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Where Enterprise Architecture Development Fails

A multiple case study of governmental organizations

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Abstract—Enterprise Architecture (EA) adoption by governmental organizations has been substantially increased not only to improve performance and efficiency, but as a prerequisite to E-Government implementation. Many efforts have been done to create frameworks and methodologies for government sector organizations to develop EA smoothly and flawlessly. Based on a survey in 2004, governmental organizations in Iran had been among the top ten countries in EA activities but since then it has faced with an on-going decline. Therefore, the goal of this study is to investigate the obstacles that governmental organizations have encountered in recent years during EA development. Employing multiple case study approach, the data were collected through semi-structured interviews with 9 governmental organizations in Iran. In total, 18 obstacles were identified. Moreover, a priority framework was created to determine the precedence in addressing these obstacles. In analogy to previous literature, five of the identified obstacles have not been mentioned in the earlier literature. This study is a great assist for both practitioners and researchers because of the essentials of digital capability in the success of businesses and EA being the central competence area in digital transformation.

Keywords—Enterprise Architecture; Obstacles; Challenges; Governmental organizations; E-Government; Iran; Multiple case study.

I. INTRODUCTION

Promised to manage the organizational complexity and align organizational business and IT, Enterprise Architecture (EA) is increasingly being adopted by governmental organizations to promote interoperability among information systems, minimize the costs and maximize the return on investment [1]. However, adopting EA is still a big challenge in these organizations [2]–[4].

Many attempts have been done to develop frameworks and methodologies, guideline and best practices and recommendation to develop EA in governmental organizations [5]–[11]. In Iran, most of the conducted EA studies have focused on EA frameworks, methodologies, methods' assessment, framework analyses, and suggesting best practices [12]–[18]. There has not been any study regarding the obstacles that governmental organizations in Iran face during EA development.

The effort of developing an EA in an organization is referred to as an EA project in Iran, which is usually performed by an external EA-consultant. In Iran, efforts on developing EA in governmental organization sector had been started since 2003 by establishing IT architecture committee, conducting several EA workshops for governmental organizations, and initiating the establishment of national enterprise architecture [19]. In a web-form based survey conducted by Institutes for Enterprise Architecture Developments, enterprise architecture activity ranking was provided, to compare high ranked countries in 2004 and 2005 regarding their EA activities [20]. According to this report in 2004, Iran placed among the top ten countries regarding its EA activities, however in 2005 Iran's placed reduced to 13th. Since 2005 no specific ranking has been done on countries regarding their EA activities. However, according to United Nations report in 2014 on world e-government ranking, in which EA activities being considered as one of the aspects that influenced on this ranking, Iran places 105 in the world [21]. This robust collapse of Iran's rank among other countries regarding EA activities in governmental sections motivated us to conduct this study. The aim of this study is to identify obstacles that governmental organizations in Iran faced during their EA projects. This study is particularly interesting because of the unique nature of obstacles that were identified during this research, which is due to the complexities of the government.

Although many studies exist that discuss about EA challenges in governmental organizations [10], [11], [22]–[30], however none of these studies priorities the obstacles based on their criticality to indicate which obstacles should be addressed first.

To collect data 14 semi-structured interviews with EA experts from 9 large governmental organizations in Iran were conducted. Employing multiple case study approach, based on qualitative analyses 18 obstacles were identified. To the knowledge of the author, this study is the first study to investigate the EA obstacles in large governmental organizations in Iran.

In this paper, after surveying the background of this study, in section III the research method is discussed and data collection and data analysis are explained. In section IV, findings of the study are presented and the discussion of the

findings is provided in section V. Finally, the conclusion is presented in section VI.

II. BACKGROUND

Enterprise Architecture (EA) is promised to manage the complexity of an organization through the structured description of enterprise and its relationships [31]–[36]. EA is still a challenging concept as there are many conceptions and a variety of definitions that hinder a uniform view [37]. In this study, we define EA based on the definition proposed by the CIO Council’s Practical Guide to Enterprise Architecture [38] as an “*agency-wide roadmap to achieve an agency’s mission through optimal performance of its core business processes within an efficient information technology (IT) environment*”.

