Evaluation of E-Government Effectiveness in Tehran Water and Wastewater Company

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Abstract: In line with the development of e-government, Tehran Water and Wastewater Company can examine its current status from various aspects of ICT development and improve their desirability by planning on relevant indicators and criteria. In this regard, the purpose of this study was to evaluate the effectiveness of e-government development. Statistical population in the qualitative part was the managers and in the quantitative part of the research it consists of a number of managers in the field of information technology of Tehran Water and Wastewater Company with 13 subsidiaries comprising 240 persons. The sample size was determined by Cochran formula and simple random stratified method. 148 individuals were selected as sample size. In order to collect data in the qualitative part, an open questionnaire was used and in the quantitative part a closed questionnaire was used. Expert opinion was used to determine the validity of the questionnaire and Cronbach's alpha was used to determine the reliability, and the results showed that the reliability was confirmed. Structural equations with AMOS software were used for data analysis. The results showed that the model has 7 dimensions which include structural, behavioral, environmental, process factors, output, outcome and impact that can be effective in applying e-government in Tehran Water and Wastewater Company, also the necessary investigations for fitness of the results showed that the proposed model has a good fit. Therefore, this model can be used to evaluate the effectiveness of e-government application in Water and Wastewater Company.

Keywords: ICT, Effectiveness, E-Government, Water and Wastewater Company.

INTRODUCTION

In general, information technology can be a good platform for sharing knowledge, developing skills, sharing innovative solutions of e-government, and building capacity for sustainable development across countries. Since the mission of Tehran Water and Wastewater Company is to provide fair, continuous and sustainable use of drinking water to the citizens of Tehran, to help improve public health by collecting and disposing of wastewater and protecting the environment through the use of modern technologies. In addition, the location of the political center and the presence of the country's sensitive centers in the province have doubled the importance and sensitivity of the company's responsibilities in performing its service duties. Tehran Water and Wastewater Company performs its assigned tasks through its subsidiaries, including six water and wastewater companies in Tehran (ABFA companies 1-6) and some others in east, southwest and southeast of the province, cities and towns of western Tehran, company of water supply and water and wastewater treatment company and also sewage company of Tehran, and considering one of the major goals of the company strategy that is to improve customer service through the improvement of service systems and the deployment of electronic services (non-personal services). In this thesis, we attempt to provide an evaluation model for the effectiveness of e-government based on the characteristics of e-services of native companies.

In line with the development of e-government, Tehran Water and Wastewater Company can evaluate its current status from various aspects of ICT development and enhance its desirability by planning on relevant indicators and criteria. An e-government realization evaluation model has been proposed to measure the e-government formation process, and in this study, how to implement this process is prepared. Regarding the realization of e-

government, necessities are raised that are considered in different researches with different topics and specific characteristics. Everyone has been defining and conceptualizing e-government and formulating e-government evaluation indicators and indexes from a perspective, and has examined a model for e-government evaluation. Therefore, in this thesis, the development and design of an e-government effectiveness evaluation model for Tehran Water and Wastewater Company is investigated. The main question in this thesis is what characteristics should an appropriate model for evaluating the effectiveness of e-government in Tehran Water and Wastewater Company have?

PROBLEM STATEMENT

The information and communication revolution at the end of the twentieth century heralded the emergence of a new model of government administration that had evolved traditionally over the years. With the increasing development of socio-economic activities and the multiplicity and diversity of demand in communities, governments have moved to implement an integrated ICT system and extend it to provide services to citizens. In developed and developing countries, the concept of e-government and its extension is one of the essential categories of the country. Governments have modified or modernized this concept and see it as re-engineering of government, which will require fundamental changes to be achieved and will pose serious challenges. This process will result in a large-scale transformation-based initiative in the field of public administration that leverages ICT capabilities in government-related services which will lead to development of high-quality, high-speed public services and support of excellent goals of economic and social development related to citizens, mutual cooperation of brokerages and public administration levels and government authorities.

One of the most important issues in an information society is the issue of e-government. E-government is to provide the conditions for governments to provide their services to citizens 24/7. This has been seriously on the agenda of governments in recent years, with government officials mobilizing their forces to meet such conditions and seeking to reform political, economic and social processes with the help of modern ICT to provide services to citizens in a more efficient way. In fact, the use and expansion of e-government is often aimed at making changes to government processes such as decentralization, improvement of efficiency and effectiveness. There is basically no single definition of e-government, and this is due to the dynamic and changing nature of technology. Today, the use of ICT to improve efficiency, effectiveness, transparency, and comparability of information and money exchange within the government, between government and its affiliated organizations, between government and citizens, and between government and the private sector of e-government (Marche, 2014). E-government offices set up in different provinces of the country provide various law enforcement and registration services, which is a step forward in providing services to Iranian e-citizens (Provan, 2011).

However, our e-government, with the procedures prevailing in the Western world, suffers from structural and executive, which of course the national resolve and the development of a comprehensive plan in this regard can overcome many obstacles in the country's 20-year vision. An effective strategy for e-government deployment will lead to significant improvements such as the following; e-government deployment strategy is the first step in formulating e-government strategy of its definition. This means that policymakers need to know exactly what they are looking for. E-government has high potentials to create electronic communications between government and citizens, government and the private sector, and various components within the government (Hamner & Qazi, 2013).

