. By implementing these programs some drawbacks have become evident. The objective of this study was to identify and assess the existing challenges involved in the development of academic disciplines from the faculty members' views. For this aim, through a descriptive study, a body of 125 faculty members involved in academic disciplines development from state universities of Isfahan, Tehran and Ferdowsi are randomly selected. The study pursued seven research questions using a researcher-made questionnaire. Findings showed that interdisciplinary challenges, structural challenges and management challenges significantly exceeded the moderate level. Moreover, scientific-professional and financial challenges significantly affected the curriculum development of the academic disciplines. Results of MANOVA further showed that there were significant differences between the mean scores of faculty members' views regarding the structural and management challenges in different universities. In general, results of the study highlighted the challenges which can be considered as important obstacles in the development process of disciplines and society at large. Optimization of this process needs the correctly addressed opinions of the faculty members in this respect.

Keywords: curriculum development, challenge, faculty members, views, academic disciplines

1. Introduction

University as one of the most important organizations in the process of formal education has taken different roles for the manifestation of human potentialities, creating learning opportunities and the development of science in human communities (Ahonen & Liikanen, 2009; Kpee, Oluwuo, & Baridam, 2012). Therefore, due to several reasons including its attraction as an institute involved in science development, learning and innovation in the society, it increasingly adds to its applicants (Sadlak, 1998). On the other hand, along with the rise of change and rapid developments in different scientific, economic, social and political fields, universities are expected to tend to extensive innovative measures and problem solving approaches. This is because many of the experts believe that higher education has entered a new era with 'competition and quality' as its main characteristic (Freeman, 1993; Jakab, 2005; Newton, 2007). This has had a particular repercussion for the universities measures and behaviors in a way that by developing new disciplines, they have attempted to train a scientific community and prepare them to enter this community through a socializing process (Diamond, 1989; Toohey, 1999). Due to these multiple demands in the second decade of the 21st century, the scholars involved in introducing and developing new academic disciplines are on increase.

The history of developing new scientific disciplines in the world universities shows that concurrent with the accumulation of knowledge and the rapid growth of science and its application in different domains of social and personal life (Keating, 2014), scientific institutions, and universities in particular have tried to develop the newly produced knowledge in the form of new scientific courses and disciplines. Also, by transferring new sciences to their own audiences and societies they can contribute to the applicability and development of sciences and technologies (Lattuca & Stark, 2011). Hence, it is said that the survival of universities is interwoven with the

curriculum development component (Hicks, 2007) and universities are forced to develop and implement educational courses and efficient programs for attracting students, and reflecting their own findings in the form of curriculum development (Goldfinch et al., 2007). Therefore, developing learning opportunities (Teichler, 2006) and reinforcing academic disciplines are the foundation of developing other parts since specialized manpower needed by different sections of the society are trained by them. Consequently, assuring the desirable quality of the performance of introducing new disciplines is the most important component for surviving every organization.

One of the most important ways to ensure the existence of scientific quality is to concentrate on the challenges involved in developing disciplines. Challenges of developing academic disciplines can be considered as objective and/or subjective problems which can hinder or slow down the balanced process of introducing disciplines (Ahonen & Liikanen, 2009). Therefore, identifying the involved challenges is necessary since educational system needs to be aware of the limitations and challenges to enact the changes in an efficient way (Fullan, 2013). This issue should be considered by curriculum planners, policy makers and politicians.

Studies conducted in this regard emphasize that the best organizations in the world consider organizational development and change as their main duty (Carter, Ulrich, & Goldsmith, 2012; Knapper & Cropley, 2000). In universities, these changes and developments have been represented in the form of introducing new disciplines which have already attracted the attention and efforts of authorities and experts. In a way that, the development of the higher education system and the necessity of the quality are assessed and evaluated by many experts in this domain. Accordingly, to Saunders little attention to curriculum and its elements (Saunders, 2007), Nyborg, academic independence and budgeting systems (Nyborg, 2003) and Arnot and Reay, insufficient attention to ideas and preferences of the students are challenges facing the higher education (Arnot & Reay, 2007).

