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Intrapreneurship in Public Libraries: An Exploratory and Confirmatory Factor Analysis

mohammad karim saberi
Department of Medical Library and Information Sciences, School of Paramedicine, Hamadan University of Medical Sciences, Hamadan, Iran, mohamadsaberi@gmail.com

Fahimeh babalhaveji
Department of Knowledge and Information Science, Science and Research Branch, Islamic Azad University, Tehran, Iran, f.babalhaveji@gmail.com

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Mohammad Karim Saberi

Department of Medical Library and Information Sciences, School of Paramedicine, Hamadan University of Medical Sciences, Hamadan, Iran

Corresponding Author: mohamadsaberi@gmail.com

Fahimeh babalhaveji

Department of Knowledge and Information Science, Science and Research Branch, Islamic Azad University, Tehran, Iran

Abstract

This study aims to identify, analyze and explain the factors influencing Intrapreneurship of public libraries. It is applied in terms of the purpose, and quantitative in terms of the method used. Confirmatory factor analysis and exploratory factor analysis techniques were also used in this study. The statistical population consisted of all employees working in Iranian public libraries; and data collection tool was a questionnaire. Based on the results of factor analysis, three factors with high eigenvalues were extracted and then named "Encouraging and rewarding system", "Education and research system" and "Organizational structure". Three extracted factors explained a total of 62.82 percent of the variance in organizational factors influencing Intrapreneurship of public libraries. Managers and policy makers in public libraries can use the results of this study to convert the public libraries to the entrepreneurial and innovative organizations.

Keywords: Entrepreneurship**,** Intrapreneurship**,** public libraries**,** Iran, factor analysis**.**

Introduction

Entrepreneurship is an interdisciplinary field of study. By the early 1970s, research in the field of entrepreneurship was focused on the individuals' actions or features; but then researchers found that organizations can also undertake entrepreneurial activities. This led to the formation of Intrapreneurship idea. It is a concept that focuses on the organization and not on individuals (Haghshenas et al. 2008).

The use of innovation as a mechanism for redefining the organization and the organization's position in the market, and in competition with other organizations, constitute the core of Intrapreneurship. It is a concept in relation to the entrepreneurial orientations of an organization. Although Intrapreneurship is rooted in entrepreneurship literature, but today it is referred to as an independent concept in the management literature (Heinonen & korvela 2003). Intrapreneurship is a term that comes from the business world. It is the ability to use the new methods that leads to the creation of new products and services in the organizational environment (Eyal & Inbar 2003). Intrapreneurship is crystallized mainly through product innovation, process innovation, entering new markets, development of new businesses, strategic renewal and organizational structure (Morris, Kuratko, & Covin 2008).

Since the beginning of 1980, Intrapreneurship is considered as a factor influencing the output of small-, medium- and large-sized organizations (Antoncic & Hisrich 2004). Over the past 30 years, organizations have considered the Intrapreneurship as a strategic orientation to overcome the challenges and contribute to the growth and survival of organizations (Karacaoglu et al. 2013). Organizations must provide the conditions to establish the atmosphere and the spirit of entrepreneurship throughout the organization to enable their personnel to have entrepreneurial activities as the teams and as individuals. For this reason, many organizations are looking to promote entrepreneurial activities among their employees. Intrapreneurship is a phenomenon that can occur in the various environments and complexes (Shepherd, Covin & Kuratko 2009). Public libraries are not exempt from this rule. In order to increase the effectiveness of services, it is required for these libraries to benefit from innovations and entrepreneurship. The study of general trend of public libraries in Iran suggests that the governing conditions are traditional and non-entrepreneurial (Tabarsa et al. 2010) and the status of Intrapreneurship in the libraries is undesirable (Tabarsa et al. 2012). In such a situation, identifying, analyzing and explaining the factors influencing the implementation of Intrapreneurship in the public libraries are important.

So far, many researchers (Zahra, 1993; Lumpkin & Dess, 1996; Echols & Neck, 1998; Antoncic & Hisrich, 2001; Hornsby, Kuratko, & Zahra, 2002; Goosen, De Coning, & Smit,

2002; Kuratko & Morris, 2003; Jones, 2005; Bulut & Alpkin; 2006; Wolcott & Lippitz, 2007; Kearney, Hisrich & Roche, 2008) have tried to develop Intrapreneurship models to identify factors influencing entrepreneurship. In these studies, factors such as organizational structure, organizational culture, organizational strategy, organizational communication, management support, and reward system have been identified as factors that affect the Intrapreneurship. In fact, what many researchers seek is to provide the conditions for the implementation of corporate entrepreneurship.

