Investigating the relationship between academic innovation and organizational identity with higher-order thinking skills among students at Yasuj University of Medical Sciences

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Abstract

The purpose of this study was to analyze the relationship between academic innovation and organizational identity with higher-order thinking skills among students at Yasuj University of Medical Sciences. This research is applied in terms of purpose and descriptive-survey in terms of collecting data. The population included the students at Yasuj University of Medical Sciences in (n=1404). Using Cochran's formula and stratified random sampling, a sample of 302 students were selected. The instrument used was a standard questionnaire, the validity of which was confirmed using content and construct validation and its reliability was confirmed through Cronbach's alpha and composite reliability. In this study, structural equation modeling and Amos and SPSS software were used for data analysis. The research results were obtained for three hypotheses, which were tested at 95% confidence level. The results indicated that academic innovation had a significant relationship with higher order thinking skills and could be effective in improving these skills. Also, the results indicated that academic innovation had a significant relationship with organizational identity and organizational identity had a positive and significant relationship with higher order thinking skills.

Key words:
Academic Innovation,
organizational identity,
higher order thinking skills.

Introduction

Today's man faces a huge body of knowledge and experiences, the scope and dominion of which is spreading on a daily basis. Despite the fact that access to this treasure of information is easily achieved from multiple sources, selecting the right and timely information from this body of knowledge has become a daunting task and requires high intellectual and mental skills (Duron et al., 2009). One of the most important needs of the present age is to educate people who can be active and logical in different fields of society. This requires attention to higher order thinking skills that consist of creative thinking and critical thinking skills. Higher order thinking skills are thinking beyond remembering facts or telling things exactly in the way you are told (Yazdi, 2009). Creative thinking refers to the ability to extract past thoughts and experiences, and combine them into novel ways. In other words, creative thinking requires divergent thinking, which stresses fluidity, flexibility, originality and expansion. Critical thinking is a blend of knowledge, attitude and skill to determine and diagnose, select the right information, solve problems, detect faults, make appropriate hypotheses, choose solutions, test results, and make judgments. In other words, it is the rational and systematic process of conceptualizing, implementing, analyzing, and expertly integrating and evaluating the collected information, which is used to orient ideas and actions (Adel, 2012). Hence, the acquisition of thinking skills in today's world has become an indisputable must in the labor market for confronting material and spiritual questions, assessing views and policies of individuals and organizations, and ultimately, facing social problems (Falch and Mang, 2015). One of the benefits of mastering higher order thinking skills is helping individuals identify their surroundings, and in particular the organizational environment in which they work. Therefore, organizational identity plays a central role in regulating the behavioral norms of an organization's members. Managers can use symbolic mechanisms in order to promote and consolidate a distinguished identity, which help create self-regulation for individuals in order to achieve performance goals, capture and maintain talents, gain reputation, create mental security in the organization, and help people to deal with ambiguous situations (Hosseini and Shahba, 2015). Since most research has focused on the organizational identity from a business perspective, little attention has been paid to the aspects related to the identity of non-profitable organizations such as universities.