Wolf and Torin consider the lack of coordination between students and the labor market (Torin, 2005; Wolf & Hughes, 2007), Nggaard, Hojlt and Hermansen and Ahonen and Liikanen, the lack of new disciplines corresponding with the rapid growth and changes in the global market, population fluctuation and the development of sciences as new challenges facing the higher education (Ahonen & Liikanen, 2009; Nygaard, Højlt, & Hermansen, 2008). Bennett and Bennett also consider inattention to the integration of ICT in the framework of curriculum elements, inconsistency of curriculum with everyday changes, scarcity of innovative experts and professors, and the simplification of curriculum as the challenges in developing curriculum (Bennett & Bennett, 2003). Stevens emphasizes the introduction of research methodologies for the efficient measurement of the developed curriculum, teaching content and methods, the quality of new curricula teachers, the efficiency of educational methods and learning requirements of the curriculum as the challenges involved in the developed curriculum (Stevens, 2004).

Kellett calls the non-comprehensive and uncoordinated attention to different educational dimensions in developing curriculum as challenges (Kellett, 2010). He concludes that both curriculum developers and curriculum performers should act based on the right analysis and thought to grow different educational sectors in a coordinate way. Along acknowledging the importance of curriculum development stages, Clark points to the length and time-consuming nature of them as a barrier for faculty members (Clark, 2006).

Therefore, if establishing appropriate structure and processes for developing academic disciplines is the objective, the commitment to constantly improve the educational processes, introducing and developing new academic disciplines should be considered as an important and great task. So it can guide this process in a way that the development and implementation of the new disciplines curricula be facilitated (Avizhgan, Jafari, Nasr, & Changiz, 2015). As a result, the investigation of existing challenges in this process prepares the ground to offer solutions out of these challenges and in this way the improvement of both quality and quantity of the curriculum, the correspondence of new disciplines and their curriculum with students' and labor market needs (Jakab, 2005; Nygaard et al., 2008), the participatory nature of the process of curriculum development (Fullan, 2013) and the accountability of the curriculum would be implemented and operationalized (Garraway, 2006).

Regarding the above, the investigation of the existing challenges in the development process of academic disciplines is both necessary and justified. In fact, expanding the knowledge frontiers and the impact of global scientific changes has revolutionized the educational and research needs of the Iranian universities. These changes have highlighted the need for decentralization in both the development and revision of the curriculum. The official announcement of these changes appeared in Iranian Ministry of Science and technology's directive number 1089 on 30 December, 2000 which relegated authority to universities regarding the curriculum planning.

Results of the studies on the activity of qualified universities during the last decade indicate to the problems which by hindering or slowing down the balanced movement of this process have had unfortunate influences on

the quality of the new disciplines and finally the sustainable development of the country. Therefore, present study investigated the existing challenges in the development process of academic disciplines from the views of the faculty members involved in the development process. To do the analysis, the challenges were divided into five main categories including interdisciplinary, management, structural and financial-professional and each was addressed through a question. Further, views of the faculty members in different university were investigated.

2. Methods

Present study as a descriptive one used the survey method for collecting data. The target population of the present study consisted of a body of 197 faculty members involved in developing academic disciplines at Isfahan, Tehran and Mashhad state universities. Based on stratified random sampling proportionate to population of each university as well as consulting Grjsy and Morgan Tables, the sample was estimated to be 125 people. In this study, by using 7 major questions a researcher-made questionnaire was developed which included 18 close-ended items on scale ranged from 0 to 10, where higher scores confirmed the existence of challenges according to the faculty members' attitudes. The questionnaire was developed in four steps:

First Step: The semi-structured interviews were conducted with experienced professors who were willing and had the experience of at least one academic discipline development. Sampling continued as long as the data saturation was achieved. Following each interview, it was wholly recorded, transcribed and then stored on the MAX.QDA software (Freeman).