Since previous studies have been conducted in the contexts other than public libraries, their results cannot be generalized to the public libraries. Therefore, the present study was conducted to identify, analyze and explain the organizational factors influencing Intrapreneurship of public libraries.

Methodology

This study is quantitative in terms of the method used, applied in terms of the purpose and survey in terms of the method of data collection. It was performed using the factor analysis technique. The statistical population consisted of all employees working in Iranian public libraries. According to the latest statistics of the Iran Public Libraries Foundation (20-01-2017), 5335 individuals are working in the public libraries of 31 provinces of Iran (IPLF, 2017). Since there was updated list of the names of all employees of public libraries, Systematic sampling method was used. The data collection tool was a 24-item questionnaire designed in the form of Likert scale after a comprehensive review of the literature. The questionnaire contained 24 variables that influence the Intrapreneurship of public libraries, which included: Creation of new opportunities in the area of business (q1), continuous improvement of quality and value of service (q2), collaboration with other similar organizations to reach new achievements (q3), contribution to innovation and risk-taking spirit of employees (q4), flexibility of the organizational structure and its periodical revision (q5), enhancement of cooperation within the organization (q6), rewarding based on innovation and creativity (q7), the timely payment of rewards (q8), transparent and accurate payment of rewards (q9), carrying out research and development activities as integrated in all libraries (q10), close and continuous relationship with other units for the application of results (q11), paying attention to the fundamental and applied research simultaneously (q12), periodical staff training needs assessment (q13), development and design of in-service training courses separately for each occupational group (q14), Holding training courses to enhance employee's creativity and innovation (q15), attracting financial credits from various

resources from people, government and etc. (q16), easy allocation of funds (q17), development of budget based on the operational program, and the cost price (q18).

There are various methods for determining the validity of measurement tool. One of them is the question of experts. To determine the validity of questionnaire, the opinions of experts were used and 10 copies of the prepared questionnaire were provided to the experts of entrepreneurship and librarianship; and they were asked to express their opinions about each question. After making necessary modifications, the modified questionnaire was prepared to assess reliability. Cronbach's alpha coefficient was used to assess the reliability; and 30 questionnaires were distributed randomly among the 30 employees. After collecting the questionnaires, Cronbach's alpha coefficient was obtained as equal to 0.91 for the questionnaire which is a good coefficient value. Finally, to describe the research data, descriptive statistics and inferential statistics were used.

Findings

Descriptive Statistics

Prioritization of organizational variables influencing Intrapreneurship of public libraries has been presented in the Table 1. On the basis of data presented in the Table 1, the "second", "third", "first", "sixth" and "Eleventh" variables were ranked from first to fifth, respectively, with averages of 3.58, 3.49, 3.42, 2.91, 2.84.

Table 1. Descriptive Statistics			
	Mean	Std. Deviation	Analysis N
Creation of new opportunities in the area of business (q1)	3.42	1.085	454
continuous improvement of quality and value of service (q2)	3.58	1.045	454
collaboration with other similar organizations …(q3)	3.49	.983	454
contribution to innovation and risk-taking spirit of employees (q4)	2.64	1.104	454
flexibility of the organizational structure ….(q5)	2.77	1.053	454
enhancement of cooperation within the organization (q6)	2.91	1.091	454
rewarding based on innovation and creativity (q7)	2.06	.929	454
the timely payment of rewards(q8)	2.20	1.014	454
transparent and accurate payment of rewards (q9)	2.33	1.096	454
carrying out research and development activities …(q10)	2.52	.976	454
close and continuous relationship with other units …(q11)	2.84	.918	454
paying attention to the fundamental and applied research …(q12)	2.78	.925	454
periodical staff training needs assessment (q13)	2.76	1.018	454
development and design of in-service training courses …(q14)	2.77	1.063	454
Holding training courses to enhance employee's creativity …(q15)	2.82	1.084	454
attracting financial credits from various resources … (q16)	2.52	.964	454
easy allocation of funds (q17)	2.26	.887	454
development of budget based on the operational program … (q18)	2.52	.893	454

Exploratory factor analysis

Before performing factor analysis technique, it is required to perform the following tests to ensure the appropriateness of the data used:

1. Kaiser-Meyer-Olkin (KMO) test: When the value of KMO is greater than 0.6, the factor analysis technique could be performed.