EA is acknowledged to improve business and IT alignment [39]–[41]. However, despite the popularity of EA practice, many EA projects are confronting with obstacles and doomed to failure. Several studies have presented challenges and critical factors during EA development from different countries, such as Finland, Sweden, Netherlands, Denmark, Germany, and Unites States [10], [11], [22]–[27].

According to Cambridge dictionary, an obstacle means “*Something that blocks you so that movement, going forward, or action is prevented or made more difficult.*” In this study, EA obstacle is defined as the factor that confronts the EA project with difficulties and loss of resources and cannot be solved easily and there is a risk of project termination.

[24], studied the challenges of government EA work from stakeholders’ views through 21 semi-structured, in-depth interviews. They identified three main categories of EA challenges: implementation ability and governance, structure of state government, and advancement of interoperability. [26], discussed the key issues in EA implementation, studying two governmental agencies. They determined three major sets of interrelated factors of EA implementation in public administration: the lack of establishing proper EA governance, insufficient support for the development, and inadequate resources to do the former two. Furthermore, [28], investigated the role of EA in the E-Government program. During their investigations, they determined few EA challenges: (1) difficulties in order to introduce EA thinking to the whole project, (2) executive group do not understand the meaning and purpose of EA, (3) lack of shared understanding and communication, and (4) lack of understanding the whole picture. In another study, [29] proposed EA as a tool for improving the coherency of the local government and its alignment to IT and other resources through an action research. They discussed the perceived challenges for EA in public administration and identified few challenges, such as the cost of change in personnel, challenges in adopting a common framework for common understanding, lack of leaders’ trust, and lack of coordination and collaboration.

[30] studied the challenges that enterprise architects faced particularly in the South African organizational context. Aiming to examine the non-technical aspects of the architecting process, they conducted eight interviews with enterprise architects working in the EA domain from different industries. They identified five challenges: communication,

obtaining buy-in from the stakeholders, ownership, perceptions of the enterprise architect, and organizational politics.

III. RESEARCH APPROACH

The aim of this study is to investigate obstacles during EA development projects from practitioners’ perspective of large governmental organizations in Iran. An exploratory, qualitative strategy using multiple case study approach was selected in order to identify the EA obstacles within the selected large enterprises.

Conducting a holistic and in-depth investigation, case study method seems ideal to employ [42]. According to [43], there are three types of case study methods: exploratory, explanatory and descriptive. To justify the employed research method the first and most important condition to choose the suitable research strategy is to determine the type of research question [43]. The main research question being “what are the obstacles during EA development of governmental organizations in Iran?” [43] suggested conducting an exploratory case study to develop pertinent hypothesis and propositions for further inquiry.

A. Data Collection and Analysis

Data were collected in 2 phases. First, empirical data through 14 interview sessions were collected. Second, data from literature was collected by conducting literature review study to validate and compare with empirical findings.

The interviews were conducted in the period from May to July 2015. The interviewed organizations were large, with size from 1500 to 35000 employees. Semi-structured interviews were deemed to be suitable for data collection, because of the complexity of EA practice and inductive approach [44]. This way the interviewer makes sure that all the preplanned questions are covered and the interviewee can think and reflect about the topic and link their experience and perception to the discussion [45]. 14 experts were interviewed including CEO, CIOs, IT managers, and head of related departments with the average duration of the interviews being 1 hour and 10 minutes. The main questions addressed obstacles that the interviewees faced during the EA development project, missions and goals of the project, and results and outcomes of the project. The researcher reached the point of data saturation after 12 interviews. Further data did not to add any meaningful observations to what have already gained from the first 12 interviews. According to [43], data saturation was gained and the rest of the interviews’ data repeated the points that had been already mentioned previously. Table 1 presents the information about the interviewed organizations.

To collect data from literature Google Scholar was selected as the digital library since it is connected to the most of important publishers in the field of Information Systems. The search string was: [“enterprise architecture” and (“obstacle” or “issue” or “challenge” or “critical factor”)]. Applying this search string Google Scholar returned 49 articles. Going through the query results by reading the title and abstracts of the articles the most relevant peer-reviewed journal and conference articles were selected. Finally, 20 articles for further analyses were selected.

