



# Affecting Structural Factors on the Entrepreneurship Behavior of the Academic Members of Healthcare

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## Abstract

**Background:** The study aimed to assess affecting structural factors on the entrepreneurship behavior of the academic members of healthcare in Qazvin University of Medical Sciences, Central Iran.

**Methods:** This was a descriptive, cross-sectional study conducted among faculty members working in five faculties of Qazvin University of Medical Sciences, Iran in 2018. Data were collected using a three-part standard questionnaire including demographic characteristics, entrepreneurial behavior and structural factors questions. ANOVA and linear regression modeling were used in STATA software version 14.

**Results:** Of 270 academic staff who participated in the study, 204 (73%) completed the questionnaire. The mean score reported for entrepreneurial behavior was  $3.76 \pm 0.55$  considered high tendency toward entrepreneurship. Moreover, the average conditions of the structural elements have been  $2.51 \pm 0.89$  considered average. Linear regression analysis showed that along with increasing age, entrepreneurship behavior increased ( $P=0.018$ ,  $\beta=0.52$ ), while an increase in educational level led to a decrease in entrepreneurship behaviour ( $P=0.001$ ,  $\beta=-0.74$ ). In a final model, organizational structure revealed a significant effect on entrepreneurship behavior ( $P<0.001$ ,  $\beta=0.25$ ). Only physical facilities didn't show a statistical significant effect on entrepreneurship score ( $P>0.05$ ).

**Conclusion:** Universities must also pay attention to acquiring and developing the science and technology gained from academic research and transferring them through entrepreneurship channels. Considering the effect of structural elements on entrepreneurial behavior of the academic members, the need for such substructure in the universities and the country's higher education organizations to assist development of entrepreneurial behavior among the academicians is greatly felt.

**Keywords:** Structural factors; Entrepreneurship behavior; Academic members; Healthcare; Iran

## Introduction

Entrepreneurship is the capacity and willingness to develop, organize and manage a business ven-

ture along with any of its risks to make a profit (1). The universities, in terms of both training



and development of human resources and elevating the social-economic level of society play an undeniable role, which in line with effective realization of this mission, facilitating the process of acquiring and transferring knowledge through changing the traditional structures, more flexible attainment and strengthening of entrepreneurship make it operational (2).

Many countries all over the world through expanding entrepreneurship channels transfer science and technology obtained from academic research, and this way they are considered entrepreneurship universities (3). The entrepreneurship universities are modern and progressive organizations which in order to conform to the complex environmental conditions, review and redefine themselves so that the probable instabilities between their wants and changing possibilities and the capacity for effective response can be suitably dealt with (4). This is when the prerequisite to achieve this goal is establishment and development of the entrepreneurial structure in the organizations. Benefiting from the entrepreneurial structure means that the organizational structure give priority to being dynamic, flexible, decentralized, innovating, team-working, and delegation of authority and the use of capable employees (5,6). Therefore, for realization of entrepreneurship, one of the suitable tools in the universities is creating an organizational structure conforming to the concept of entrepreneurship (7,8).

A centralized, inflexible and traditional organizational structure does not provide a suitable ground for entrepreneurship. For this reason, the universities to achieve a suitable structure for providing grounds for entrepreneurship, must include entrepreneurship concepts in their mission, goals and strategies, and strengthen more than before decentralization in management and relationships with businesses outside the university (9,10).

Realization this important task depends on the effective performance of the employees, especially the members of the academic staff who have a pivotal role in training the human resources needed in the country (11,12). In a study on the

general staff of one of the country's universities, the structure related to the knowledge-oriented, creative and learning organizations, had more tendency toward organic structures and are distant from traditional, inflexible and mechanical frameworks (13). Overall, 25 structural elements in 9 dimensions were recognized, and these elements included organizational structure, physical facilities, research system, financial system, human resources, organizational strategy, information system, processes and work methods, and the systems of control and monitoring (14). In a study in the Greek public sector, entrepreneurial behavior considered middle (15). Noting the importance of the subject and attention to the necessary conditions for development of entrepreneurship, review and precise recognition of the present entrepreneurship situation from the university academic staff viewpoint and determining the effective elements on entrepreneurship from their angle.

