THE ROLE OF ENTERPRISE ARCHITECTURE IN RECRUITMENT AND EDUCATION PROCESSES ON THE EFFECTIVENESS OF HUMAN RESOURCES: A CASE STUDY OF PUBLIC SECTOR

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ABSTRACT

Enterprise architecture is a comprehensive roadmap for achievement to organizational goals through optimum function of the main business processes in an effective environment of information technology. This roadmap is a description of the components of the organization, and communication between the components and the rules governing their design and evolution over time. Goals such as integration, interoperability, decentralization, simplicity, quality and updating are the basic parameters that will lead enterprises into the enterprise architecture approach. In a general view, the main components and characteristics of architecture in each organization are the process, places, people, objectives and information.

The current study aimed at evaluation of the role of enterprise architecture in recruitment and education of the employees besides effectiveness of human resources in public sector. In this regard, this study is conducted in an attitudinal-applied framework with descriptive-correlation method. The data needed was collected by the aid of questionnaire with a statistical population of 850 persons from the organization and then they were analyzed through the structural equation modeling analysis technique. The results indicated that the main characteristics of enterprise architecture in employees' recruitment and education can directly and positively affect the human resources. Finally, some suggestions based on these results are provided for improvement of human resources' effectiveness.

Keywords: Enterprise architecture, recruitment, education, effectiveness, human resources

INTRODUCTION

In modern organizations which usually have complicated dimensions and structures and are physically distributed, the mere elaboration on who should do what is not enough. Rather, the processes, information, the goals, and the roles of people who serve the organization should also be in line with the organizational goals and strategies which are presented in the form of strategic planning. This requires the organization to have a map of all its dimensions, so by using this map, it is able to perceive the relationship between its dimensions and adapt with the conditions if needed. This map of organization which contains the information about people, processes, the places, and other components and characteristics of the organization is named "enterprise architecture". The prerequisite for any social and economic change and evolution is the existence of developed and effective men. Maybe that is why the scholars in the field of human resources consider the expert human resources as the greatest asset and main capital of the organization. Thus, consideration for this vital matter and investment for increasing the effectiveness of this capital is of a great importance. One of the ways for making this capital effective in the organization is the application of enterprise architecture.

Enterprise architecture is comprehensive roadmap for achieving the organizational goals through optimum function of the main business' processes in an Information Technology (IT) environment. The enterprise architecture is a result of extensive use of IT by the organizations and an increase in intra- and inter-relationships besides the increasing acceleration of the changes which have caused the technology crisis. Enterprise architecture directly affects the organizational processes such as human resources management. For doing so, firstly the principles and processes of enterprise architecture is investigated in the similar organizations and then the solutions for enterprise architecture utilization for increasing the human resources effectiveness in public sector are provided. Regarding the mission of public organizations for providing the public services and their special position among the other organizations, actions for increasing the effectiveness of their human resources are of a great importance.

Enterprise architecture can have different applications for the organization's managers and employees. After the creation of architecture products, these products are put at the disposal of interested parties. Descriptions in the above products mainly provided in graphical forms are a great help for decision-making, strategic analyses, evaluation and modification of the profession's procedures, the measurement of efficiency, forecast and planning for the changes, evaluation of the costs, and etc. Therefore, the current study aimed at evaluating the role of enterprise architecture on human resources effectiveness in public sector. Regarding the special conditions of the study and the extensiveness of the subject, only the recruitment and education areas have been addressed by this study.

Enterprise Architecture

The enterprise architecture is made of the two words "architecture" and "enterprise". Architecture is a description mostly used for buildings and constructs and contains a set of technical and artistic maps of a physical complex which describes its components. Generally, architecture is a description for complicated and special structures of a complex. Here, the organization is an equivalent to enterprise which is a more extensive concept of "organization". Here, the enterprise is a system of systems or in other words a set of components that each can be an organization. The term "system" may be a synonym of it. It is of note that by using this concept, all of the components, relationships, and internal sources of that complex as a whole are addressed. Based on this assumption, "enterprise architecture" is a description that describes the organization components, the relationship between these components, the principles ruling their design, and their evolution over the time. In a general view, the main components and characteristics of architecture in each organization are the processes, places, people, goals, and information.