TABLE I. INFORMATION ABOUT CONDUCTED INTERVIEWS AND THE ORGANIZATIONS

Cases	Number of personnel	Number of interviews	Interviewed roles
A	1500	1	CIO
N	1860	1	IT manager
G	10000	3	CIO Head of systems analyze & design Head of business process development
D	20000	1	IT manager
H	9700	3	CEO R&D director Head of business process development
I	35000	1	CIO
J	11000	2	CIO Head of R&D
K	1570	1	CIO
M	1600	1	Head of systems analyze & design

A coding technique based on the open coding in Grounded Theory was employed to analyze the empirical data [46]. To analyze the data the interviews were transcribed as text and imported into the Atlas.ti software, which is suitable for qualitative analyses.

IV. FINDINGS

A. EA development obstacles

18 obstacles were identified from analyzing the interviews with governmental organizations in Iran. Following is the explanation of these obstacles.

(1) Political issues of the government

Confusion in government was mentioned as a common obstacle in governmental organizations. Both of the CIOs from Cases A and J mentioned that *“the inappropriate definition of business in the government”* and *“confusion in the government regarding the long-term goals”* affected their EA development in the initial stages. Also, political changes in the country were mentioned by Cases G and J. They imposed difficulties to the organizations *“for example when the government changes”*. In this situation, *“the government changes, the cabinet will change, the industry minister will change. Therefore, [the organization’s] boss will change”*. Thus, it is so likely that the project will be terminated in the middle. Further, the interviewee from Case M mentioned that because of political sanctions their company is not up to date technologically. Also, Case M stated that because of the political sanctions the company that sells SAP licenses *“refused to sell them the required licenses”*.

(2) Constant change of management

Constant change in management affects policies and strategies of the organization. Changes in the organization hinder the decisions that are needed for EA development. Cases J and M mentioned this obstacle. In Case J, when the management changed, it was not clear that the new management *“approved to continue the previous manager’s works and projects.”* Therefore, during the development of a lengthy project like EA, it is very probable that management changes several times during the project and the changes affect the strategies and priorities of the company. In Case M, the EA

results were not accomplished, because the management changed constantly and sometimes the projects, which are initiated as the results of EA were terminated because *“the new manager did not approve the project”*.

(3) Outdated organizational statutes

Having old and forgotten statutes mentioned by the CIO in Case A to hinder their EA planning. The interviewee mentioned the statutes as an input for the EA development *“which indicates the establishment goals and aims of legislator or founder of [the organization]”*. However, they realized the obstacle when their EA consultant asked for these statutes and they realized that *“the organizational goals and objectives were different from what organization was doing.”*

(4) Fluctuation in personnel’s motivation

The CIOs of Cases A and K mentioned the effect of fluctuation in personnel’s motivation on the EA development process. For instance, the interviewee from Case A mentioned the difficulty of coping with higher level management. Also, the CIO of Case K stated that the personnel’s motivation affects the progress of EA project as *“Sometimes the employee is in a good spirit and the project progresses very well but sometimes the employee is not in the mood and then even continuing the project seems so difficult”*.

(5) EA conflict with governmental laws

According to the Head of System Analysis and Design of Case G, EA development in a governmental organization is more difficult than in private organizations because of restricted rules and laws in governmental organizations. It was stated that in governmental organizations *“there are managers, ministers, and a president who impose rules and restrictions on the organization”*. Case J faced with a situation in which laws contradict with the EA results. As a result of EA, they realized that sales management in one of their divisions that should be removed. However, legislated laws of the county was against this EA result.

(6) Lack of communication and collaboration

In Case G, some employees felt threatened by the EA development and tried to *“jeopardize”* the project by giving wrong information to the EA consultant intentionally. Some of the employees wanted to *“hide the truth”* about their processes because *“they were afraid to lose their position in the company”*. Additionally, the EA consultant did not have all the company’s knowledge and therefore they could not verify the employees’ answers regarding their processes. Consequently, the architecture became flawed and some analyses had to be redone.