2. Bartlett's Test: The significance of the Bartlett test is the minimum prerequisite for the implementation of factor analysis.

In the present study, KMO and Bartlett tests were used to evaluate the suitability of the test data, the results of which are shown in Table 2.

Table 2. KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.941
Bartlett's Test of Sphericity	Approx. Chi-Square	4638.809
	Df	153
	Sig.	.000

Table 2 shows that KMO value is greater than 0.6 and equal to 0.941, and the Bartlett test is also significant (Sig = 0.000> 0.5). Therefore, the variables in this study are suitable for the factor analysis. After ensuring the suitability of data for factor analysis, the next step is to extract the primary factors. This step is performed by the variance explained using principal factor analysis method. Generally, Kaiser Criterion is used in the factor analysis to determine the number of extractable factors. On the basis of Kaiser Criterion, factors with eigenvalues greater than 1 can be selected as the extractable factors.

Table 3. Extraction of the primary factors						
Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.555	47.528	47.528	4.376	24.313	24.313
2	1.489	8.271	55.800	3.474	19.300	43.613
3	1.264	7.020	62.820	3.457	19.207	62.820
4	.825	4.584	67.404			
5	.772	4.290	71.694			
6	.706	3.923	75.616			
7	.506	2.810	78.426			
8	.486	2.699	81.126			
9	.430	2.388	83.514			
10	.412	2.289	85.803			
11	.401	2.229	88.032			
12	.373	2.075	90.107			
13	.368	2.043	92.150			
14	.328	1.820	93.971			
15	.301	1.672	95.642			
16	.277	1.539	97.181			
17	.259	1.439	98.620			
18	.248	1.380	100.000			

As is seen in Table 3, there are three factors with eigenvalues greater than 1. Thus, organizational factors influencing Intrapreneurship of public libraries can be summarized in the following three factors. According to the obtained results, the first factor with eigenvalue greater than 8.55 has the highest contribution in explaining organizational factors and it alone explains 24.31% of the variance in organizational factors. The second factor with an eigenvalue of 1.48 and the third factor with an eigenvalue of 1.26 are next in the rank and explain 19.30 percent and 19.20 percent of the variance in organizational factors influencing Intrapreneurship of public libraries, respectively. According to Table 3, it was found that three factors extracted explain a total of 62.82% of the variance in organizational factors which is a reasonable and acceptable value.

After determining the number of factors, it is needed to determine to which factor each of the rotation is not to change the number of factors extracted, but to achieve a new status for the factors in order to better interpret and classify them. Therefore, varimax method which is the most common method of rotation was used. Rotated matrix of the extracted factors has been presented in the Table 4. As seen in Table 4, the variables q7, 8q, 9q, 16q, 17q and 18q have a highest loading on the first factor. Variables q10, q11, q12, q13, q14, and q15 have the highest loading on the second factor and the variables q1, q2, q3, q4, q5 and q6 have the highest loading on the third factor. Thus, 18 variables of organizational factors were categorized into 3 elements.

Table 4. Rotated Component Matrix[a]			
	Component		
	1	2	3
Creation of new opportunities in the area of business (q1)	.001	.091	.793
continuous improvement of quality and value of service (q2)	.219	.187	.791
collaboration with other similar organizations …(q3)	.234	.232	.755
contribution to innovation and risk-taking spirit of employees (q4)	.479	.281	.596
flexibility of the organizational structure ….(q5)	.375	.360	.563
enhancement of cooperation within the organization (q6)	.489	.353	.578
rewarding based on innovation and creativity (q7)	.652	.185	.279
the timely payment of rewards(q8)	.759	.211	.112
transparent and accurate payment of rewards (q9)	.724	.238	.218
carrying out research and development activities …(q10)	.468	.513	.279
close and continuous relationship with other units …(q11)	.358	.530	.383
paying attention to the fundamental and applied research …(q12)	.428	.589	.273
periodical staff training needs assessment (q13)	.245	.783	.135
development and design of in-service training courses …(q14)	.155	.807	.186
Holding training courses to enhance employee's creativity …(q15)	.210	.788	.199
attracting financial credits from various resources … (q16)	.647	.186	.108
easy allocation of funds (q17)	.758	.184	.105
development of budget based on the operational program … (q18)	.699	.252	.276
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 5 iterations.			