The present study was made with the goal of determining the role of structural factors in entrepreneurial behavior of the members of the academic staff of Qazvin Medical Sciences University in 2018.

## Materials and Methods

### *Study Design*

This was a descriptive, cross-sectional study of 270 scientific board members working in five faculties affiliated by Qazvin University of Medical Sciences from Sep 2017 to Mar 2018.

Permission to conduct the study was given by the Ethical Board of the university and verbal consent was obtained from research participants informed about the study purpose.

### *Study Population*

Overall, 270 faculty members agreed to participate in the study. No sampling method was used and the study population consisted of all scientific members working in five faculties (including medicine, nursing and midwifery, health, paramedicine and dentistry) affiliated by Qazvin University of Medical Sciences.

### Data Collection Tool

In order to collect information in this research, standard questionnaires were used made of three sections of demographics information including 8 questions (sex, age, marriage, education specialization, level of education, duration on academic staff, name of college and teaching group were served). The questions related to the effective structural elements on entrepreneurship development in universities included 25 questions in 9 dimensions (organizational structure, physical facilities, organizational strategy, processes and work methods, control and monitoring system, research system, financial system, human resources and information systems); and the question related to entrepreneurial behavior included 12 questions consisting of the components (reduction of bureaucratic obstacles, change in workers behavior, strategic behavior, creating an energetic and support environment).

The scale for responses to these questions in a range of five on Linkert scale were (very low = 1, low = 2, average = 3, high = 4, very high = 5). Content justifiability through the opinion of knowledgeable persons, and the constancy of each of the 2 sections related in turn based on Cronbach test for entrepreneurship ( $\alpha = 0.85$ ) and structure ( $\alpha = 0.80$ ) were confirmed. Finally, the average per each of the variables, the numbers 1 to 2.33 was considered undesirable, 2.33 to 3.66 were average, and 3.66 to 5.0 were considered desirable in this study. ANOVA with Bonferroni correction and linear regression modeling used to examine the relationships between entrepreneurship and its contributory factors were used in STATA software version 14.

### Results

Overall, 204 (73%) completed and returned the questionnaire. Among them 109 (53.4%) were men and most of the participants were in the age group of 45 to 54 yr old. Demographic characteristics of study population are shown in Table 1. The results obtained from Table 2 showed that the average entrepreneurial behavior among the

academic staff was  $3.76 \pm 0.55$  and the average opinion of the academic staff about structural elements has been  $2.51 \pm 0.89$ . The most and least scores in the area of entrepreneurship were respectively about energetic working environment ( $3.97 \pm 0.70$ ) and for control and monitoring system ( $2.37 \pm 1.00$ ).

**Table 1:** Demographic Characteristics of study population

<i>Characteristic</i>	<i>No.</i>	<i>%</i>
<i>Sex</i>		
Male	95	46.6
Female	109	53.4
<i>Age (yr)</i>		
≤ 34	43	21.1
35–44	73	35.8
45–54	78	38.2
> 55	10	4.9
<i>Work experience (years)</i>		
≤ 3	44	21.6
4–5	22	10.8
6–10	38	18.6
> 10	100	49
<i>Education level</i>		
Master	31	15.2
Ph.D/ Specialist	138	67.7
Sub- Specialist	35	17.2
<i>Academic position</i>		
Instructor	41	20.1
Assistant Professor	124	60.8
Associate Professor	36	17.6
Professor	3	1.5
<i>College</i>		
Medical	89	43.8
Dental	48	23.6
Health	25	12.3
Nursing	31	15.3
Para medicine	10	4.9

