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Construction and validation of academic Enterprise Architecture measurement tool

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ABSTRACT: *The current research was conducted with the aim of building and validating a measurement tool for the design of a university Enterprise Architecture model. The research method is mixed. In the qualitative part, using targeted sampling and open coding method, out of 87 scientific articles and valid documents available in the field of Enterprise Architecture, 35 cases were examined in direct connection with the university and compiled as a questionnaire, then for survey (Delphi method). Regarding the components obtained through snowball sampling, it was given to 9 management experts (with three years of management experience). After modification, the final form was designed with 3 core categories with 93 sub-components (sub-components related to business architecture with 70 items, information systems architecture with 15 items and technology architecture with 11 items). To determine the validity of the questionnaire, content validity, divergent validity and construct validity were used, and Cranach's alpha (0.913) was used to determine its reliability. The factor loadings of business architecture, information systems architecture, and technology architecture are respectively equal to 0.869, 0.989, and 0.853. For statistical analysis of structural equation modelling, SPSS 26, Smart software PLS 3.2 was used, the results showed that each of the factors has a suitable factor load to predict the main dimensions of the questionnaire, and as a result, the designed tool has high reliability and validity.*

***KEY WORD**: Enterprise Architecture, tool making, validation, hybrid, structural equations*

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I. INTRODUCTION AND LITERATURE REVIEW

The university should have a map of all its dimensions in order to be able to understand the relationships between the dimensions of the organization using this map and adapt to changes if needed. This map of the university, which contains information about people, processes, places and other dimensions. And the characteristics of the organization, it is called Enterprise Architecture (Mehjorian, 2016). Enterprise Architecture as a comprehensive approach not only causes integration and coherence in the processes and activities of different academic units, but also increases the competitive advantage of universities, optimal use of all resources and hidden assets, which is one of the methods of reducing costs and improving processes and cost-generating activities in the university. In the field of optimal use of financial resources and modification of cost-generating activities of Sivhatnolulu. Email, R. Kabirian, Nilo Legou (2020) Examining the business architecture gap of using appropriate middleware to support integration frameworks as well as employee training, process integration between applications, and process integration between applications to implement an interoperability framework and The security framework is essential. Also, to move from the current state to the desired state with a focus on development and updating, Yu Yun Mei, A. P. G. Patra, Y. D. P. Gitting, I. L. Lee, F. Hamani, and Y. Rial Doriani (2020) Enterprise Architecture Planning for the System University information by using the TOGF architecture development method is one of the important strategies in dealing with the advancement of information technology, increasing the support and use of information systems in the organization knows that by adjusting it, existing information systems can be adapted for customers, so for support It is necessary to update information technology to adapt it to existing business needs. Regarding the results of this comprehensive approach, it can be said that today, due to the reduction of public research budgets, universities should be active in commercial and business fields in order to provide the required financial resources. For this purpose, the coordination and integration of work processes, development and updating, and as a result, the optimal use of financial, human, and information resources in reducing current costs and minimizing the time of processes, using Enterprise Architecture improves time management, resources and prevents Financial, human and informational resources are wasted. Numerous evidences from around the world show that policymakers and spending a lot of resources to support Enterprise Architecture in universities need a lot of research because the application of Enterprise Architecture in universities has valuable results and consequences and causes economic growth and an increase in living standards. And it can also provide the financial resources needed for the continuation of universities. The application and non-implementation of most Enterprise Architecture research due to the high financial budget, requires further study in this field and presentation. Research results in the form of models and practical and scientific frameworks of academic Enterprise Architecture for researchers and policy makers. (Sayadi and Rast Khadio, 2016).

1.2 research objectives

The general goal of this research is "designing a measurement tool for university Enterprise Architecture" for the use of Enterprise Architecture in the university and its more specific goals are "counting and compiling components and sub-components and validating them" according to the above goals, this research It seeks answers to questions such as finding the components of university Enterprise Architecture and the reliability and validity of its measurement tools.