The final step in the factor analysis is the naming or designation of extracted factors. Designation must be made according to the type of variables in each factor. It is tried to make the name of factors most proportionate with variables in that factor. In Table 5, the naming of organizational factors influencing Intrapreneurship of public libraries has been provided.

Table 5. organizational factors influencing Intrapreneurship of public libraries		
Influencing Factors	Variables	factor loadings
First factor: encouraging and rewarding system	rewarding based on innovation and creativity	.649
	the timely payment of rewards	.741
	transparent and accurate payment of rewards	.708
	attracting financial credits from various resources …	.672
	easy allocation of funds	.789
	development of budget based on the operational program …	.708
Second factor: education and research system	carrying out research and development activities …	.480
	close and continuous relationship with other units …	.489
	paying attention to the fundamental and applied research …	.561
	periodical staff training needs assessment	.786
	development and design of in-service training courses …	.805
	Holding training courses to enhance employee's creativity …	.802
third factor: organizational structure	Creation of new opportunities in the area of business	.799
	continuous improvement of quality and value of service	.791
	collaboration with other similar organizations …	.771
	contribution to innovation and risk-taking spirit of employees	.577
	Flexibility of the organizational structure ….	.519
	enhancement of cooperation within the organization	.536

As is seen in Table 5, three factors of "encouraging and rewarding system", "education and research system" and "organizational structure" are the most important organizational factors influencing Intrapreneurship of the public libraries, respectively.

Confirmatory factor analysis

After identifying the organizational factors, the confirmatory factor analysis (measurement model) was used to identify the relationships between the latent variables (encouraging and rewarding system, education and research system, and organizational structure) and observed variables (indicators or items). Figure 1 shows the measurement of organizational factors influencing Intrapreneurship of the public libraries in a standard estimation.