(7) Lack of management support

The CIO of Case K mentioned management unsupportiveness as a problem. It took more than 6 months to argue with the CEO of the company to convince him about developing EA. Getting the CEO’s approval and support was their *“biggest obstacle”*. Similarly, it was mentioned by the Case A, that *“managers do not pay enough attention to EA when it is needed.”* Cases K and A stated that managers just ask for the EA results without wanting to be involved in the

project. However, *“Managers’ supervision during the EA project motivates the personnel”* as they realize that the management is also involved in the project. Further, Case M complained about the managers being unsupportive during the EA project, although they supported the project initially. Also favouritism in hiring new and unqualified personnel by the high management to be in charge of EA project hindered EA development in Case M.

(8) Unable to set common understanding

The CIO of Case K stated that setting *“a common desire and goal in the whole company”* was their biggest obstacle. It is stated that everyone in the organization must reach a common understanding of EA. Also, the representative of Case M mentioned that everyone in the organization *“must want”* EA to be developed.

(9) Unclear organizational strategies

The CIO of Case A considered EA development as a total failure when the organization did not have a clear organizational strategy. In order to reach the target situation, the organization must know the *“mission and vision”* of the project with *“a clear and up to date strategy”*.

Also, Case M started its EA development project with *“false assumptions”* because the personnel did not cooperate efficiently and costs increased as they had to *“redo everything”*. Thus, the EA development took much longer than what was expected.

(10) EA-consultant related issues

The CIO of Case J mentioned the Lack of professional EA consultant as one of the major obstacles. Also, the EA consultant of Case G was inexperienced with amateur members. This situation faced the EA project with difficulties as it took *“much longer than expected”* to finish and *“almost failed”*.

According to the CIO of Case A, Lack of innovation in consultant’s team is another EA development obstacle. The interviewee mentioned that *“consultant team just wants to draw a diagram and to show that they have known and modelled processes”* without bringing any innovation to the job, which results in consultant being inflexible. Further, the interviewee mentioned that sometimes EA consultants become inefficient in a way that *“instead of consulting they were taking orders and acted like our employees.”*

(11) Organizational structure deficiencies

The interviewee from Case G mentioned that their *“biggest challenge”* is that *“there is not a central and powerful unit to govern [their] EA”* after development. The interviewee pointed out that when the CEO does not directly manage the CIO; big IT projects like EA develop progress slower with more obstacles. Because *“the manager of that department [which EA is a sub-set to it] does not have enough IT knowledge or resist to changes that IT brings by proposing new technologies and the CIO’s proposal might never reach to the CEO.”*

(12) Lack of personnel knowledge

In Case J, and A lack of personnel knowledge about EA development was a challenge. The CIO of Case A stated that because of personnel’s lack of knowledge *“the data gathering and interview sessions became longer than what was expected”*.

(13) Lack of change management tools

Lack of change management tools mentioned by the Case M hindered an EA project. It was difficult for the EA team of the company to manage changes as they had not had any *“monitoring tool”*. Each unit in the company had a person who was responsible for the changes in the company, which was not acting efficiently. Further, as *“the environment changes rapidly and their time was limited”* lack of a tool to monitor and manage changes during EA development was challenging.

(14) Budget provision

In Case G, *“budget provision”* was the biggest obstacle. The budget was too small to implement all the projects that were defined as the EA results and they were *“postponed each year”*. A limited budget also affects the selection of the consultant. As it was mentioned by Case G, one of the important criteria in selecting a consultant was the cost.

(15) Personnel change resistance

In Cases G, J, and M personnel resistance to change seemed to hinder EA development greatly. Although organizations tried to convince the personnel of their job safety, they still faced resistance. The high-level management should *“reassure the personnel of their job safety by communicating and involving”*. According to the Case H, the reason for personnel change resistance is that the employees are *“too attached to their desks and chairs”*. The employees think if the processes are improved and the tasks are performed automatically, they might lose their jobs.

(16) High costs of training the personnel

Changes in the organizational structure are usually one of the EA results. Therefore, implementing the results of EA development often involves hiring and training new employees or losing the trained ones. In Case M, high costs of hiring, training, and losing personnel was an obstacle. The interviewee from Case M stated that training human resources to become experts in business process development is *“an investment and is expensive for the company”* and when *“[the trained employee] leaves the company or moves to another division”* the company loses its *“potential”*.