1- Processes: they are indicative of the ways in which the jobs are done and usually are run in lines with the main missions of the organization. For example, the missions of a mail company can be small cargo transportation, postal services, electronic services, distribution of goods, etc. and examples of the job processes are accepting registered mail, shipments from origin to destination, fleet management, and management of post offices and so on.

2- Places: the organization's members and assets are usually distributed in different places such as office buildings, factories, manufacturing units, warehouses, offices, and etc. one of the critical elements in facilitation of the organizations' job processes is the creation of communicative and tele-communicative infrastructures between the different places in the organization so through these infrastructures the members of an organization can transfer the information and officially do some arrangements. Using the

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technologies such as tele-communication, fax, wireless communications, computer networks and others are in this regard.

3- People: every organization has a specific structure in which are defined the organization's sectors, vice-chancellors, administrations, units, positions, and organizational posts besides the hierarchy, reporting methods, and governance. For example, a mail company usually includes sectors such as headquarters, provincial post offices, post offices, analysis and exchange units, units of postal operations, transportation, etc.

4- Information: the information architecture is a special form of IT for achievement to select goals and tasks in the organization. Actually, the information architecture is designing the key applied systems for business and also is used as a special route by each organization. Since the managers and the employees directly interact in their systems, it is necessary for organizational success to adapt the information architecture with the current and future requirement of business. Information technology includes information infrastructure and the software program.

5- Goals: Any organization is moving toward a set of goals at any point in time. Thus, any organization must clear its goals and strategies and continuously control whether the whole complex is moving in direction of these goals and strategies. It is so called "planning and strategic supervision of the organization's missions" which is actually the most important duty of the organization's top manager (Samadi, 2005).

In any organization, there are several members with different positions who based on their organizational position own various attitudes. Also, based on the members' attitudes, their views on the organization's dimensions are different. For example, an organization's Managing Director attitude toward the information, job processes, organizational units and etc. is different from that of a head of production lines or systems engineer. Moving from administrative levels toward the operational model in the organization, the members' attitude gets more detailed. This principle has led to the separation of enterprise architecture. Actually, based on this attitude, three important dimensions can be defined for any organization. In organization's enterprise architecture, these dimensions are named the "analysis and interpretation layers". These dimensions or layers are as follows:

1- The Strategic Dimension: these are the sectors of the organization that are responsible for policy-making, setting long-term objectives, values, policies, and strategies besides the organization's major planning and also sets the visions and criteria for measuring the efficiency and effectiveness of the lower layers. In this regard, every organization usually has plans as "Development Strategy", "five-year development plan", etc. which make up the layers of the organization. This layer defines the "character" of the organization and distinguishes its position as compared to other organizations.

2- The Operational Dimension or Processes: this dimension includes the mission sectors of the organization which themselves own different levels such as top-level management, middle management, and administrative-operational management. Actually, all of the organization's tasks are done in this layer. Depending on the type of the organization, the results of this layer's activities can be a product or a service. The running processes in this layer create the organization's "capabilities".

3- The Information and Communication Technology Dimension: this dimension specially includes all the information and communication technology used by the organization for accomplishment of operational dimension activities.

In this regard, a hypothesis as "enterprise architecture (the recruitment and education processes) has a direct and positive effect on human resources' effectiveness" is proposed for achievement to the research objectives and responding the research question. Regarding the vastness of the dimensions of the research's main hypothesis, 10 subsidiary hypotheses are also introduced:

1- The people architecture of the education section has a significant and direct effect on effectiveness of the organization's human resources.

2- The places architecture of the education section has a significant and direct effect on effectiveness of the organization's human resources.

3- The information architecture of the education section has a significant and direct effect on effectiveness of the organization's human resources.

4- The goals architecture of the education section has a significant and direct effect on effectiveness of the organization's human resources.

5- The processes architecture of the education section has a significant and direct effect on effectiveness of the organization's human resources.

6- The people architecture of the recruitment section has a significant and direct effect on effectiveness of the organization's human resources.

7- The places architecture of the recruitment section has a significant and direct effect on effectiveness of the organization's human resources.