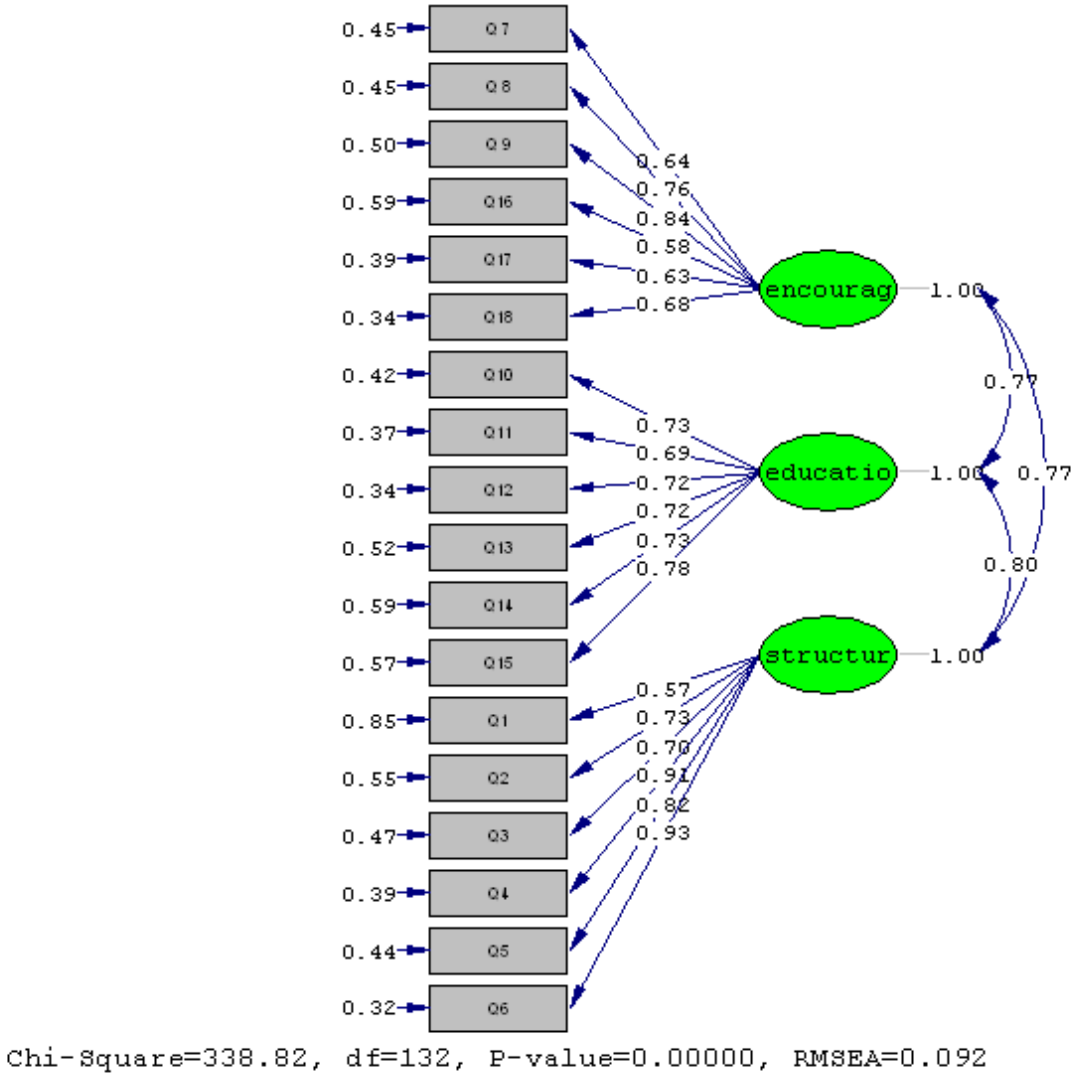

Figure1. Measurement model in standard estimation

The measurement model in the standard estimation shows the factor loadings of observed variables for the latent variables. As shown in Figure 1, factor loadings of "encouraging and rewarding system" range from 0.58 to 0.84; factor loadings of "education and research system" range from 0.69 to 0.78, and factor loadings of "organizational structure" range from 0.57 to 0.93. Figure 2 shows the measurement model of organizational factors influencing Intrapreneurship of the public libraries in a significant estimation.