1.3 Research method and data analysis

In this article, in order to observe the factors affecting the Enterprise Architecture of the university, the factors that directly or indirectly affect the Enterprise Architecture of the university have been identified. The variables considered to represent the factors are business architecture, information systems architecture and technology architecture. First, the research conducted in this field is reviewed and the indicators in this research are summarized and summarized. First, the variables are defined and then the identification of factors that directly or indirectly affect the Enterprise Architecture in the university is discussed.

Business layer: *showing the existing or desirable state of an organization from various elements such as process, function, organizational unit, organizational role, business service, product - output of the organization.*

Application layer: *It is one of the layers of the Enterprise Architecture and includes the information recorded in the information systems that are necessary to meet the information needs of the organization.*

Data Layer: *The art and science of organizing and classifying websites, organizational networks to help people find and manage information.*

Infrastructure layer: *Any hardware, software and communication necessary for the implementation of information systems and information circulation and operations are called used*.

This research, which was based on the purpose of developmental and applied research and was a part of mixed research in terms of methodology, was conducted in two qualitative and quantitative stages and by a sequential exploratory method. Based on the available scientific documents and articles in the field of Enterprise Architecture and using the synthesis research method, the components of Enterprise Architecture were found in the university, then the construction of the Enterprise Architecture scale for universities and its validation in the Islamic Azad University of East Azerbaijan province were done. Then, to carry out the quantitative phase, based on the findings of the qualitative section, a questionnaire with a 5-point Likers scale was developed, and to check the content validity of the questionnaire, 9 management experts (faculty members with executive and management experience and experts in management and leadership knowledge) in the university) was given so that after a detailed study of the tool, they would submit their correction comments or any ambiguities they felt in writing and note if the form of the question or its wording should be changed. Finally, the necessary corrections were made and a 10-factor questionnaire with 93 items was prepared. Content validity, divergent validity and construct validity were used to determine the validity of the questionnaire and Cranach's alpha was used to determine the reliability of the questionnaire. In the analysis of the qualitative part of this research, first open coding was done, then axial and selective coding. In the initial stage of open coding, each extracted concept was included in a category. In the selection of categories, those categories have been intended to fill the conceptual space of the concepts as much as possible. By examining the data obtained in the first stage of open coding, 172 concepts were obtained. In the second stage of open coding, similar and common concepts and categories were integrated through constant comparative analysis of data. The data of this stage were classified into 109 concepts and 16 major categories.

In the axial coding stage, in order to determine the patterns in the data, the constant comparison analysis of the data was done once again and 10 core categories were determined. In the selective coding section, following the presentation of a unified, convergent model with a high level of abstraction, the categories of business architecture, information systems architecture, and technology architecture were selected as the final core categories. This stage is the process of theory integration and refinement, in other words, the stage of theory or model production. The quantitative part was analysed using descriptive and inferential statistics and SPSS and Smart PLS software. Based on the qualitative findings, the answer to the first research question was obtained.

Table 1. The number of items in the questionnaire according to the selected codes

Enterprise Architecture components	Number objects	Open coding	Axial Coding	Selective Coding
Business architecture	70	12	6	1
Information systems architecture	12	2	2	1
Technology architecture	11	2	2	1
Total	93	16	10	3

Before performing the factor analysis, in order to ensure the adequacy of sampling and the significance of data adequacy, the values of Kaiser-Meir-Elkin (KMO) and Bartlett's test of sphericity were tested. In Table 2, the results of Keizer-Meir-Elkin test and Bartlett's sphericity test are presented:

Table 2 Keyser-Meir-Elkin values and Bartlett's sphericity test

Indicator		the amount of
Sampling adequacy index (Keyser-Meir-Olkin)		0.500
Bartlett's sphericity test	Chi-square statistic	222.801
	Degrees of freedom	1
	The significance level	0.000

As shown in the above table, the value of KMO is equal to 0.500; Therefore, the sample size is suitable for factor analysis. Also, the value of Bartlett's test is significant at the 0.000 level. Based on this, the necessary condition for factor analysis has been provided. In the first-order factor analysis, because the factor loadings were above 0.5, no sub-components were removed from the analysis due to low and insignificant factor loadings. also, 7 factors of main processes, innovation, creativity, public relations, social services, structure and content were combined together and formed a factor called the main layer. Table 3 shows the results of the analysis of the confirmatory factor model of the first stage, separately for each of the factors of the present research.as this table shows, all the sub-components have significant correlation with the components. In other words, structural equation modelling shows that all sub-components have significant factor loadings.