Regarding entrepreneurship, the opinion of individuals about entrepreneurial behavior and also the structural elements were significantly different among the people employed in various colleges ( $P < 0.05$ ). As an example, the situation for entrepreneurial behavior in the area of Change Orientation between the College of Medicine and other colleges was significantly different and

showed a higher grade of ( $P<0.05$ ). In the area Supportive Context there were significant differences between College of Medicine and College of Paramedical Sciences (3.46 and 2.25), Colleges of Dentistry and Paramedical Sciences (3.26 and 2.25) where ( $P<0.5$ ). Finally, for Reducing Bureaucratic Obstacles a noticeable difference was

seen between Colleges of Medicine and Dentistry (3.89 and 3.32,  $P<0.05$ ). Finding show, the general score obtained for this variable for College of Medicine compared to the Colleges of Dentistry (2.51 and 2.29,  $P<0.05$ ), Health (2.51 and 2.27), and Nursing (2.51 and 2.26,  $P<0.05$ ) was higher (Table 2).

**Table 2:** Entrepreneurship scores among the members of the academic staff in respect to their colleges

Variable	Total		Medicine		Dentistry		Public Health		Nursing		Para medicine		P†
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Entrepreneurial behavior	3.76	0.55	3.88	0.06	3.57 ‡	0.08	3.79	0.11	3.77	0.10	3.46	0.17	0.010
Strategic Vision	3.75	0.71	3.83	0.07	3.52	0.10	3.82	0.14	3.84	0.13	3.70	0.22	0.12
Energetic Working Environment	3.97	0.70	3.99	0.07	3.87	0.10	4.14	0.14	4.08	0.12	3.65	0.22	0.24
Change Orientation	2.57	1.14	2.95	0.11	2.32 ‡	0.15	2.264 ‡	0.22	2.29 ‡	0.20	1.90 ‡	0.35	0.001
Supportive Context	3.22	1.10	3.46	0.11	3.26	0.15	3.10	0.21	2.90	0.19	2.25 ‡§	0.34	0.003
Reduce the Bureaucratic Obstacles	3.67	1.00	3.89	0.10	3.32 ‡	0.14	3.68	0.20	3.65	0.18	3.30	0.31	0.020
Structural factors	2.51	0.89	2.84	0.09	2.29 ‡	0.12	2.27 ‡	0.17	2.26 ‡	0.15	2.08	0.26	0.001
Organizational structure	2.56	0.97	2.93	0.09	2.33 ‡	0.13	2.19 ‡	0.18	2.36 ‡	0.16	1.92 ‡	0.29	0.001
Physical facilities	2.60	1.74	3.00	0.18	2.35	0.24	2.34	0.34	2.23	0.31	2.00	0.54	0.06
Organizational Strategy	2.54	0.95	2.82	0.09	2.31 ‡	0.13	2.44	0.18	2.27 ‡	0.17	2.17	0.29	0.03
Processes Procedures	2.51	0.94	2.79	0.09	2.31 ‡	0.13	2.20 ‡	0.18	2.41	0.16	2.07	0.29	0.03
Control and monitoring system	2.37	1.00	2.73	0.10	2.24 ‡	0.13	1.92 ‡	0.19	2.05 ‡	0.17	1.85 ‡	0.30	0.001
Research system	2.43	1.01	2.72	0.10	2.19 ‡	0.14	2.20	0.20	2.24	0.18	2.30	0.31	0.010
Financial system	2.54	0.88	2.87	0.86	2.19 ‡	0.12	2.48	0.17	2.34 ‡	0.15	2.20	0.26	0.010
Human resources system	2.50	0.99	2.81	0.10	2.34	0.14	2.40	0.19	2.10 ‡	0.17	2.03	0.30	0.001
Information resource system	2.53	0.98	2.87	0.97	2.36 ‡	0.13	2.16 ‡	0.19	2.20 ‡	0.17	2.20	0.30	0.001

† Obtained from ANOVA with Bonferroni correction  
 ‡ Significant compared with Medicine  
 § Significant compared with