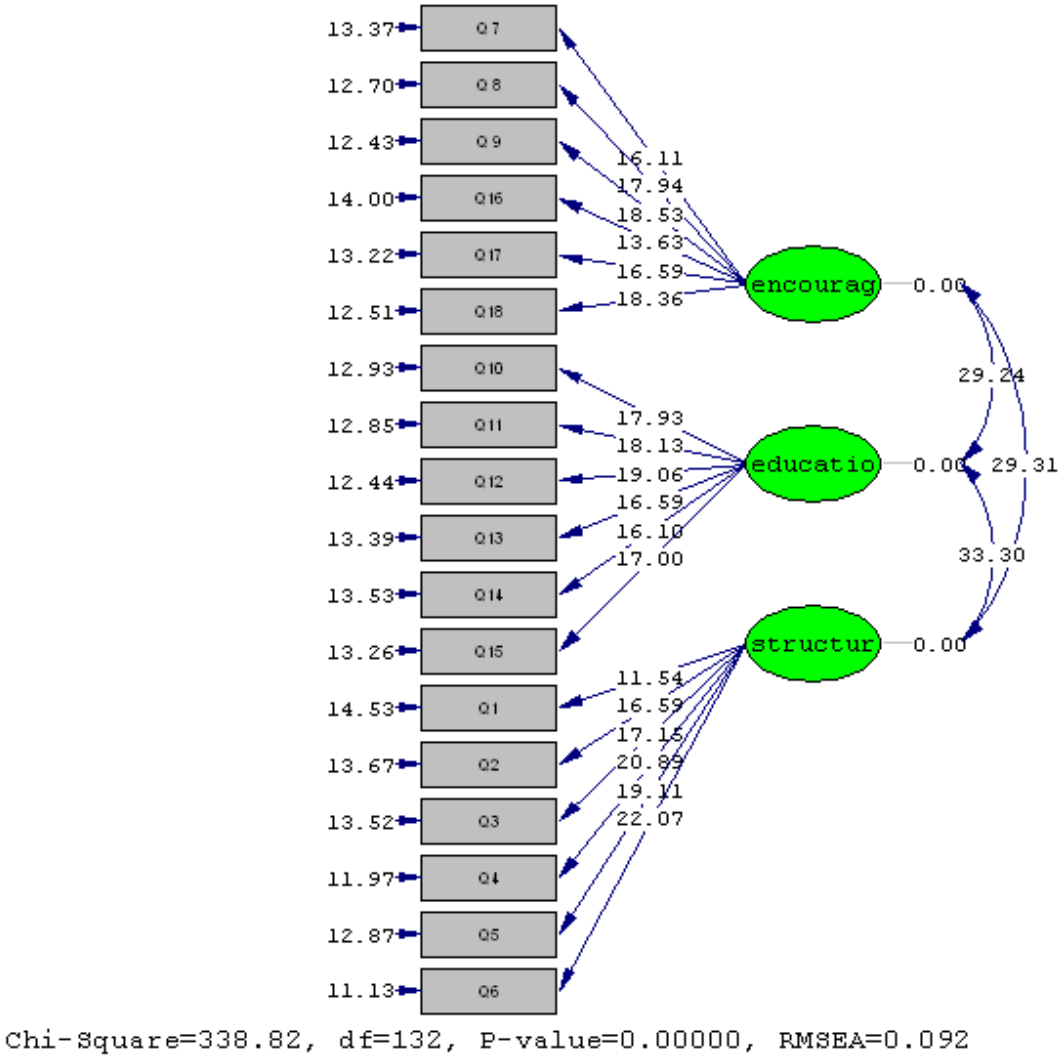

Figure2. Measurement model in significant estimation

As is seen in Figure 2, the T values obtained for all studied variables are greater than 1.96. Therefore, there is a significant relationship between the latent variables and observed variables. Model fit indices of organizational factors influencing Intrapreneurship of public libraries have been presented in Table 6.

Table 6. Model fit indices

Model value	Acceptable value	indices
$\frac{338.82}{132} \leq 3$	≤3	X^2/df
0.092	≤ 0/10	RMSEA
0.090	0/90 ≤	GFI
0.096	0/90 ≤	NNFI
0.096	0/90 ≤	NFI

The results of

confirmatory factor analysis showed that the organizational factors measurement model has a good fit and all observed variables selected for the latent variables are appropriate.

Discussion and conclusion

The results of exploratory factor analysis and confirmatory factor analysis showed that organizational factors affecting Intrapreneurship of public libraries can be classified into 3 factors of encouraging and rewarding system, education and research system, and organizational structure. According to the results of the present study, the first factor (encouraging and rewarding system) with eigenvalue of 8.55 has the highest contribution in explaining organizational factors and it alone explains 24.31 percent of the total variance in organizational factors. The second factor (education and research system) with an eigenvalue of 1.48, and the third factor (organizational structure) with the eigenvalue of 1.26 are second and third in the rank; and they explain 19.30 percent and 19.20 percent of the variance in organizational factors, respectively.

After identifying the dimensions and components of organizational factors influencing Intrapreneurship of public libraries, the confirmatory factor analysis model was used to identify the relationships between the latent variables (encouraging and rewarding system, education and research system, and organizational structure) and observed variables (indicators or items). Results of the confirmatory factor analysis showed that T values obtained for all variables studied were greater than 1.96; and all the markers of choice for organizational factors are necessary and of sufficient accuracy. Organizational factors reinforce Intrapreneurship. The results showed that the first and most important organizational factor influencing Intrapreneurship of public libraries is the "encouraging and rewarding system". Importance of encouraging and rewarding system is to such an extent that experts of entrepreneurship believe that if the rewards for risk taking and innovation in an organization are not included in the rewards system of that organization, that organization could not be attractive for entrepreneurs. Due to the great importance of encouraging and rewarding system, all employees become clearly informed about the measures to encourage and reward in the entrepreneurial organizations; and essentially, risk-taking, innovation, teamwork and active behaviors are encouraged.

According to the results of the present paper, education and research system is considered as the second organizational factor influencing the Intrapreneurship of public libraries. Entrepreneurial organizations spend a lot of time and effort in training, particularly holding

group training courses for their staff. In these organizations, staff training needs assessment is conducted periodically. Furthermore, various educational programs such as workshops, conferences, etc., are held to raise the spirit of entrepreneurship and increase employee's creativity and their innovative spirit.

In entrepreneurial organizations, different approaches to research are used which include a variety of interdisciplinary teams. Research system in these organizations considers a long-term time horizon; and it is an integrated composition throughout the organization. In entrepreneurial organizations, the research unit is highly independent and selects its research projects based on the results of the research and opinions of customers and citizens. As the results of the present study showed, the third organizational factor affecting Intrapreneurship of public libraries is the organizational structure. An organization that aims to do entrepreneurial activities should use an organic and flexible structure. The proper environment for entrepreneurial activities is not created in a vacuum; rather it is the organizational structure that should prepare, as a good platform, the way for the emergence of such a situation.

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