Second step: All the secondary material collected from books, journals and super-ordinate documents related to the challenges of developing new disciplines and their curriculum in the literature review section were entered into MAX.QDA (MAX Qualitative Data Analysis) similar to the first-step interviews. Using the software (version 2007) the data obtained from the interviews and the analysis of documents were coded and classified. On the whole, 113 codes and 5 classifications were extracted from the sum of two parts.

Third step: Based on the data obtained from the content analysis of the interviews and the documents, the final questionnaire was prepared. It included 18 items in five major areas of the challenges involved in developing new academic disciplines. The challenges included: academic-professional (items 1-3), structural (items 4-7), financial (8-10), management (items 11-14) and interdisciplinary (items 15-18)

Fourth step: The content validity of the questionnaire was calculated by a group of curriculum experts (0.7) and its reliability estimated through the internal consistency procedure turned out to be quite satisfactory (Cronbach Alpha = 0.92). By using SPSS software (version 20), the data were analyzed using one-sample t-test, MANOVA and Friedman test.

3. Results

In order to answer the first five questions of the study, the mean and the sum of all items for each challenge in the questionnaire were compared with the hypothetical mean of 5 using one-sample T-Test. Based on the research questions, the results are presented as below:

Research question 1: What is the effect of professional-scientific challenges on the development of academic disciplines in the view of the faculty members?

Table 1. Results of one sample t-test for assessing the effect of professional-scientific challenges on developing academic disciplines

Professional-scientific challenges	N	Mean	SD	t	Sig.
1. Lack of curriculum planning consultants in the development disciplines team	125	4.10	2.86	-3.50	0.001
2. Insufficient knowledge of the team members due to the newness of discipline	125	4.96	2.49	-0.17	0.85
3. Discrepancies based on the knowledge and experiences of the professors and their resistance against innovation	125	4.95	2.66	-0.20	0.84
Total	125	4.67	2.17	-1.68	0.09

The data in Table 1 shows that the significance level of the t-statistic related with the lack of curriculum planning consultants in the development discipline team challenge is lower than 0.05 (p<0.05). Regarding the fact that the direction of this challenge is negative, it can be deduced that the mean scores of this challenge is smaller than that of the hypothetical mean of 5 and consequently its effect on the process of intruding and developing disciplines is significantly less than the moderate level. In addition, items 2, 3, and sum total of the professional-scientific challenge items has a mean smaller than 5 and the significance level is higher than 0.05 (p>0.05). Therefore, from the perspectives of faculty members, the effect of professional-scientific challenge on the process of developing new disciplines has no significant difference with the moderate level.

Research question 2: What is the effect of structural challenges on the development of academic disciplines in the view of the faculty members?

Based on the results of Table 2, the significance level of t-statistics associated with the structural challenges and all its items except item 4, are smaller than 0.05 (p<0.05). Therefore, faculty members assessed the effect of the structural challenge on the process of developing academic disciplines significantly higher than the moderate level.

Table 2. Results of one sample t-test for assessing the effect of structural challenges on developing new academic disciplines

Structural challenges	N	Mean	SD	t	Sig.
4. Lengthening the process of developing disciplines due to the administrative bureaucratic structure	125	5.41	2.85	1.62	0.10
5. Excessive parallelism in universities and overgrowth of the disciplines	125	5.59	2.65	2.49	0.01
6. Centralization in introducing disciplines and developing its curriculum	125	5.64	2.42	2.95	0.004
7. Lack of implementing comprehensive educational plans based on super ordinate documents	125	5.52	2.48	2.38	0.01
Total	125	5.54	1.83	3.31	0.001

Research question 3: What is the effect of financial challenges on the development of academic disciplines in the view of the faculty members?

