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Presenting a construct Model for Factors influencing Organizational Architecture

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Abstract

Purpose: The objective of this study was to introduce a model for factors affecting organizational architecture in Islamic Azad University. **Methodology:** This is an applied research in terms of objective, and a descriptive research in terms of collecting data. In addition, according to the objective and nature of the research, this is an exploratory research. The statistical population consists of all faculty members working in Islamic Azad University (31000) members. Based on cluster sampling method and kerjeci & Morgan (1987) table, the sample must include 379 members; however, for prevention of probable loss, we finally selected 500 members. Data was collected through interviews and a questionnaire. The validity of the research instrument was confirmed by content validity. The reliability was measured based on Cronbach's alpha coefficient. **Findings:** findings defined factors affecting organizational architecture as: educational and research factor, organizational support and participation factor, physical factor, size of organization, and psychological factor. **Discussion:** A model was introduced considering the mentioned factors, which was well fitted. According to the model, factors affecting organizational architecture in Islamic Azad University were in a good current status; however, there was a difference between the current and the desirable status of factors influencing organizational architecture in Islamic Azad University.

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1. Introduction

In today's world, change is the only ability that is considered as a competitive advantage. There are few opportunities to insure sustainability of competitive advantage. Survival depends on how the organization understand the surrounding world and how it responds the changes (Rahnavard and Davoodi, 2011). Hence, evolution has changed the world unimaginably like a great storm. The pace of change is such accelerating that Ackoff (1996) believes that change is itself constantly changing (Golestanizadeh et al, 2015). An educational organization cannot permanently sustain, and it requires to meet the ever-changing needs. Inevitably, institutions and universities must therefore turn to strategic plans that minimizes decision-making crises (Nazem and Mirhashemi, 2006).

Hence, organizational architecture is more than a reorganization, rehabilitation, reengineering, or strategic planning (Laurie and Silverman, 1997). Organizational architecture, as a main factor, often plays a key role in the success of organizational change. Organizational architecture, with the collaboration of all active departments and IT, defines the organization's current architecture to achieve the target architecture and makes any changes that need to be made (Ekins, 2014).

Joseph and Akazyo (2012) believe that the organizational architecture is an alternative to designing organizational problems. They also argued that organizational architecture refers to the structure of communications, interactions, and the relationships of officials within the organizational structure (Crilly and Sloeva, 2014). Miller (2015) believes that the whole-system architecture is an interactive planning process that relies on dialogue between students, faculty members, staff, and executives. The whole-system architecture seeks to create a goal design including a group of managers, faculty members, and staff. Change management requires changing principles. For a dialogue to be effective, a secure atmosphere is required. Agreement on principles and processes helps create that secure atmosphere. The principles behind the entire-system architecture are derived from the best business, management, and psychology theories which are combined in a unique way. In fact, the whole-system architecture is a principle-centered design. The whole-system architecture process should begin with an analysis of the current status on: the working system (time cycle, elimination of sources of waste, conflicts, etc.); culture or social system (empowerment, decision making, competency, motivation, etc.); money circulation. Then, terms of the future plan are accordingly designed (Miller, 2015).

According to studies, 85% of works in IT field in the United States failed to meet the strategic needs of organizations. In recent decades, organizational architecture has been considered to solve such problems (Ostadzadeh and Shams, 2014).

In today ICT-based world, faculty members face new challenges. They need to have skills to deal with these challenges. Therefore, in order to increase internal dynamics, universities should give ground for the participation of faculties while paying attention to network communication. In this regard, faculty members should have professional security in addition to internal motivation and organizational support (Ghorchian, 2010).

Therefore, universities as the most important educational institution, are responsible for providing the necessary training to the applicants, training human resources, producing science, and advancing the boundaries of science. This research tries to answer this question: What model can be introduced for factors influencing organizational architecture in Islamic Azad University?

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2. Literature review

Alblawi, et al (2017) conducted a study entitled "A Feasible Program Organizational Architecture Framework". In that study, a hypothetical scenario of an ongoing program was presented in the study to demonstrate that a given program organizational design was a feasible solution. This approach enables the program designers to support the decision-making process of implementing an effective program organizational design to manage a complex system and select the "best" program organizational structure

In another study, Mondorf, et al (2017), conducted a study entitled. "Contextual Components of an Enterprise Architecture Framework for Pan-European eGovernment Services" The main contribution of the conceptual paper was to connect existing theoretical models as a basis to examine contextual components of an EA framework for PEGS. Three aspects are elaborated using a model-based approach: a Critical Success Factor Model, a Strategy Management Model and a Stakeholder Engagement Model. The identified models are aligned with EA standards and provide guidance to empirical research and to programs, projects and initiatives that wish to create interoperability architectures.