8- The information architecture of the recruitment section has a significant and direct effect on effectiveness of the organization's human resources.

9- The goals architecture of the recruitment section has a significant and direct effect on effectiveness of the organization's human resources.

10- The processes architecture of the recruitment section has a significant and direct effect on effectiveness of the organization's human resources.

METHODOLOGY

The current study is applied in terms of objective since its results can be used for measuring the effects of application of enterprise architecture on the current condition of recruitment and education and effectiveness of human resources in public sector. In terms of data collection, the current study is descriptive-survey, since it tries to gather the needed information about the current condition of the statistical population. It is cross-sectional in terms of time and quantitative in terms of the type of data. The statistical population included all the 850 experts working in the mail organization in Tehran who are familiar with the concept of enterprise architecture. Regarding this size for statistical population, 265 samples were chosen using Krejcie-Morgan table through simple random sampling.

The data needed for this study were obtained through filed studies referring to the related documents. The validity of the research's questionnaire was approved by content validity and construct validity (the KMO criterion Bartlette's significance level. The reliability of the questionnaire was also calculated as 0.72 by alpha-Cronbach. The basis for data analysis in this research is the method of structural equation modeling.

DATA ANAIYSIS

After the evaluation of the data distribution normality by Kolmogorov-Smirnov test, the parametric tests (Pearson correlation coefficient) and multiple regression analysis were used to evaluate the hypotheses.

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Based on the table (1) results, since the significance level (Sig) is lower than error level (α), the H0 rejected and consequently there is correlation between enterprise architecture and human resources' effectiveness. The value of Pearson correlation coefficient is 0.854 which is indicative of the direct and strong correlation between the enterprise architecture and human resources' effectiveness. Therefore, it can be said the direction of the changes in the two variables is the same and it is positive, i.e. the improvement in enterprise architecture also increases the human resources' effectiveness and vice versa.

Table 1. Pearson test results for the main hypothesis

		ARCHITECT	*HRE*
ARCHITECT	Pearson Correlation	1	.854**
	Sig. (2-tailed)		.000
	N	265	265
HRE	Pearson Correlation	.854**	1
	Sig. (2-tailed)	.000	
	N	265	265

**. Correlation is significant at the 0.01 level (2-tailed).

Also, in the table 2, the multiple regression coefficients, the coefficient of determination, the adjusted coefficient of determination, Durbin-Watson test results and the standard error of estimate are shown. Regarding the table's results, the adjusted coefficient of determination is 0.729, so it can be concluded that 73% of the changes in dependent variable is attributable to changes in the independent variables and the rest of the dependent variable which is less than one percent of the variation is due to chance (factors other than the independent variables). Also, as indicated in the table, the multiple regression coefficients are 0.857. It means that the intensity of the relationship between the independent and dependent variables is equal to 0.857 percent. These results are in line with correlation test results.

Table 2. The Regression Model

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*	*Durbin-Watson*
Dimension	.857a	.734	.729	.38326	1.734

a. Predictors: (Constant), PLACE, INFORMATION, GOAL, PROCESS, PERSON

b. Dependent Variable: HRE

The structural model of causal relationship between enterprise architecture in information, process, goals, people, and places sectors in the two areas of education and recruitment as independent variables and human resources' effectiveness as the dependent variable was used in evaluation of model's relationship and subsidiary hypotheses. The figure 1 indicates the standard error of the estimate and significance coefficients. The results are indicative of the model propriety. In LISSREL output, the value of χ^2 is less than 3 which is a proper value. The low value of this indicator is indicative of the slight difference between the conceptual

framework of the study and the observed data. The RMSEA value is also 0.054 and p-value is zero. Thus, in addition to χ^2 indicator, since the RMSEA indicator is also lower than 0.01, the model is properly fit. Other indicators such as GFI, AGFI, and NFI were calculated as 0.962, 0.9, and 0.93, respectively. In this regard and based on the results of the model, the following results can be obtained for the hypotheses:

First secondary hypothesis: The people architecture of the education section has a significant (4.12) and direct (0.39) effect on effectiveness of the organization's human resources. So the first secondary hypothesis is approved.