(17) Lack of management knowledge

The CIO of Case G mentioned that the managers’ lack of knowledge *“make it so difficult to convince them about the usefulness of developing EA”*. Further, the interviewee mentioned that because of lack of knowledge the manager did not want to be *“involved”* in the project.

(18) Old infrastructure

Being function-oriented instead of process-oriented mentioned by IT manager of Case D to be *“the fundamental problem with most of the organizations”* and it is necessary to

“first fix this fundamental challenge to become process-oriented, then think about EA development.”

B. Analyzing the identified obstacles

Further analyses of the identified obstacles, a priority framework was created to determine the precedence in addressing these obstacles. The levels of priorities in addressing the obstacles are illustrated in Fig 1. Moving from inner layer (Top Management Commitment) to the outer layer (Personnel Engagement) the seriousness of the obstacles alleviates. Top management commitment issue (containing obstacles, such as constant change of management, lack of management knowledge and support, and budget provision) is the most critical issue in EA development. Without complete management’s commitment to the EA project, this project doomed to failure. Management should have enough knowledge of EA to understand the necessity of EA development for the organization and it is the job of enterprise architects to provide management with enough information and rational about the necessity of EA. When the management supports the project, most probably enough budget and resources will be allocated to the EA project. Although the change of management is a big issue during EA development, the EA team should be expert enough to convince the new management to continue with the project. Nevertheless, in some cases a change in management ceased the EA development project.

The second most critical issue in EA development project is to prepare the requirements and infrastructure for the project. The infrastructure issue contains obstacles, such as lack of communication and collaboration, outdated organizational statutes, old infrastructure, lack of change management tools, unclear organizational strategies, and organizational structure deficiencies. The obstacles in this level are more of technical and strategical type. The importance of communication and collaboration in EA development have been well discussed in [47].

After achieving management commitment and preparing the organization from the technical and infrastructural aspects

for initiating the EA development, it is time to address personnel related issues to ensure personnel’s engagement in the EA project. Obstacles, such as unable to set common understanding, lack of personnel knowledge, personnel change resistance, and fluctuation in personnel’s motivation are in personnel engagement level. To be successful in EA development it is crucial to achieving a common understanding regarding the EA and its benefits to the organizations. It is also necessary to be clear about the intentions and processes of EA to gain personnel’s trust and avoid their resistance to change. Most of the personnel-related obstacles are rooted in personnel’s lack of knowledge. The personnel’s lack of motivation is another obstacle in EA development that hinders the project.

In addition to the internal obstacles (personnel engagement, infrastructure preparation and top management commitment), we identified EA-consultant related issues, political issues of the government, and rules imposed by the government as external obstacles that hinder EA development in governmental organizations. The power that government has over the governmental organizations sometimes face EA projects with difficulties or termination.

The external obstacles are as important of the internal ones. Usually, external obstacles are out of enterprise architects control, however, they can alleviate them by adopting appropriate strategies. For example, EA team of the organization must know the rules and regulations imposed by the government in order to prevent conflicts between those rules and the EA results. Furthermore, architects must be aware of the political situation of the country in order to avoid future complications. Some of the EA-consultant related issues can be avoided when selecting an EA consultant for the organization. For example, organizations (top management and the internal EA team) must pay attention to the consultants’ resume and reputation in their selection process to choose the best EA consultant that can address their needs (based on their resources).