Table 3. Results of one sample t-test for assessing the effect of financial challenges on developing new academic disciplines

Financial challenges	N	Mean	SD	t	Sig.
8. Not including the time of developing disciplines in professors' educational and research schedules	125	4.32	2.92	-2.57	0.01
9. Inattention to the key role of receiving credits from non-state institutions for developing the disciplines	125	4.23	2.91	-2.94	0.004
10. Lack of financial supply and credit mechanism for developing disciplines	125	4.59	2.97	-1.53	0.12
Total		4.38	2.41	-2.84	0.005

As the results of Table 3 show, the significance level of t statistics related with the financial challenges and all its items except item 10, are smaller than 0.05 (p<0.05). Regarding the fact that the direction of this challenge is negative, it can be concluded that the mean scores of this challenge is lower than the hypothetical mean of 5. Therefore, faculty members considered the effect of the financial challenge on the process of developing new academic disciplines significantly lower than the moderate level.

Research question 4: What is the effect of management challenges on the development of academic disciplines in the view of the faculty members?

Table 4. Results of one sample t-test for assessing the effect of management challenges on developing new academic disciplines

Management challenges	N	Mean	SD	t	Sig.
11. The weak support of the managers and universities for pursuing disciplines and having inappropriate expectations from the involved professors	125	5.68	2.57	2.98	0.003
12. Changing the policies of organizations and managers	125	5.80	2.59	3.44	0.001
13. Lack of mechanization of the process of introducing and developing disciplines	125	5.50	2.56	2.19	0.03
14. Authorities' interest in the priority of registering new discipline for their own university and unusual support of some universities	125	5.77	2.66	3.25	0.001
Total	125	5.69	1.79	4.30	0.001

Based on the results of Table 4, the significance level of t-statistics related with the management challenges and all its items are smaller than 0.05 (p<0.05). Therefore, faculty members assessed the effect of the management challenge on the process of developing academic disciplines significantly higher than the moderate level.

Research question 5: What is the effect of management challenges on the development of academic disciplines in the view of the faculty members?

Table 5. Results of one sample t-test for assessing the effect of interdisciplinary challenges on developing new academic disciplines

Interdisciplinary challenges	N	Mean	SD	t	Sig.
15. Confusion of the new disciplines clients due to the division of responsibility of the results between some fields or domains	125	5.58	2.65	2.45	0.01
16. Uncertainty of interdisciplinary authorities in the Ministry and the difficulty of evaluating them	125	5.87	2.47	3.93	0.001
17. The difficulty of combining and intertwining issues and content of multidisciplinary subjects and their limited scientific resources	125	6.01	2.19	5.17	0.001
18. Lack of capable and expert professors in some disciplines and domains	125	6.28	2.12	6.73	0.001
Total	125	5.93	1.49	6.99	0.001

The results in Table 5 show that the significance level of t-statistics related with the management challenges and all its items are smaller than 0.05 (p<0.05). Therefore, faculty members evaluated the effect of the interdisciplinary challenge on the process of developing academic disciplines significantly higher than the moderate level.

Research question 6: Are there any differences between the scientific-professional, structural, financial, management and interdisciplinary challenges from the faculty members' views?

To answer this question, Friedman's test was used. One of the applications of this test is when the attitudes of a group are to be assessed in several fields and the priority of each case is to be identified based on the significant ranking. Based on the results of Table 6 ($\chi2$=75.74, df=4, p<0.05), there was a significant difference in the degree of existing challenges in the process of developing academic disciplines in the view of faculty members. The highest degree of challenges was related to interdisciplinary, management, structural, scientific and financial challenges, respectively.

Table 6. Results of Friedman's test for comparing faculty members' attitudes towards each of the challenges in developing new academic disciplines

Challenges	Mean scores	N	Chi square	df	Sig.
Scientific	2.47	125			
Structural	3.15	125			
Financial	2.30	125	75.74	4	0.001
Management	3.32	125			
Interdisciplinary	3.77	125			

Research question 7: Are there any differences among the faculty members' attitudes towards challenges in selected universities?