Table 3 shows the relations among the demographic and structural elements with entrepreneurship in raw, model, the elements related to age and work history have meaningful effect on entrepreneurial behavior ( $P<0.05$ ). In the modified model a meaningful statistical relationship between age and entrepreneurial behavior was observed ( $P=0.05$ ,  $\beta=0.61$ ). Eventually, in the final model t still affect the entrepreneurial behavior of the academic staff ( $P<0.05$ ). Concerning the effect of structural elements on entrepreneurial behavior, as being observed, in the raw model, all of the elements except physical facili-

ties have affected the entrepreneurial behavior ( $P<0.05$ ). In the modified model, all elements except physical facilities affected the entrepreneurial behavior ( $P<0.05$ ). Among various dimensions, the most effect was related to control and monitoring systems ( $P=0.001$ ,  $\beta=0.44$ ) and information system ( $P=0.001$ ,  $\beta=0.44$ ). In the final model estimated through retrogressive method, the organizational strategy variable, while other variables continued to be present, continued to have a meaningful effect on the entrepreneurial behavior of the academic staff ( $P<0.05$ ).

**Table 3:** The relationship between variables and entrepreneurial by Multiple linear regression according to Hosmer & Lemshow model

Variable	$\beta$	Model 1			B	Model 2			$\beta$	Model 3			$\beta$	Model 4		
		Confidence interval %95		P-value		Confidence interval %95		P-value		Confidence interval %95		P-value		Confidence interval %95		P-value
		Up-per CI	low-er CI			Up-per CI	low-er CI			Up-per CI	low-er CI			Up-per CI	low-er CI	
Personal characteristics																
Sex	-0.21	-1.09	0.66	0.63	---	---	---	---	---	---	---	---	---	---		
Age	0.79	0.28	1.29	0.002	---	---	---	---	0.61	0.00	1.23	0.05	0.52	0.09	0.94	0.02
education level	-0.11	-0.57	0.35	0.63	---	---	---	---	---	---	---	---	---	-1.19	-0.29	0.001
academic position	0.17	-0.39	0.73	0.56	0.04	-0.58	0.66	0.90	---	---	---	---	---	---	---	---
work experience	0.46	0.11	0.82	0.01	0.14	-0.37	0.65	0.60	-0.04	-0.45	0.38	0.86	---	---	---	---
patent	-1.17	-2.47	0.14	0.08	-0.72	-2.04	0.60	0.28	0.75	-2.22	0.73	1.00	---	---	---	---
Company registration	-0.84	-2.01	0.33	0.16	-0.84	-1.96	0.28	0.14	0.74	-2.25	0.78	0.34	---	---	---	---
Structural factors																
Organizational structure	0.25	0.14	0.36	0.001	0.24	0.12	0.35	0.001	0.23	-0.11	0.57	0.18	---	---	---	---
Physical facilities	0.10	0.22	0.23	0.11	0.10	-0.02	0.23	0.11	-0.09	-0.24	0.07	0.27	---	---	---	---
Organizational strategy	0.27	0.12	0.42	0.001	0.26	0.11	0.41	0.001	-0.18	-0.59	0.23	0.39	0.25	0.14	0.36	0.001
Processes and procedures	0.30	0.15	0.45	0.001	0.29	0.14	0.44	0.001	0.13	-0.19	0.45	0.42	---	---	---	---
Control and monitoring system	0.45	0.22	0.68	0.001	0.43	0.19	0.66	0.001	0.10	-0.37	0.57	0.68	---	---	---	---
Research system	0.30	0.15	0.45	0.001	0.29	0.23	0.44	0.001	0.08	-0.28	0.45	0.65	---	---	---	---
Financial system	0.27	0.12	0.42	0.001	0.26	0.10	0.40	0.001	-0.11	-0.49	0.26	0.54	---	---	---	---
Human resources system	0.28	0.14	0.43	0.001	0.30	0.15	0.44	0.001	0.02	-0.31	0.36	0.89	---	---	---	---
Information resource system	0.44	0.21	0.67	0.001	0.43	0.19	0.67	0.001	0.17	-0.32	0.66	0.50	---	---	---	---

Model 1: crude model

Model 2: adjusted model by age, sex and education level

Model 3: adjusted model by remove all variables with higher p-value 0.2

Model 4: the backward elimination method to remove inefficient variables from the model in order to obtain the most parsimonious model