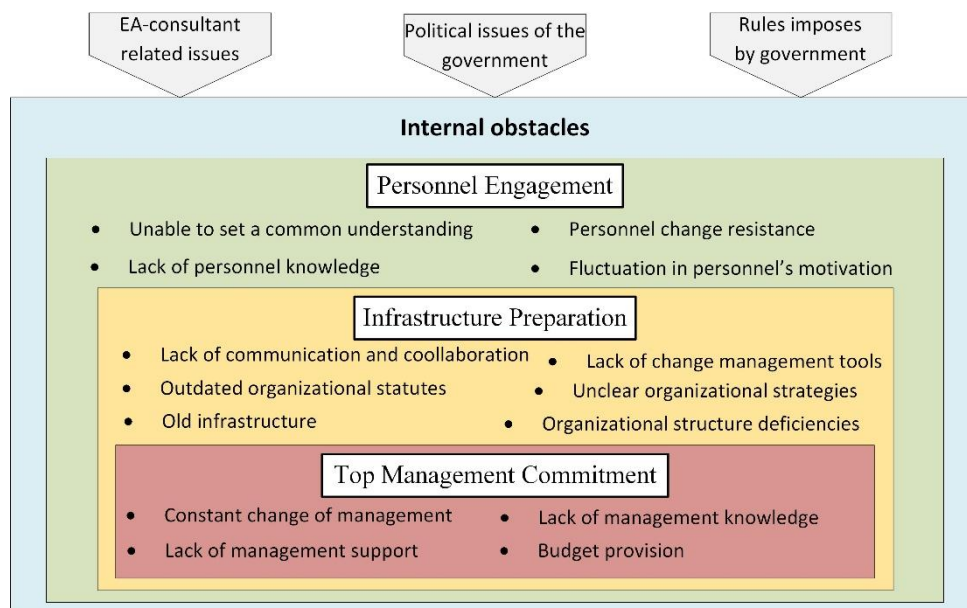


Fig 1 Levels of priority in addressing EA development obstacles

V. DISCUSSION

By analyzing the cases, 18 obstacles were identified that practitioners experienced during EA development in 9 governmental organizations in Iran. Table 2 presents the

comparison between the identified obstacles and the obstacles that are mentioned in the 20 selected previous studies. Numbers in the table represents the corresponding obstacle from section 4.

TABLE 1 COMPARISON BETWEEN IDENTIFIED OBSTACLES FROM EMPIRICAL DATA AND IDENTIFIED OBSTACLES FROM LITERATURE

Literature Obstacles	[48]	[25]	[22]	[23]	[24]	[49]	[26]	[50]	[51]	[52]	[27]	[30]	[53]	[28]	[29]	[54]	[55]	[56]	[39]	[57]
(6)	•	•	•	•	•	•		•	•		•	•	•	•				•	•	•
(7)	•		•		•	•	•		•			•	•	•	•	•		•	•	•
(8)	•	•		•	•	•				•		•	•	•	•			•		•
(9)		•	•		•	•			•		•						•	•	•	•
(10)		•						•	•		•	•	•				•	•	•	•
(11)	•					•	•	•		•	•	•	•						•	
(12)	•				•							•	•	•	•				•	•
(13)		•				•					•		•			•		•		
(14)			•				•	•				•						•		•
(15)	•				•	•				•		•								•
(16)						•			•						•			•		•
(17)					•				•						•					
(18)		•			•							•								

Comparing the findings from empirical data with the literature it was understood that, five obstacles have not been mentioned in any of the previous studies: political issues of the government, constant change of management, outdated organizational statutes, fluctuation in personnel's motivation, and EA conflict with governmental laws.

Political issues of the government: this issue consists obstacles, such as confusion in government, political changes of the country, and political sanctions. Confusion in government is a challenge that many countries regardless of being developed or developing country might be faced with for a period of time [58]–[60]. Confusion in government mentioned several times during the interviews that endangers the EA development. Political changes of the country were determined as another issue imposed by the government that hinders the EA development. This is interesting to realize that politics can influence the EA development of an organization. However, none of the previous studies has mentioned this issue as an obstacle to EA development. Maybe, this situation happens more in developing countries that as the interviewee from Case J mentioned when the government changes the cabinet will change, the industry minister will change and consequently the strategy and the management of the organization will change. Even any changes in the middle of this chain have an impact on the organization. Focusing on governmental organizations in Iran, this issue seems to be

specific only for Iranian organizations due to the political situation against Iran. This obstacle raises specifically because the United States has enacted major sanctions against Iran since 1979 [61], [62]. The situation worsened in 2006 as the United Nations imposed more sanctions against Iran [63]. Maybe it was due to imposing more sanctions by United Nations against Iran that Iran's rank in the world regarding EA activities and e-government faced with the on-going decline since 2005. Surprisingly, political sanctions hinder the EA development in Iranian organizations as they could not buy up to date and advanced technologies.