Mikhailov, et al (2017) also done the research entitles. "Development of innovative architecture of the organizational and economic mechanism for the nature protection management". The main result of the study was the improvement of the existing management mechanism to minimize the negative impact on the environment, including through the incentive system, and to improve the financial performance of the economic entity. The practical component of the study conducted can be recommended to municipal, regional and federal authorities, as well as the industrial enterprises, to support the adoption of the effective, environmentally sound management decisions that are consistent with the global concept of sustainable development.

Davila et al. (2014) conducted a research entitled "The Relationship between Organizational Performance and Organizational Architecture". The results showed that a component of organizational architecture outperforms the others. This organizational structure combines delegation of authority, high performance evaluation, and performance-based rewards and is compatible with an optimal design in the presence of information asymmetry. Although the optimal organizational architecture introduced in this study is compatible with existing theory, performance drop in organizations with bad organizational configurations seems to be more than what is expected. Research findings indicate that any incremental increase in the "high performance" component of an organizational architecture will gradually improve performance. This shows that in evaluating performance, defining rewards and appropriate agents, managers are reluctant to ignore organizational priorities reflected in the organization's resources and timeframe. According to the importance of organizational architecture in universities, the present study wants to measure the current and desirable status of identified factors influencing organizational architecture

Elzavita and Jean (2014) found in their research that service-oriented architecture is the method adopted by organizations to design and implement IT solutions. However, it was soon considered as the main architectural style for implementing organizational architecture management. Standards, operating systems, compatibility, management support, appropriate strategy and management, proper human and financial resources are the key factors for implementation of service-oriented architecture and affecting organizational architecture (Davila et al, 2014)

Richard et al. (2006) conducted a research entitled "Key Factors Affecting Modeling and Managing Organizational Architecture." Organizational architecture is an important tool for integrating two companies in terms of business and IT. This article describes how to create an

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organizational architecture and identify the critical factors affecting the mode and management of organizational architecture. This research is based on the experiences of the two companies AstraZeneca and SKF. Both companies have years of experience working with organizational architecture approaches with completely different indicators. The results of this study showed that critical factors are classified in three groups: management, scope, and content. An organizational architecture is obtained by ingenuity and then improved by information management and business management. The scope of organizational architecture should be defined and agreed upon by business and IT. Scope benefits the organizational structure. Content must have certain characteristics (Richard et al., 2006).

Keshavarzzadeh and Abdi (2006) conducted a research entitled "A Model of Good Governance of Information Technology based on organizational architecture of Zachman Framework". According to research findings, a number of good governance aspects of information technology include: strategic IT planning, greater efficiency, the alignment of business and IT, building trust and synchronization, and smart competition and business. Finally, the framework proposed for the model of good governance of information technology is based on Zachman organizational architecture framework.

Seyyed Javadin et al. (2010) conducted a research entitled "Evaluating Electronic Readiness in Human Resources Architecture with a Strategic Approach". The statistical population was the staffs in National Oil Company. The results showed that experts in oil industry did not evaluate the status progressive. Exploratory Factor Analysis (EFA) of the results showed that ICT evaluation can be classified into six factors: ICT infrastructures, ICT application, HR development, ICT process outcomes, and organizational culture.

3. Methodology

This was an applied research in terms of objective, and a descriptive research in terms of collecting data. In addition, according to the objective and nature of the research, this was a mixed methods research combining qualitative and quantitative methods. The statistical population of the study consisted of all non-medical faculty members working in Islamic Azad University; i.e.31000 members. Sample size at this stage was decided based on cluster sampling method and Jessie and Morgan table as 379 members; however, to prevent the probable loss, we finally selected 500 members and the sample size was determined by combining the following table.

Table 1. Information on the research sampling method

Row	Class	Sample Size
1	Islamic Azad University, West Tehran Branch	71
2	Islamic Azad University of Roudehen	50
3	Islamic Azad University of Saveh	37
4	Islamic Azad University of Malayer	38
5	Islamic Azad University of Neyshabur	34
6	Islamic Azad University of Mashhad	65
7	Islamic Azad University of Kermanshah	51
8	Islamic Azad University of Harsin	29
9	Islamic Azad University of Zanjan	31

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10	Islamic Azad University of Abhar	32
11	Islamic Azad University of Abarkouh	43
12	Islamic Azad University of Yazd	19
13	Total	500

4. Findings

In order to understand the status of the identified factors affecting organizational architecture, T-test was employed due to the normal distribution of data and the distance scale of the variables. Since we used a 5-point Likert scale, we considered μ= 3 to compare with T statistics. Accordingly, Table 1 shows the result of one-sample T-test.