## Discussion

The entrepreneurship score of 3.75 reported about the participating academic staff was relatively desirable. Moreover, the highest score obtained in this regard belongs to a fully energetic work environment. The results of some of the similar studies made confirm the present study. A study among the members of the academic staff of Army Medical Sciences University with similar goals showed that the entrepreneurship situation with the individuals studied are at the relatively desirable 3.02 level (16). This is a sign of the direct effects of the policies of recent years in this

university regarding attracting the elite of the country who have tendency toward entrepreneurship, creativity and dynamism, in the military organizations; and many cases of research cooperation with the academic staffs employed in these universities (17,18). In another research project carried out on the entrepreneurial behavior in the students of the Isfahan Medical Sciences University, the results showed desirable conditions and scores were relatively high in the dimensions of success seeking, internal control, independency and creativity (19). This is while the entrepreneurship score among the general employees of this university was reported to be rather low and



as compared to the students it was at an undesirable level (20). Formality, centrality, complexity and expertly nature of the organization were the elements causing lower tendency toward entrepreneurship in this organization (21). On this subject, a similar study was made among the managers employed in an industrial company in the city of Arak, which showed a limited tendency toward entrepreneurship (22).

In the present study, the role of structural elements in entrepreneurial behavior of the academic staff showed that the most effect was related to control and monitoring and the information systems. One of these effective elements was the organizational strategy and this emphasizes this important subject that the universities through design of their general goals focused on creativity, innovation and entrepreneurship, should compose working programs defining the role of each individual for realization of these goals (23, 24).

Similarly a meaningful and positive relation was observed between the entrepreneurship situation of an organization with its predetermined goals and strategies. The organizations considered the subject of entrepreneurship in their strategic program enjoy a more desirable situation on entrepreneurship (25). In the study made among the academic staff employed in the army Medical Sciences University, one of the important effective elements in getting undesirable score was lack of a strategic program around entrepreneurship (16). Therefore, establishing and maintaining a common ideal and a common course through designing a cohesive organizational strategy, not only helps with progress and continuity of effort for elevating entrepreneurial behaviors among the members of the organization (26,27). Despite the remarkable results that organizational strategies have shown on the performance and success of organizations, universities still seem less concerned with this issue than the rest of the world, putting them at the forefront of their work (28,29).

In the results of the present study, effective control and monitoring, existence of a system of information and human resources management

have been effective elements on entrepreneurial behavior. Similarly, different studies in this area, referred to these components as facilitating or strengthening elements of entrepreneurial behavior (30,31). Therefore, using a suitable system of control and monitoring for recognizing and understanding shortcomings and deficiencies can result in improving employee satisfaction and greater tendency toward innovative activities (32,33). In the same context, existence of a suitable information system and effective human resources management can, through efficient and effective organizational planning, protection and distribution of appropriate information among the employed human resource in the organization will elevate the abilities of the existing employees and cause continuity in their movement toward innovation and entrepreneurial behaviors (34,35). The present study continued to show better situation of tendencies of the academic staff members of the Medical College toward entrepreneurship as compared to other colleges. One of the reasons for this can be the difference in the makeup of the academic staff in this college as compared to other colleges.

The interesting point in this study is the negative relation of the level of education with entrepreneurship score of the academic staff. The individuals with lower entrepreneurial behavior had greater tendency to pursue higher education. On the other hand, developing experience during the years of employment and gain specialized skills in these various fields, has caused strengthening of their entrepreneurial behaviors (36,37). There was a meaningful relation between different fields of entrepreneurship and the age of managers, due to their work experience (38), which is similar to the present study.

## **Conclusion**

In this study reported the participating academic staff was relatively desirable, as the results have shown, the majority of the structural elements had meaningful effect on the entrepreneurial behavior. Therefore, noting the effect these elements have on the entrepreneurial behavior of

the academic staff, the need for development of these kinds of substructures in the universities and higher education organizations in the future years to facilitate development of entrepreneurial behavior among university members is strongly felt.

## Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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## Conflict of interest

The authors declare that there is no conflict of interest.

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