Constant change of management: Interviewees from Cases M and J, pointed out that constant change of management caused a big problem during their EA development. Looking for the cause of this obstacle, political changes of the country was realized that caused by confusion in government. When management of an organization changes, it affects the whole organization as the strategies and priorities of one manager are different from another manager. It was realized from the data that some managers consider EA development as a high priority task, whilst some consider it as a luxury project and completely ignore the efforts that had been done previously in the organization. In this situation, sometimes the EA development was terminated.

Outdated organizational statutes: it was mentioned by the interviewee of Case A that during EA development they

realized their organizational goals and objectives mentioned in their statutes were different from what the organization is doing currently. This issue caused huge difficulties for them during EA development. Looking for the causes of this obstacle it was realized that the organization suffered from the constant change of management, and according to the political situation of the country at the time, each management applied a different strategy comparing to the previous managers. In this situation, after some times and several changes in management, the main strategy, objective, and structure of the organization was buried somewhere far beyond their mind and they never updated.

Fluctuations in personnel's motivation: this obstacle occurs especially during the post-development phase of EA and during the EA update phase when personnel is not motivated enough to update EA. In addition, it was mentioned that personnel's motivation diminished when they feel that it is hard to cope with the management. It was suggested to employ rewarding systems to increase the personnel's motivation.

EA conflict with governmental laws: As it was mentioned by the interviewee of Case J, EA development in governmental organizations is more difficult compared to private sector organizations. Rules and laws that are imposed on the organizations are more restricted in the governmental sector. Due to these restrictions imposed by the government, Case J faced with an unwilling situation that governmental laws contradict with their EA results.

Besides these five never mentioned before obstacles three of the obstacles were mentioned repeatedly by most of the previous studies: lack of communication and cooperation, lack of management support, and unable to set a common understanding. It can be said that these three obstacles are the ones that need more consideration during EA development.

Moreover, comparing the results with previous studies, which have been carried out in different countries regardless of being developed or developing countries and from different industries, both governmental and private sectors, indicates similar obstacles during EA development. Thus, the obstacles during EA development are mostly the same in different countries and different industries.

VI. CONCLUSION

Employing a multiple case study approach, obstacles during EA development in governmental organizations in Iran were identified to provide a better understanding of the topic. 18 obstacles from which five of them have not been mentioned in the related literature before were identified: political issues of the government, constant change of management, outdated organizational statutes, fluctuation in personnel's motivation, and EA conflict with governmental laws.

Furthermore, this study proposed a priority framework based on identified EA obstacles to address EA development obstacles. Based on this framework the obstacles are either internal or external. Managerial obstacles (internal) have considered as the most critical issues that must be addressed first. Second, obstacles related to infrastructure and

organizational strategies (internal) should be addressed and finally, personnel related obstacles (internal) need attention. External obstacles including, EA-consultant related issues, political issues of the government, and rules imposed by the government need careful consideration in EA development.

Some of the mentioned obstacles came up due to the peculiar political situation of Iran, such as the political sanction against Iran that hindered the EA development. The political situation of countries might have a positive or negative effect on EA development. In case of Iranian organizations, it had negative effects. It was also realized that politics and country's relationship with the world influences the EA development. Although the positive effect (no effect) of it may not be comprehensible until something unusual happens in the political process of a country (for example sanctions).

This study is a great assist for both practitioners and researchers because of the essentials of digital capability in the success of businesses and EA being the central competence area in digital transformation. For EA practitioners, this study is a great assist by providing a better understanding of issues that they are going to encounter during EA development. Reviewing and comparing the findings with the previous literature, this study can be utilized by researchers in this field who want to get a comprehensive overview of EA development obstacles.

One of the limitations of this study is that the cases were selected only from Iranian organizations. Investigating the EA development obstacles in the governmental organizations from other countries would increase the reliability and generalizability of this study. Although interviewing the management level of the organizations was a little difficult to arrange but all the interviewees were from the management level of the organizations. However, having other stakeholders' perspectives, such as EA consultants and personnel could clarify and explain some issues.

In future, in order to be able to make a generalization, studying more cases from different countries is necessary. Further, considering lack of communication and collaboration as one of the fundamental obstacles, this issue will be more investigated in future.

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