Table 3 components and sub-components and factor loadings

Row	Components	Subcomponents	loads a factor Standard	Row	Components	Subcomponents	loads a factor Standard
1	Strategy	Strategy	0.772	9	Structure	Complexity	0.936
		Architectural perspective	0.604			Structure	0.933
		strategic Management	0.898	10	content	Beliefs of senior managers	0.757
		Strategic review	0.824			University campus	0.863
		Strategic analysis	0.874			content	0.916
		Strategic choice	0.866	11	Support layer	human resources	0.872
		strategic planning	0.874			Competence of professors	0.836
		Strategic implementation	0.910			Employees' access to in-service training	0.908
		Environmental management	0.726			Professors' access to scientific resources	0.925
		investment	0.849			Job satisfaction of professors	0.946
2	relation with industry	relation with industry	0.782			Job satisfaction of employees	0.890
		Student recruitment	0.915			The standard of living of professors	0.893
		Student education	0.866			Standard of living of employees	0.865
		Recruitment of efficient academic staff	0.826			Funds	0.870
		Empowering efficient academic staff	0.815			Development of financial resources	0.847
		Problem solving in industry	0.760			Property and facilities	0.877
		Solving the problem of organizations	0.796			Equipment development	0.865
		Student skill training	0.933	12	Contro	Control activities	0.880

		Carrying out industrial research projects by the student (under the supervision of the supervisor)	0.931
3	motivation	Motives	0.897
		Take advantage of available opportunities	0.846
		Eliminate existing threats	0.888
		Increasing strengths	0.954
		Reduce weaknesses	0.950
4	processes	processes	0.760
		Scientific faculty management	0.457
		Student management	0.853
		Management of other employees	0.832
		Education of students	0.859
		Research	0.868
		Educational content of students	0.842
		Coordination between activities	0.787
		Job enrichment plan	0.586
		job performance	0.915
		Job readiness assessment	0.774
		Integration of processes	0.804
5	Innovation	Innovation	1.000
6	Creativity	Creativity	1.000
7	public relations	public relations	1.000
8	Social service	Social service	0.787
		cultural Affairs	0.586
		Clinical services	0.915
		Providing welfare services for students	0.774
		Providing welfare services for professors	0.860
		Provide welfare services for employees	0.860
9	Structure	Focus	0.926
		formality	0.828
		Control objectives	0.880
		Standards control	0.741
		Process control	0.881
		Control indicators	0.922
		Communication control	0.906
13	Functional services	Functional service	0.824
		Shared service	0.880
		Basic service	0.824
		Application system	0.880
		Application interface	0.924
		Security service	0.929
		Infrastructure service	0.926
14	Data management	data entity	0.917
		Human data	0.799
		Financial data	0.911
		Equipment data	0.790
		A coherent and comprehensive source of information	0.919
15	Infrastructure	infrastructure	0.925
		Infrastructure equipment	0.924
		Hardware	0.933
		software	0.801
		Communication channels	0.884
16	Standardization	Infrastructure standardization	0.871
		Type of technology management	0.890
		Network evolution	0.962
		Informal IT assessment	0.835
		Application of standard principles	0.959
		Following standard principles	0.901

According to the Smart PLS output in Table 5, in addition to the traditional Cranach's alpha criterion, this more modern criterion is also used to determine the reliability of each construct. The advantage of this measure compared to the Cranach's alpha measure is that it is calculated in absolute form, but according to the correlation of their structures with each other. Both of these criteria are used to better measure the reliability. A combined reliability value above 0.7 for any structure indicates appropriate stability. The second criterion for the fit of measurement models, i.e. convergent validity, the criterion of average variance extracted, is used for this purpose. By which, the correlation value of each structure with its items is checked. This criterion represents the average variance shared between the structure and its indicators, and a value of 0.4 or higher is sufficient for it. After obtaining the results of the values of factor loadings and Cranach's alpha coefficients, combined reliability and average variance extracted through the analysis and output of smart Pls software, because the values of each of the mentioned criteria for each of the present variables are higher than their conventional limits, it can be stated that the state of reliability and convergent validity of this research is confirmed. According to the Smart PLS output in Table 3, the amount of variance inflation index in the VFI combined measurement model is equal to 1.000 and is approved.