The current environment of increasing competitiveness along with increasing limitation of public resources for university education, as well as the social debate over the need for universities to increase their ability to generate income has made image and identity an essential part of the modern strategic management in these institutions (Martinez & Garcia, 2011). Colleges and universities vary not only in terms of size, type of monitoring, choices, and goals, but also in terms of characteristics of their students and faculty members, as well as their mental and social environments. This diversity of higher education creates multiple identities. Educational motivations and ideas that help some organizations grow up are a kind of extra-curricular life, which dominates the faculty identity (Kheiri et al., 2012). In studies on long-term economic growth, it has been suggested that technological change has been identified as the most important change that can improve growth and productivity. Innovation creates new products and methods of production, and ultimately improves economic growth. Educational systems at universities should be able to train students who are well versed in the concept of innovation in their work performance. Universities, therefore, refer to innovation as the most important factor in their education system (Falch and Mang, 2015). Identifying the factors effective on the acceptance and application of innovations and their impact on increasing the capacity of the educational system of universities, and adopting policies in line with the university goals is very important, because the widespread use of innovations has led to quantitative and qualitative changes in some activities (Ebadollahi et al., 2014). One of the recent innovations in the university education system is computer technology, which, thanks to its unique features, has had direct and indirect impacts on the educational system of universities and schools (Kahn et al. 2013). Higher education is considered to be an authority that generates and disseminates knowledge, which is itself considered as wealth. Higher education is also recognized as a tool for personal development of people for a better quality of life and as a means of production and economic growth; therefore, it leads to the economic prosperity of society and individuals. The traditional functions of producing and disseminating knowledge are at risk. In terms of social knowledge, the tendency towards a "knowledge-based economy" has made knowledge valuable and exposed to commercial transactions. Marketing in education is growing publicly. One of the strategies adopted by countries is the internationalization of higher education (Knight .2003). Creating a positive image for universities is very important; therefore, universities are nowadays doing a lot of work to promote their services, so that they can get a positive image of themselves for their students. Universities, which are serious about business and competitive environments, move towards educational innovations and related factors. This method has been controversial in gaining a competitive edge in the current environment (Poole et al. 2000). In the field of academic innovation, some skills predict more success in learning knowledge and technology-oriented skills. Integration of innovation in the university has transformed the teaching styles, learning approaches, and access to information. Academic innovation accelerates the process of enriching and deepening skills and motivating learners in relation to their experiences in the educational environment. Innovation at the university can make teaching and learning diverse, multi-dimensional and purposeful, engage and motivate learners, and develop collaborative activities and creativity in learning. In addition, it enables the individual to work well in different parts of the community (Demokānin, 2009).

Given the changes in, and attention to, the nature of science, new approaches have been proposed in determining educational objectives and processes. One of the most prominent approaches is to focus on higher

order skills in the education process. Training students who are thinkers, and creative and have scientific insights is not just achieved by the transfer of information to their minds, but requires the implementation of content and methods in university education systems through which they can learn how to learn through intellectual order and use what they acquire in their everyday lives. On the other hand, we live in an epoch of knowledge and information, and unbelievable acceleration of technology and creativity. With the popularity of fast access to computers and information technology and advanced media, no country can handle the 21st century economy without the 21st century electronic infrastructure. During the last decades, the speed and scope of environmental challenges have made competition more intense and has forced organizations to strategically coordinate their tools and technologies, and their required knowledge, skills and abilities in order to be as competitive as possible. One of the important factors in this regard is deciding on the level of focus on innovation in the educational system. Having accurate and timely information will speed up decision making and prevent many wrong decisions. Given the features of modern technology that cannot be controlled, we must strengthen the ideological foundations and beliefs of people and focus on internalization of values. Since educational environments are considered to be the second society, informing the educational systems of the correct use of the innovations at the level of education will help us better benefit from learning methods and their impact on the level of learning. Therefore, the purpose of this study was to investigate the relationship between academic innovation and organizational identity with the higher order thinking skills in students at Yasuj University of Medical Sciences.

Methods

The present study is applied in terms of purpose and descriptive-survey in terms of implementing research. The population included the students at Yasuj University of Medical Sciences in (n=1404). Using Cochran's formula a sample of 302 students was selected. The sampling method in this study was stratified random sampling. The data collection instruments included Facione's (2011) 18-item Critical Thinking Questionnaire with components of curiosity, open-mindedness, truth-seeking, analyticity and maturity in judgment. Kanter's Creative Thinking Questionnaire (2009) consisting of detecting differences, finding the deleted symbol, and finding the relationship between the diagrams with 9 items was used to measure the higher order thinking skills. A 15-item researcher-made questionnaire based on Khosravi and Arman (2015) including comparative advantage, visibility, compatibility and ease was used to measure the academic innovation variable. Cheney's (1983) Organizational Identification Questionnaire (OIQ) including membership, loyalty and similarity was used for measuring organizational identity. All questionnaires used a 5-point Likert scale. In the inferential statistics section, AMOS software was used to analyze and test hypotheses. This software uses a component-based approach, which can measure reliability, validity and relationships between constructs. Analysis was conducted in two steps. The first step involved the analysis of reliability and convergent and divergent validity of the model and questionnaire. The second step involves testing all hypotheses of the study via the software. Path coefficients as well as the significance coefficient of T (T-VALUE) were used for general fitness of the model and testing the hypotheses and correlation. The results of the convergence and validity of the questionnaire are summarized in Table 1.