Table 7. Results of MANOVA for challenges in terms of university

Independent variable	Dependent variable	The sum of squares	df	Mean of squares	F	Sig.
	Scientific	15.23	2	7.61	1.63	0.20
	Structural	31.31	2	15.65	4.93	0.009*
University	Financial	22.74	2	11.37	1.97	0.14
	Management	47.91	2	23.95	8.29	0.001*
	Interdisciplinary	3.60	2	1.80	0.80	0.45

Regarding Table 7, results of MANOVA for assessing the difference in the degree of assessed challenges in terms of university indicated that the significance level of F statistic in structural and management challenges was lower than the Alpha level 0.05 (p<0.05). Therefore, there was a difference between the mean scores of faculty members' attitudes regarding structural and management challenges in developing academic disciplines in terms of the selected universities. To assess the quality of the mentioned differences, the paired comparison of mean scores in terms of universities was made by the Bonferroni post-hoc test. The results have been displayed in Table 8.

Table 8. The paired comparisons of the challenges mean scores in terms of the university

Dependent variable	Independent variable		Mean scores differences	Sig.
	Tehran	Isfahan	-0.78	0.10
Structural challenge	Isfahan	Mashhad	-0.44	0.94
	Mashhad	Tehran	*1.22	0.01
	Tehran	Isfahan	-0.55	0.34
Management challenge	Isfahan	Mashhad	*-1.06	0.03
	Mashhad	Tehran	*1.62	0.001

The results of Table 8 indicate that the significance level of the Bonferroni post-hoc test of comparison of mean scores of structural challenges in Mashhad University and Tehran University and management challenges between Mashhad University with Universities of Isfahan and Tehran is lower than the Alpha level of 0.05; therefore, it can be concluded that faculty members in Mashhad University considered the structural challenges significantly more effective than the faculty members of Tehran University. In addition, management challenges were assessed significantly more effective in Mashhad University compared with Isfahan and Tehran Universities.

4. Discussion and Conclusion

Findings of the present study indicated that in the process of developing new academic disciplines faculty members faced with interdisciplinary, management, structural, professional and financial challenges, respectively.

Results of the study also showed that based on the faculty members involved in developing disciplines, all items of the interdisciplinary challenges component (i.e. Confusion of the advisors of new disciplines, uncertainty of interdisciplinary authorities in the Ministry of Education and the difficulty of evaluating them, the difficulty of combining and intertwining issues and content of multidiscipline, lack of capable and expert professors in several disciplines and fields) were considered as the interdisciplinary challenges and by receiving the highest mean scores were the first challenge in the process of academic disciplines curriculum development. These challenges were also presented and confirmed in studies by Fiore (2008), Glied, Bakken, Formicola, Gebbie, and Larson (2007), Holley (2009) and Jakab (2005). Some of the reasons underlying the findings can be lack of appropriate grounds for interdisciplinary perception, lack of coordination among the experts, weakness of teamwork and lack of professional independence in the interdisciplinary fields.

In this regard, some scholars emphasized the combination of diverse attitudes and confrontation with the conflicting expectations (Stark & Lattuca, 1993), some addressed the lack of common words among the professors of multiple disciplines (Bromme, 2000), and others discussed the difficulty in finding connecting points among different attitudes and different conflicting standards in disciplines (Miller & Mansilla, 2004). Also, Klein in (Klein, 2009) highlighted the lack of experienced leaders, diverse infrastructures, insufficient action plans, and severe competitions among the groups and universities. Furthermore, Riegler considered variety in the professors' educational fields, information deficiency, and the preference of prediction versus explication as the barriers which generated difficulties in this process (Riegler, 2005). Therefore, the proposal of establishing the network of professors involved in developing disciplines in Iran and delegating some authority of developing disciplines to them can be effective in enriching the development and implementation of curriculum among the interdisciplinary disciplines.