Table 4 fit indices of the first order factor analysis

Indicator	**Calculated**	**Standard**
SRMR	0.174	0.151
d-ULS	156.364	117.703
d-G	n/a	n/a
Chi-Square	Infinite	n/a
NFI	n/a	n/a
RMS THETA	0.305	
VIF	1/000	
GOF	It is not accessible in version 3.2.	

Second order factor analysis

In the second-order factor model of structural equation modelling, hidden factors (components) that are measured using observed variables (small components) are influenced by a more underlying variable, in other words, a hidden variable, but in they are on a higher level. In this research, the second-order factor model consists of 10 factors based on this, S110 (the designed measuring instrument) is a latent variable, and Q1 to Q10 is an observed variable influenced by the underlying latent variable S110. Considering that the academic Enterprise Architecture measurement tool has 10 factors that can act as an indicator of this structure, therefore, the second-order factor analysis has been examined in line with the test and also the validity of the factors of the academic Enterprise Architecture tool. The result of the confirmatory factor analysis test of the second order of the factor is presented in Table 5 and its conceptual diagram in Figure 1.

Table 5 confirmatory factor analysis of the second order of the factor

Row	**symbol**	**Factor**	**operational burden**
1	S110	Strategy	0.925
2	S1019	relation with industry	0.935
3	S2024	motivation	0.922
4	S2552	Main layer	0.926
5	S5364	Support layer	0.846
6	S6569	Control	0.855
7	S7076	service	0.976
8	S7082	Data	0.946
9	S8387	Infrastructure	0.991
10	S8894	Standard	0.997

According to the Smart PLS output in Table 6, the calculated SRMR value is equal to 0.176. Also, the d-ULS value is 83.453. The VFI index is equal to 1.000 and the RMS THETA index is equal to 0.294.

Table 6 fit indices of the second order factor analysis

Indicator	**Calculated**	**Standard**
SRMR	0.176	0.148
d-ULS	83.453	58.765
d-G	n/a	n/a
Chi-Square	Infinite	n/a
NFI	n/a	n/a
RMS THETA	0.294	
VIF	1.000	
GOF	It is not accessible in version 3.2.	

According to the fit indices of Table 6, it can be concluded that the designed measurement tool of university Enterprise Architecture has a very favourable fit