Second secondary hypothesis: The places architecture of the education section has a significant (0.44) and direct (5.74) effect on effectiveness of the organization's human resources. So the second secondary hypothesis is approved.

Third secondary hypothesis: The information architecture of the education section has a significant (4.39)and direct (0.38) effect on effectiveness of the organization's human resources. So the third secondary hypothesis is approved.

Fourth secondary hypotheses: The goals architecture of the education section has a significant (6.11) and direct (0.44) effect on effectiveness of the organization's human resources. So the fourth secondary hypothesis is approved.

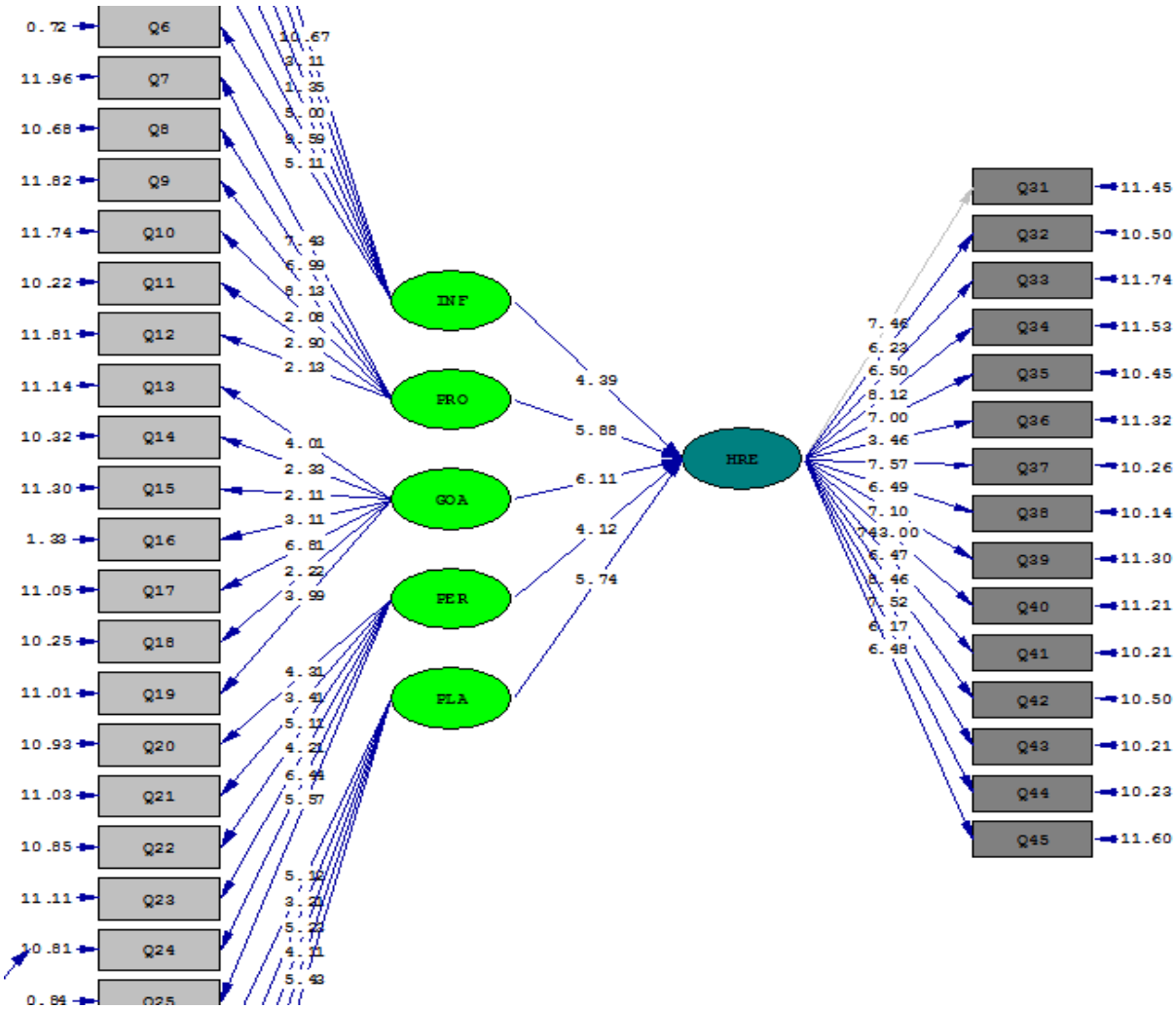

Figure 1: Analysis of structural equation modeling in significance state

Fifth secondary hypothesis: The processes architecture of the education section has a significant (5.88) and direct effect (0.34) on effectiveness of the organization's human resources. So the fifth secondary hypothesis is approved.