In the same line, faculty members viewed all items discussed under the management challenges (i.e. the weakness of supporting managers and universities for pursuing disciplines and having inappropriate expectations from professors involved, changing the policies of organizations and managers, lack of mechanization of the process of discipline introduction and development, authorities' interest in the priority of registering new disciplines for one's university and unusual support of some universities) as the management challenges which have had the most challenges after the interdisciplinary disciplines in the process of academic discipline development. These challenges have been presented and confirmed in Keating, Jakab, and Lukic (2005). Their results confirm the findings of this study whose reasons can be the excessive job preoccupation of the managers, the political inconsistency of the society and the lack of transparency of the developing disciplines regulations. These challenges make the managers drive to quantitative and short-term objectives which in turn make the higher education system to distance from the real needs and long-term qualitative objectives in the process of developing new disciplines. Therefore, as some effective suggestions in this regard the relegation of authorities within the law framework and trust to universities and groups as well as the digitalization of the process of developing new disciplines can be named.

Furthermore, the involved faculty members considered all items discussed under the structural challenges (i.e. lengthening the process due to the administrative bureaucratic structure, parallelism in universities and overgrowth of the disciplines, centralization in creating disciplines and developing its curriculum, lack of implementing comprehensive educational plans based on super ordinate documents) as those which were ranked third among the challenges involved in the academic disciplines curriculum development. The analysis of mentioned cases revealed that the administrative structure and mechanism were among the main elements of the organization which can constrain the activities of the universities (Ahonen & Liikanen, 2009; Debackere & Veugelers, 2005; Jakab, 2005). As a result, they have a constructive role in advancing or hindering the process of developing new disciplines (Jakab, 2005). At present, these cases can cause some of the faculty members to act in a limited way as the executives or planners through plans and approved terms and conditions. While for attaining the desirable state of organizational structure, by coordinating the activities of organizational groups and departments in the hierarchy, an effective communication system should be established in this respect (Nelson & Quick, 2007).

Also as the findings here show, the involved faculty members believed that items 1 to 3 of the professional challenge component (i.e. lack of curriculum planning consultants in the team, insufficient knowledge of the

group members due to the newness of the disciplines, discrepancies between young and experienced professors and their resistance against the innovation) were not serious challenges in the process of change as the mean score of these challenges was smaller than the hypothetical mean of 5. Therefore, it seems that because professors of a department propose a discipline based on their own knowledge and specialty, they face less barriers and challenges in this regard. This finding resembles to that of Wolfs' study and contradicts the Jakab and Lukic research findings (Jakab, 2005; Wolf & Hughes, 2007). In addition, the amount of the observed challenges is related to the absence of the professional curriculum planners. These results confirm the findings of Schwab in his emphasis on recalling curriculum planning experts to practical decision-making areas in a sophisticated way (Schwab, 1969). According to Schwab, developing curriculum is a research process which requires a thoughtful endeavor; therefore, any kind of decision-making, measures and actions in this regard should be conducted based on rationality and logic.

Finally, with regard to the components of the financial challenge, results of the study indicated that from the perspectives of the involved faculty members, ignoring the time of developing disciplines in professors' educational and research plans, also inattention to the key role of receiving credits from non-state institutions for curriculum development were not serious challenges in developing new academic disciplines, since the mean score of these challenges was smaller than the hypothetical mean of 5. Therefore, it seems that some of the professors considered developing academic disciplines as part of their own educational and research tasks; therefore, using the professors' social capital, establishing friendly and informal relations, and resorting to external organizations would finance this process. Accordingly, Sotiraco states that a reduction in the budget allocated to universities has led educational departments to seek for external resources to supply their finances (Sotirakou, 2004). In addition to the above-mentioned cases, results of the present study showed that the faculty members of Mashhad University faced with more structural challenges than their counterparts in Tehran University and also more management challenges than the faculty members of Isfahan and Tehran universities. These challenges can be considered as important barriers in developing new academic disciplines which can be eliminated by presenting appropriate strategies.

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Note

Note 1. For more information see, http://academics.ui.ac.ir/ShowPage.aspx?Page_=letters&lang=1&sub=16&PageID=225&PageIDF=46