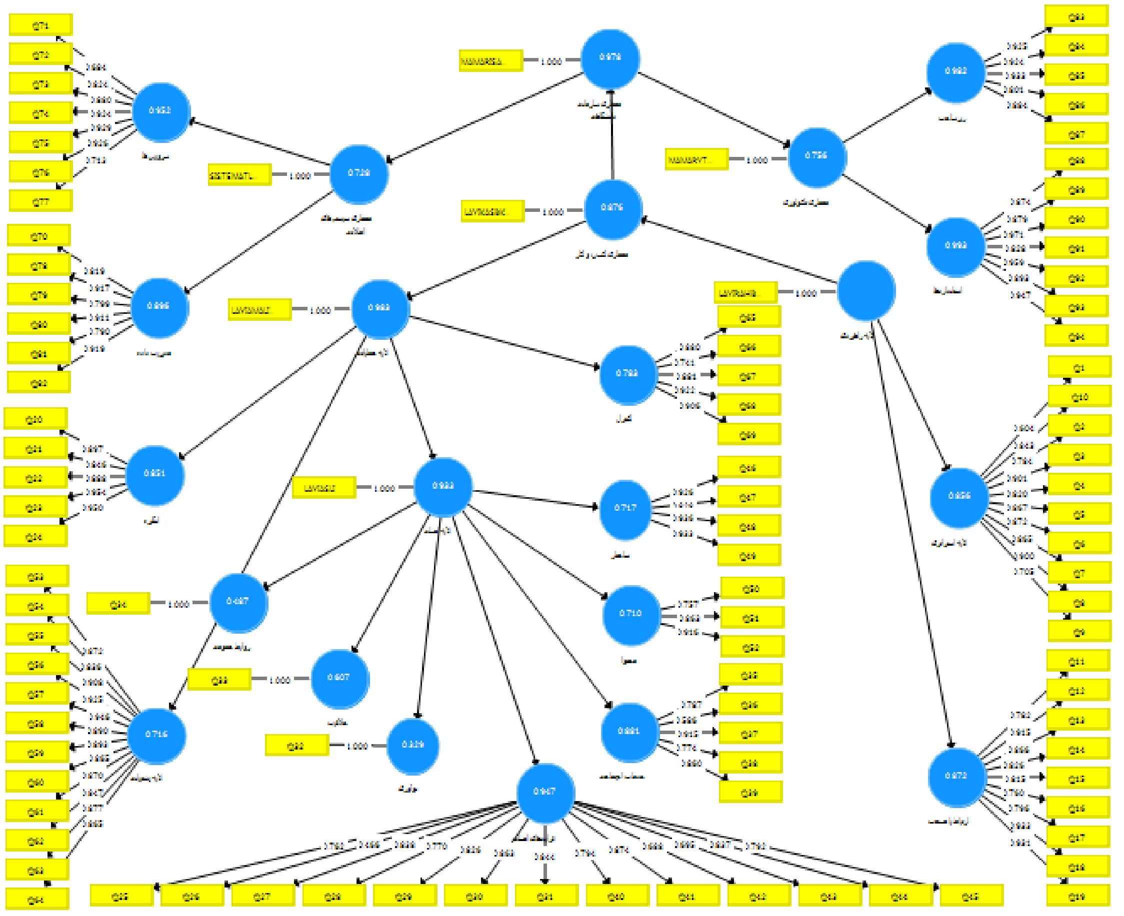

Figure 1 Smart PLS output for the second-order factor analysis of the structure of the academic Enterprise Architecture measurement tool

In this research, the reliability of the measurement tool was investigated using the method of internal consistency through Cranach's alpha and composite reliability, which is a more modern method than Cranach's alpha. As we said before, the reliability of the whole scale is equal to 1.000 based on Cranach's alpha internal consistency method. Also, the composite reliability value is equal to 1.000, which is higher than the acceptable value of 0.7. In Table 7, the results of calculating the reliability of the scale are presented separately for each of the components. In this way, it can be concluded, the designed measurement tool has a very high reliability.

Table 7 statistical characteristics and reliability coefficients of the components

Row	Variable	Number of items	Cranach's alpha	Composite reliability	Average extracted variance
1	Strategy	10	0.945	0.957	0.674
2	relation with industry	9	0.956	0.959	0.722
3	Motivation	5	0.946	0.959	0.824
4	Main layer	29	1.000	1.000	1.000
5	Support	12	0.974	0.977	0.781
6	Control	5	0.917	0.938	0.754
7	Services	7	0.931	0.945	0.715
8	Data	6	0.929	0.945	0.742
9	Infrastructure	5	0.937	0.952	0.801
10	Standardization	6	0.964	0.971	0.825

Fornell and Larker test - diagnostic validity

According to this criterion, a hidden variable should have more dispersion among its observables compared to other hidden variables. The average square root of the extracted variance of each hidden variable should be greater than the maximum correlation of that variable with other hidden variables of the model. This test measures the diagnostic validity at the level of hidden variables. The table below shows the diagnostic validity of this measurement.