Table 1: Summary of fitness for measurement models

Construct	Cronbach's alpha	Composite reliability coefficient CR ≥ 0.7	Mean extraction variance AVE ≥ 0.5	CR ≥ AVE
Academic innovation	0.78	0.704	0.561	✔
Organizational Identity	0.82	0.710	0.505	✔
Thinking Skill	0.73	0.786	0.578	✔

Results

In this research, descriptive results included analysis of the sample's demographic characteristics and the Kaiser-Meyer-Olkin (KMO) Test (for Sampling adequacy). Examining gender data shows that 203 participants were women (67%) and 99 were male (33%). Also, in the selected sample, 196 participants (65%) were under 30 years; 91 participants (30%) were between 31 and 40 years old; and 41 participants (5%) were over 41 years old. It is worth mentioning that the numerical value of KMO was 0.897, which is above 0.7 indicating the adequacy of using factor analysis. Pearson correlation test was used

to investigate the relationships between the research variables, the results of which are shown in Table 2.

The results in Table 2 indicate that at the 95% confidence interval, the variable of academic innovation has a positive and significant relationship with organizational identity with a correlation coefficient of 0.540 and with higher order thinking skill with a correlation coefficient of 0.448. On the other hand, the organizational identity variable had a positive and significant relationship with higher order thinking skills with a correlation coefficient of 0.471.

Table 2: Pearson correlation results indicating relationships among research variables

Variables	Academic innovation	Organizational identity	Higher order thinking
Academic innovation	1	0.540	0.482
Organizational identity		1	0.417
Higher order thinking			1

In this study, two critical indicators of CR and P were used for the purpose of verifying the significance of the hypotheses tests. At the significance level of 0.05, the critical value should be more than 1.96 and the parameter values less than 1.96 were not considered significant. Similarly, values less than 0.05 for the P value indicate a significant difference between the calculated values for regression weights with zero value at the 0.95 level. To test the research hypotheses, structural equations and Amos22 software were used. The output of the software is presented in Figure 1.

Figure 1: AMOS software output
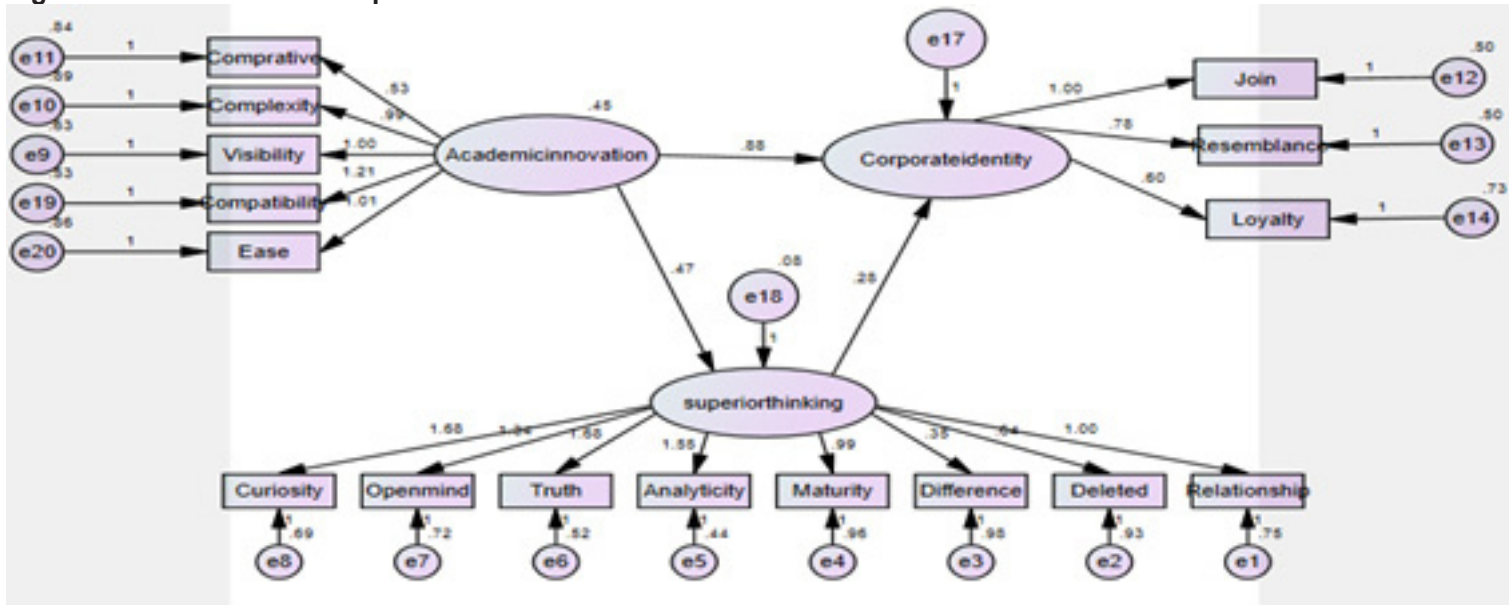
AMOS software was used to test the fitness of the above model indicating the general indicators as shown in Table3.