Table 2. Single sample T-test to determine the status of factors affecting organizational architecture

Factor	T-value	μ = 3				
		Degrees of freedom	Significance Level	The mean difference	Confidence interval 95% of difference	
					Upper Limit	Upper Limit
Physical factor	13/862	499	0/000	0/3883	0/319	0/5577
Psychological factor	8/818	499	0/000	0/3953	0/3071	0/3836
Organization size	10/515	499	0/000	0/3591	0/3732	0/535
Educational and Research factor	17/639	499	0/000	0/7524	0/6685	0/8364
Organizational support and participation	16/28	499	0/000	0/6897	0/6064	0/7732

As shown in Table ۲, the significance level was less than 0.05 for all variables; therefore, the null hypothesis was rejected for all factors with 95% confidence and H1 is confirmed. Since the mean difference is positive for factors, it can be concluded that the mean for factors is in a desirable status.

In order to understand the status of the identified factors affecting organizational architecture, T-test was employed due to the normal distribution of data and the distance scale of the variables. Since we used a 5-point Likert scale, we considered μ = 3 to compare with T statistics. Table 3 shows the result of one-sample T-test.

Table 3. Single sample T-test to determine the desirable status of factors affecting organizational architecture

Factor	T-value	Degrees of freedom	μ = 3		
			Significance Level	The mean difference	Confidence interval 95% of difference

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					Upper Limit	Upper Limit
Physical factor	15/515	499	0	0/64159	0/32080	1/2831
Psychological factor	10/471	499	0	0/51899	0/2595	1/0379
Organization size	12/172	499	0	0/51058	0/25529	1/02116
Educational and Research factor	19/292	499	0	1/17803	0/5890	2/3560
Organizational support and participation	17/933	499	0	1/105	0/5525	2/2100

As shown in Table ۳, the significance level was less than 0.05 for all variables; therefore, the null hypothesis is rejected for all factor with 95% confidence and H1 is confirmed. Since the mean difference is positive for factors, it can be concluded that the mean for factors is in a desirable status.

Question 3: How different are the current status and the desirable status of factors affecting organizational architecture in Islamic Azad University? In this question, the current status of the 5 identified factors was evaluated .In this regard, a t-pair test was used and the results are presented in Table 4.

Table 4. T-pair test to investigate the difference between the current and the desirable status of factors affecting organizational architecture

Factor	Paired differences				T	Significance Level
	Mean	SD	Confidence interval 95% of difference			
			Upper Limit	Upper Limit		
Human resource development	0/15329	0/14208	0/07665	0/30658	8/541	0/000
Organizational culture	0/12369	0/60312	0/06185	0/24738	7/902	0/000
Organization structure	0/05148	0/89601	0/02574	0/10296	4/360	0/000
Organizational policy	0/42563	0/73294	0/21282	0/85126	14/589	0/000
Organizational resource planning	0/41530	0/16348	0/20765	0/8306	14/014	0/000

As shown in Table ۴, according to the significance level for all five factors (0.000), the hypothesis of the existence of the difference between the desirable and the current status is confirmed. Considering the positive mean value in all factors, it can be concluded that the average status of all factors is lower than the desirable status. In other words, the current status of all 5 factors is less than the desirable status.

Question 4: What model can be introduced for factors influencing organizational architecture in Islamic Azad University? How does the model fit? To select the appropriate model for factors influencing organizational architecture, we used factor analysis. The following figure shows the

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graph fitted to the data. As the Chi-square and RMSEA showed, the modified model better fits the data. The outputs of the model were discussed in the Table 5.