8- Table 8 matrix of Fornell-Larker method (divergent validity test)

Variables	Technology architecture	Enterprise architecture	Information systems architecture	Business architecture
Technology architecture	1.000			
Enterprise architecture	0.869	1.000		
Information systems architecture	0.130	0.853	1.000	
Business architecture	0.830	0.989	0.795	1.000

1.4 Findings and Interpretation

The current research was designed and validated with the aim of developing and exploring measurement tools to measure the state of university Enterprise Architecture. For this purpose, you identified the factors affecting university Enterprise Architecture, which included strategy, industry connection, motivation, main layer, support layer, and control. These factors include all the services and data used in the information systems architecture section and infrastructure and standardization in the technology architecture section. The obtained results are similar to the researches of Ghasemi (2018), Faqih (2014), Daro (2013), Malek Lozadeh (2013), Ahmadi (2013), Golshani (2012), Lulu et al. (2020), Yul May et al. 2020), Yuyun Se Vairanti et al. (2019), Alamari and Abdullah (2018), Alamia, Sopardi (2017), Parmensef (2017), Adnan (2017), Vahjo Rehardjo Emmanuel and Galieh Prima Negara (2019), Gigi Forda Nama. and Didik Korniavan (2017), Razmi (2016), University of Birmingham (2014), Simon and Fischbach and Shoder (2014), Lowe and Linger (2012), Itali (2011), Theo and Corbitt (2010), Salamat and Al Khorosi. (2009).

BIBLIOGRAPHY

[1]. Ahmadian, Najma, Medina, Syed Ibrahim, Shabani, Ali Akbar (2013). Qualitative evaluation of the Enterprise Architecture of the current state of Islamic Azad University and the provision of architectural services model in the optimal state, a research of a new approach in educational management, fifth year, number 4, pp. 235-260

[2]. Abbasi Spushani. Hossein (2016), Designing the commercialization model of university research with the partial least squares structural equation modelling method, Business Research Quarterly, Volume 21, Number 82, pp. 33-65.

[3]. Ali Ahmadi, Alireza. Fathian, Mohammad. Soltani, Farzad (2016), Information and Communication Technology Development Reference Model for Iranian Universities, Knowledge Management Quarterly, Year 19, Number 73, pp. 57-88

[4]. Aier .S.(2014) .The Role of Organizational Culture for Grounding، Management، Guidance and Effectiveness of Enterprise Architecture Principles، Systems And E-Business Management.

[5]. Alamri .A.October، (2018) .Enterprise Architecture Adoption for Higher Education Institutions. International Journal of Simulation: Systems، Science & Technology. DOI: 10.5013/IJSSST.a.19.05.16: https://www.researchgate.net/pu.

[6]. Andersen .Peter.(2014). MANAGING THE IT ARCHITECTURE. A MULTIPLE CASE STUDY PhD dissertation Aarhus BSS Aarhus University Department of Management 2016.

[7]. Creswell، J. W. (2007). Qualitative inquiry and research design: Choosing among five approaches (2nd ed.). Thousand Oaks، CA: Sage.

[8]. Clark .Steve. (2001). Information systems Strategic Management: An Integrated Approach. This paper is posted at coda.

[9]. Daraje. Amir (2013), development of a reference service-oriented Enterprise Architecture plan for Iran's electronic education universities based on TOGF framework, Shiraz University, International Branch, Master's Thesis in Information Technology Engineering (Information Systems Management).

[10]. Daraje. Amir (April 3, 1400), the site of the Amir Dora Educational Institute: https://darajeh.net

[11]. Dalavar Ali (2013), Theoretical and practical foundations of research in humanities and social sciences, Tehran: Rushd Publications.

[12]. Sharifi Ali (2009), presenting an Enterprise Architecture model for university research management in a service-oriented and agent-based environment, Master's thesis of the Faculty of Technology and Engineering, Department of Industrial Engineering, Tarbiat Modares University.

[13]. Faqih, Mohammad Baqer (2014), Designing and explaining the model of electronic (virtual) university from the perspective of organizational factors and elements, doctoral dissertation in management, Payam Noor University, Faculty of Management, Economics and Accounting.

[14]. Fischbach. D ،Schoder. K. Simon .D ، (2014). Enterprise architecture management and its . Systems Journal 26-3.

[15]. Gartner Group،(2004)،http://www.gartnergroup.com.

[16]. Ghuman .K, Chaudhary. S .(2012) .Incorporation of ERP in Educational Institutions: An Empirical Study، India: in International Conference on Technology and Business Management.