Table 3: Conceptual Model Fitness

RMSE	NFI	GFI	P	CIMN/ DF	CIMN
0.013	0.944	0.902	0.000	2.321	167.33

According to Table 4, it can be seen that the model has an acceptable fitness. Considering the results of the model analysis, the research hypotheses were tested as shown in Table 4.

Table 4: Regression coefficient and partial index values related to the hypotheses

Hypotheses	Regression coefficient	Critical value	P	Result
H1: University innovation at Yasuj University of Medical Sciences has a positive and significant effect on organizational identity.	0.88	5.86	0.000	Supported
H1: University innovation at Yasuj University of Medical Sciences has a positive and significant effect on higher order thinking skill.	0.47	6.64	0.000	Supported
H1: Organizational identity at Yasuj University of Medical Sciences has a positive and significant effect on higher order thinking skill.	0.27	2.31	0.002	Supported

According to Table 4 and tests of the main research hypotheses, the main research hypotheses were confirmed at 95% confidence level. Given the critical value (CR), which was greater than 1.96 for all hypotheses and the value (P), which was less than the 0.05 error level, the main research hypotheses are confirmed at 95% confidence level. Therefore, according to

Table 4, it can be concluded that at Yasuj University of Medical Sciences, academic innovation had a positive and significant effect on organizational identity and higher order thinking skills at 95% confidence level. Also, the results indicate that at Yasuj University of Medical Sciences, organizational identity had a positive and significant impact on higher order thinking skills.

Discussion and Conclusion

The importance of universities in comprehensive, integrated, and balanced development of countries, and their various sectors in all economic, social and cultural areas has been investigated and emphasized by most scholars. Like any other organization, universities need efficient instruments and models to adapt to environmental conditions, use technological advances, and meet the diverse and broad needs of their target groups. This study aimed at examining the relationship between academic innovation and organizational identity with higher order thinking skills among students at Yasuj University of Medical Sciences. The results showed a significant relationship between educational innovations and higher order thinking skills. From this conclusion it can be inferred that today, educational organizations are seeking to identify people who are creator and thinker and attempt to identify students' aptitude with the help of innovations. The recognition of the students' thinking skills is necessary, because many differences in the performance of individuals can be attributed to their thinking skills rather than their abilities. On the other hand, identifying and understanding thinking skills helps an individual to better understand why some activities are suitable for him, but others are not. Therefore, if people properly use innovation in their educational environments, they can improve their skills. In a study on high school students, Abdullah Zadeh (2009) found that the amount of utilization of IT tools promoted the acquisition of thinking skills. In a study conducted on students, Emamipor (2003) found that creativity and progress had a positive and significant effect on thinking skills. Sternberg (2001) found a significant relationship between information technology and thinking skills. The results of this study indicate a significant relationship between academic innovation and organizational identity. Therefore, it can be concluded that people who are more loyal to their organization, and feel more dependent on and associated and satisfied with the organization, i.e. have a greater commitment to their organization and deem themselves as part of it, have a higher possibility of innovation in the organization. It can therefore be inferred that if the organization is designed in such a way that attracts people and increases their loyalty to the organization, they will seek to innovate and increase its competitive advantage. Therefore, the organizational identity of individuals represents the organization's good faith and increases the trust of individuals in the organization. Likewise, in order to strengthen the trust of individuals in the organization and increase innovation, we need to adopt a coherent approach. Seyyed Jawadin and Rezaee (2015) found a significant relationship between innovation and organizational identity of employees. Moayedi (2012) found out that teachers' creativity has a