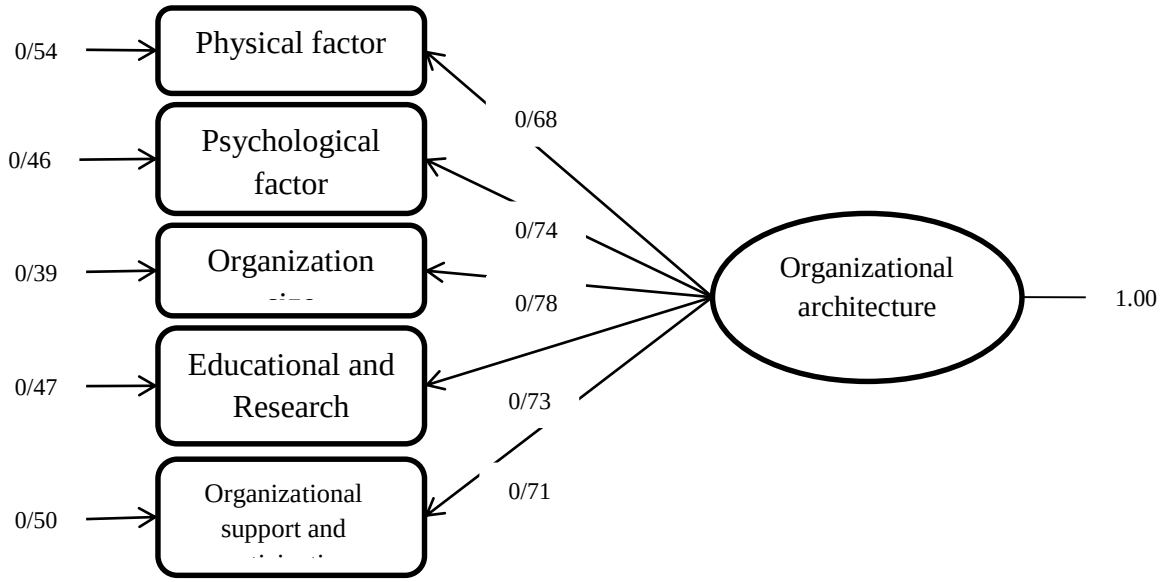
Table 5. Fit indices for path analysis

Index	Fit Indices	
	Value	Limit
Chi-square / df	2/91	Less than 3
RMSEA (root mean square estimated error)	0/078	Less than 0/1
CFI (Comparative Fitness Index)	0/98	Above 0/9
NFI (softened Fitness Index)	0/98	Above 0/9
GFI (Goodness Fitness Index)	0/97	Above 0/8
AGFI (Adjusted Good Fit Index)	0/92	Above 0/8

As indicated, the fit indicators of the model were in a desirable status. To implement the model, Table 4 lists the name of factors.

Table 6 Naming relevant factors

Since in the above tested model, the paths between variables are the effectiveness of factors, Fig. 1 illustrates the estimation of the standard coefficients of paths along with the factor load of each variable.



Chi-square=14.54, df=5, p-value= 0.01152, RMSEA= 0.078

Figure 1. Structural model in the mode of estimating standard coefficients

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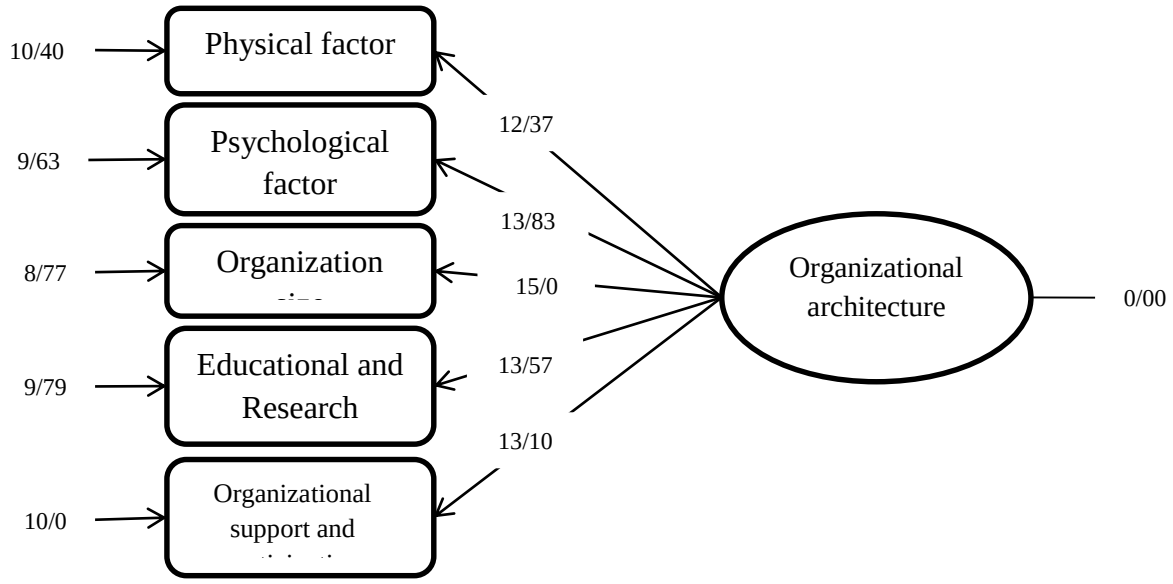

Chi-square=14.54, df=5, p-value= 0.01152, RMSEA= 0.078

Figure 2. Structural model in the mode of significant coefficients

Parametric values of all factors affecting the organizational architecture along with the path coefficients, t-values and their status are shown in above figures and summarized in Table 2.