[17]. Goethals. Frank .G, Snoeck. Monique .(2006).Management and enterprise architecture click: The FAD (E)E. Springer Science/Business Media، 67-79.

[18]. Ghasemi, Mahmoud. Akbar is a divine prophet. Seifzadeh..Syed Habib (2018), a new method for identifying business services based on capabilities, the third national conference on Enterprise Architecture developments of Sharif University of Technology.

[19]. Golshani Rosta, Mehrab Ali (2012), Designing an Information Architecture Framework for the Application of Virtual Social Networks in Iran's Educational System, Scientific Research Quarterly of Information and Communication Technology, 192, Year 5, Nos. 17 and 18, pp. 23-42

[20]. Mezmadi, Amir (2016), providing a screening model for evaluating and selecting information technology Enterprise Architecture frameworks. The first national conference on Enterprise Architecture developments of Shahid Beheshti University.

[21]. Malek Lozadeh, Mahdieh (2013), management of key data of the organization using service-oriented architecture (Study example: University of Tehran), thesis for receiving a master's degree, computer engineering - software orientation, computer engineering department and information technology of Payam Noor University.

[22]. Iyer. D ،.Dreyfus .B .(2008) .Managing Architecture Under Emergence: A Conceptual Model and Simulation، Boston University School of Management.

[23]. Itala. Timo. (2011).Enterprise Architecture in Practice Methods and Tools INFORTE seminar 15-16.12. Espoo and Helsinki‹Aalto University
[24]. Legner. J‹ Lo¨he. C‹ Received: 21 April (2012) / Revised: 3 December 2012 Accepted: 7 December 2012 / Publish online : 3 february 2013). Overcoming implementation challenges in enterprise architecture management: a design theory for architecture-driven IT Management (ADRIMA)
[25]. [Ponde. P, Shirwaikar. S. C. (2014).Education enterprise services repository using service oriented architecture‹ International Journal of Emerging Technology and Advanced Engineering.
[26]. Rezvani. Shahla . (2016).Presentation of Service Oriented Architecture Modelin Libraries of MazandaranUniversities Based on GroundedTheory. Journal of Information Processing and Management‹pp 45-64.
[27]. Ross .J.(2014). Demand Shaping: Changing the Conversation About IT. MIT CISR Research.
[28]. Selamat .Mohd Hasan , Al Kharusi .Abdulmonem. (2009) Service Oriented Architecture in Education Sector. IJCSNS International Journal of Computer Science and Network Security‹ 301-308.
[29]. Shirwaikar .P, Ponde .S. C.(2014). Education enterprise services repository using service oriented architecture‹ Internationa . l Journal of Emerging Technology and Advanced Engineering‹ vol. 2‹ pp. 172-179‹ 172-179.
[30]. Supriadi. E ‹Amalia. H, Published Online: 15 June (2017). Development of enterprise architecture in university using TOGAF as framework. AIP Conference Proceedings 1855‹ 060004 : https://doi.org/10.1063/1.4985527 .
[31]. Team pengroup. 16 mey(2004). www.opengroup.com.
[32]. Tiago. M. Fernández-Caramés & Paula. Fraga-Lamas.(2019).Towards Next Generation Teaching‹ Learning‹ and Context-Aware Applications for Higher Education:A Review on Blockchain‹ IoT‹ Fog and EdgeComputing Enabled Smart Campuses andUniversities. applied sciences‹ pp.1-24.
[33]. Wahju. Andi, Emanuel. Rahardjo, Galih. Julius, Negara1. Prima . (2019). Enterprise Architecture Design Strategies for UGK Using TOGAF ADM. st Borobudur International Symposium on Humanities, Economic 491-495. Yogyakarta: Advances in Social Science‹ Education and Humanities Research.
[34]. Wieringa. R.(2004).Architecture is Structure plus Synergy http://graal.ewi.utwente.nl/WhitePapers/Architecture/architecture.htm.
[35]. Yurchak .M, Pasyeka .I.(2014).Designing the conceptual model of the management"of higher education the basis of information and interperating web technologies. Ivano-Frankivsk National Technical University of Oil and Gas ‹2Lviv Polytechnic National University.

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