significant relationship with organizational identity. On the other hand, according to the current results, organizational identity had a significant relationship with higher order thinking skills. Organizations try to increase loyalty of individuals to their organization and the style of thinking is very important in this regard. However, they should note that there is no best thinking skill as these skills vary based on decision-making positions and occupations, and it is the art of individuals to use the appropriate skill for each position. Therefore, organizations can create the appropriate grounds for strengthening their thinking skills in the organization. Madankar (2015) found a meaningful relationship between identity and thinking style. Hejazi and Borajali (2009) found that the level of individuals' commitment to and identification with the organization has a significant relationship with their thinking. According to theoretical literature, the following recommendations are made to create and improve the status of innovation and organizational identity in acquiring higher order thinking skills at higher education institutions:

• Before creating an image for the university, all external and internal aspects of the university must be clearly understood and interpreted so that there is no ambiguity.
• In order to understand the type of student thinking, higher education centers can present certain forms to students and their families upon enrollment or interview so that they can continuously recognize the dimensions and characteristics of students' thinking style.
• Today, given the growing need for innovation in higher education institutions in both public and private sectors, these institutions have recognized the effect of innovation on student satisfaction. That is a way positive and negative emotions towards the university may form in the minds of students. Hence, higher education institutions should provide new and innovative services to all students as well as apply innovations to the university's educational system in order to satisfy their students.

References

Hoseini, H. and Shahbah. B. (2015). Investigating the effect of organizational identity on job satisfaction by explaining the mediating role of employees' self-esteem. Researcher Journal. No. 17, 8-1.

Khosravi, M and Arman. M. (2015). A model for implementing innovation in the curricula of the higher education system. Bi-quarterly of Innovation and Value Creation. 3(7), 85-65.

Ebadollahi, N.; Sohrabi M. and Noshinfard F. (2014). Analyzing the Technology Factors Affecting Technology Acceptance Based on Rogers' Diffusion of Innovation (DOI) Theory: A Case Study of Journal Profile Software. Quarterly of Dentistry. 7(26) 92-79.

Yazdi. M (2009). Investigation and comparison of students' learning styles and methods at Schools of Alzahra University. New Educational Thoughts. 5(2), 145-123.

Cheney G. (1983). On the various and changing meanings of organizational membership: a field study of organizational identification. Communication Monographs. 50 (4):342.

Demkanin, P., Kibble, B., Lavonen J., Mas J. G. & Turlo, J. (2009). Effective use of ICT in Science Education, School of education, University of Edinburgh.

Duron R, Limbach B, Waugh W. (2009). Critical thinking framework for any discipline. Int J Teach Learn High Edu, 17(2):160-6.

Facione, P. (2011). Critical thinking: What it is and why it counts. Retrieved from http// www. Insightassessment. com.

Falch, T. & Mang, C. (2015). Innovations in education for better skills and higher employability. European Expert Network on Economics of Education (EENEE), 1-44.

Edel, EM. (2012).Critical Thinking and Clinical Judgment. AORN Journal, 93(1):514-5.

Kane, T. J., E. S. Taylor, J. H. Tyler, & A. L. Wooten (2013). Identifying effective classroom practices using student achievement data. Journal of Human Resources, 46(3), 587-613.

Kheiry,B., Mohammadi rad, B., & Asghari, O. (2012). University intellectual image impact on satisfaction and loyalty of students (Tehran Selected universities). African journal of business management. 6(37):10205-10211.

Knight, J. (2003). GATS, Trade and Higher Education: Perspective 2003-Where are we? The Observatory on Borderless Higher Education. London: U.K.

Martinez, T.L., & Garcia, S.D. (2011). Modelling university image; the teaching staff viewpoint, public relations review. 35(1):.325-327