Table 6. Estimates of the organizational architecture model

Rout	Factor Analysis	T-value	Status
Organizational Architecture → physical factor	Accepted	12/37	0/68
Organizational architecture → psychological factor	Accepted	13/83	0/74
Organizational Architecture → organization size	Accepted	15/00	0/78
Organizational Architecture → educational and research factor	Accepted	13/57	0/73
Organizational Architecture → organizational support and participation	Accepted	13/10	0/71

5. Discussion

The first finding of this study suggests that the observed mean for identified effective factors, including educational and research factors, organizational support and participation, physical factor, size of organization, and psychological factor, were in a suitable status. Participation in the university provides the basis for the faculty constancy and satisfies them which improve their responsibility. This will provide organizational support and results in improved quality of the faculty members' relationship with the university. In addition, a friendly work environment and access to the necessary equipment are satisfying factors forming psychological factors. Satisfaction can be one a factor affecting organizational trust; the higher organizational trust was, the more faculty members tend to develop great ideas to start a research, an idea is needed. Education and research complement each other. As education should be research-based, research

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is also dependent on educational processes. This is the only way to learn how to solve the problem (Tufail, et al, 2016).

The secondary finding of the present study indicates that the difference between the observed averages for the factors affecting organizational architecture in Islamic Azad University is in the suitable status. The university is not a factory to build people who produce market ideologies. University is a place promoting unknown talents. Educational factor of the university should provide a framework for active and participatory learning of the present generation; a framework for enhancing the unique capabilities and creativity of individuals. In order to have a desirable university in the future, the physical location of the site would be somewhere far away from the sound pollution with an area proper for scientific atmosphere. All training facilities must be upgraded to the latest technology, including classrooms equipped with smart systems and video receiver, suitable library space, beautiful educational environment, etc. The number of faculties, students, and administrative staff must be proportional to the physical factors of the university. In addition, another factor influencing organizational architecture in Islamic Azad University is organizational support and participation. Supporting research-based economy can bring self-sufficiency and make the university closer to a desirable university. Therefore, organizational support and participation will play an important role in the quality of professional life of the faculty members, and the result will be higher motivation and efficiency. Certainly, the output of a university nurturing active and research-oriented faculty members will be effective and self-governing people. The factors affecting organizational architecture of Azad University help to reduce crises, and improve agility and cooperation (Miller, 2015).

The third finding of the research suggests that considering the positive mean value in five factors, the average of the current status of all components is less than the desirable status. In other words, the current for the educational and research factor, organizational support and participation, physical factor, size of the organization, and psychological factor is less than the desirable status. If the university is intended to play a fundamental role in the knowledge world of tomorrow, it needs to have a higher efficiency; have a higher quality education and research; consider applied training; and apply collaborative management for both university and classroom. In fact, the future university must be a multicultural university with a combined curriculum approach. Factors affecting organizational architecture can optimally improve the performance of the future university (Davila et al, 2014).

The fourth finding of the research is in fact regarding the main objective of the research: introducing a model of factors affecting organizational architecture in Islamic Azad University, in which the proposed model is well-fitted with factors. The results obtained in this study about the five factors affecting organizational architecture in Islamic Azad University are consistent with results obtained in Richard et al. (2006), Oregon (2007), Ukley (2015), Parker (2013), and Elzavita and Jean (2014).

According to the study, the present study suggests to consider factors of job training, development of faculty members, organizational atmosphere, team work, and organizational innovations integrated into the development of human resources of Islamic Azad University, also, it is suggested that delegate authority to managers and officials of the Azad Universities and using faculty members' visions to make decisions and solve problems, furthermore, encouraging faculty members to conduct new research projects can be useful. Another suggestion is about increasing commitment of faculty members to organizational goals and improving job satisfaction. Finally, it is suggested to provide the necessary facilities in the physical environment of the university such as adequate space, safe environment, and good restaurants with proper food distribution.

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