Sixth secondary hypothesis: The people architecture of the recruitment section has a significant (4.24) and direct (0.37) effect on effectiveness of the organization's human resources. So the sixth secondary hypothesis is approved.

Seventh secondary hypothesis: The places architecture of the recruitment section has a significant (5.16) and direct effect (0.46) on effectiveness of the organization's human resources. So the seventh secondary hypothesis is approved.

Eighth secondary hypothesis: The information architecture of the recruitment section has a significant (4.33) and direct (0.35) effect on effectiveness of the organization's human resources. So the eighth secondary hypothesis is approved.

Ninth secondary hypothesis: The goals architecture of the recruitment section has a significant (6.71) and direct effect (0.48) on effectiveness of the organization's human resources. So the ninth secondary hypothesis is approved.

Tenth secondary hypothesis: The processes architecture of the recruitment section has a significant (5.6) and direct (0.39) effect on effectiveness of the organization's human resources. So the tenth secondary hypothesis is approved.

CONCLUSION

Regarding the conducted tests and data analysis, all of the hypotheses of the study are approved and the forecasted relationships are estimated as related and effective. Based on this assumption, the following suggestions are provided for improving the level of employees' recruitment and education through implementation of enterprise architecture in these areas and consequently improving the human resources' effectiveness (especially in public sector):

Enterprise Architecture in Recruitment

1. Given the current status of employment, the recruitment trough the university entrance is more effective and the scientific quality of the accepted will be higher.
2. Using the specialist exams for recruitment.
3. Consideration for people's familiarity with the organizational goals and attention for it in lines with the conditions and goals of the organization (higher adaptation of job condition with the characteristics of the job).
4. Greater use of mass media advertising, and even social media in the hiring process.
5. Due to the fact that there are economic and livelihood issues, the most important priority is to hire applicants.
6. Intelligence and scholastic aptitude test to be considered in the hiring process.
7. More time should be allocated to the implementation of recruitment process, so there will be more time for hiring better persons.
8. In accordance with the architecture of places, more attention should be paid to appearance of the places and adapting their characteristics with the people to get more attention.
9. According to the architectural goals, clear objectives in employment would lead to higher effectiveness of recruitment process.

10. Every stage of the recruitment process to be carried out in coordination with the areas of human resources and in accordance with their needs.

Enterprise Architecture in Education

1. In the field of educational goals architecture, the educational needs should be prioritized and they should be consistent with educational and special goals.
2. During the in-service training, the role of supervision is very important. In redefining their role they need to pay more attention to the motivational issues.
3. At the end of the in-service training, the effective evaluation should be implemented and its documented results should be basis for future decisions.
4. The education courses content should be periodically reviewed using the scientific experiments of the employees and in accordance with the changes in technology and environment.
5. Updating the job profiles based on the changes in technology and environment, every several years and the review of educational needs with respect to these changes.
6. Considering the issue of places architecture, the educational places should be designed based on psychological principles, so they can attract more members for education.
7. The educational processes should be precisely formed and reviewed in a framework of certain time perspectives and every educational activity should be conducted based on this model. An educational certificate containing all the educative records, Birth certificate, curricula, the evaluation carried out and the level of skill and expertise should be prepared for all of the employees.
8. It is required the educators of the training courses update their knowledge continuously and follow the minimum educational standards.
9. Courses on teaching methods (reeducation) should be held for teachers to help them enhance the teaching methods and the ways of presenting concepts.
10. In terms of transfer of knowledge, the results of other studies, particularly related scientific conferences and parallel training courses should be used for easier identification of the advantages and disadvantages of the existing courses.

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