Now e-government in Iran is active in some areas. Nearly 1,000 government sites in Iran, despite all the shortcomings and deficiencies in official digital information on the web, are performing some of the country's digital public relations. However, the e-government of Iran, with the procedures prevailing in the Western world, suffers from structural and executive backwardness with the procedures that prevail in Western countries, which of course the national resolve and the development of a comprehensive plan in this regard can overcome many obstacles in the country's 20-year vision. E-government has high potentials to create electronic communications between government and citizens, government and the private sector, and various components within the government. Each government can define the scope of influence and expansion of this phenomenon when formulating its desired e-government strategy. The strategy should then be formulated. This strategy is important because it guides practical plans re-engineering of the processes and procedures in a way that is in line with and supportive of e-government (Rahimi, Khatami, and Shafeiha, 2009). Given that the implementation process of structural reform programs in the country's administrative system is particularly slow, and that it will not be essentially possible for the government to properly manage economic development programs without going through this phase, it is desirable to pursue the reforming programs of the country's administrative system more rapidly by identifying the success factors of e-government deployment and accelerating its implementation. Modern ICTs have made it possible to re-engineer government architecture and make it more accessible, efficient and responsive. The use of these innovations in the process of managing the affairs of society has given rise to a reality called e-government. In the meantime, governments have to redefine

their roles and functions in order to provide services to social stakeholders, e-government has emerged in response to this need (Soltanifar, 2010).

BACKGROUND
In an article entitled "Evaluating the Role of E-Government in Public Administration Reform", Agus (2019) stated that data were collected based on four parameters: Citizen Document Services, Business Licensing Services, Planning Transparency and Financial Transparency. Each of these parameters will be evaluated with the score 0,1,2,3, or 4. Index of Reform (IR) is also calculated with the range 0 to 4. About 32 Websites samples are taken from the capital of provinces in Indonesia and non-capital cities in Java. The result shows that only 15,6 % websites having IR between 2.75 to 4.00 and city of Surabaya has the highest rank. Nationally, by combining the percentage of value 3 and 4 for each parameter, we obtain the percentage 18.75% for citizen service, 37.50% for business service, 25% for planning transparency, and 40.6% for finance transparency. Meanwhile, West Indonesia with 35.30%, 52.94% ,35%, and 42% is higher than East Indonesia with 0%, 19.97%, 13.34%, and 40%. Based on corridor, for the citizen service and business permission., Corridor Java and Sumatera had the percentage of 45.45% & 17%, and 54.55%& 50% which are higher than other corridors. On the planning transparency, Sumatra corridor had the highest score of 50%, then follow by Java with 27%. But corridor Bali & Nusatenggara with 100% is the best on the finance transparency, follow by Java (46%) and Sumatera (34%). As a conclusion, PAR using e-Gov in Indonesia is still running slowly. West Indonesia, with Java and Sumatera corridors, is better than East Indonesia in e-Gov implementation. But for the finance transparency, corridor Bali & Nusa Tenggara of East Indonesia is the best. It is recommended that each city government enhance the static content and gradually move to the transaction content, such as for ID card which the order progress can be known online since the order submission.

Lano (2018), in an article entitled "E-Government Adoption in Indian Governmental Organizations", stated that India, a rapidly growing economic superpower, has been adopting and implementing E-government with lightning speed. The Government of West Bengal (FED) has implemented e-government in the Pension Administration, for example the Pension Management System, to provide faster and more efficient government services. The success of the pension management system depends on many factors, one of which is the successful adoption by employees that has been empirically analyzed. This research has used a technology acceptance and trust model to construct a conceptual model. Research data were collected from 60 employees working on the collection system and the model was analyzed by regression analysis. The findings show that the effective factors included in the conceptual model of research are confirmed. The study also shows that the system does not fully perform the error-free tasks that the West Bengal government must address. This is the first time that e-government has been adopted by employees at the Indian Pension Administration.

METHOD
The present study is a mixed methods research and exploratory hybrid design was used. The statistical population of this research is comprised of managers of information technology department of Tehran Water and Wastewater Company with 13 subsidiaries including 240 persons. Since in the present study the statistical population and the data scale are qualitative and the size is specified, the following formula was used to determine the sample size:

$$n = \frac{N \times (Z_{\alpha/2})^2 \times p(1-p)}{\varepsilon^2 \times (N-1) + (Z_{\alpha/2})^2 \times p(1-p)}$$

In the above formula n represents the sample size, N the size of the statistical population, p is the ratio of success and ε is estimation accuracy.

Thus, the sample size through Cochran's research formula is:

$$n = \frac{240 \times 1.96^2 \times 0.5 \times 0.5}{0.06^2 \times (240-1) + 1.96^2 \times 0.5 \times 0.5} = 147.95 \approx 148$$

As can be seen in the formula, the sample size is approximately 148 persons. A total of 150 questionnaires were distributed to achieve this sample size and return the desired number. The design is qualitative because it will be assessed through a conceptual model questionnaire and the information will be collected and analyzed through a questionnaire and it is descriptive because it will be conducted as a case study in Water and Wastewater Company. Structural equations were used to test the research hypotheses.

FINDINGS
Model quantification
In this section, given that it became clear how the conceptual model is, the sample size is appropriate, and all the identified dimensions are effective on the desired model, the model will be quantified using partial squares

technique and t-bootstrapping test. The results are in the form of figures. The results of the above figure show that all coefficients obtained for model dimensions are positive and all values of t are greater than 1.96 in Table Z. It can be concluded that the model is significant and the results can be cited.
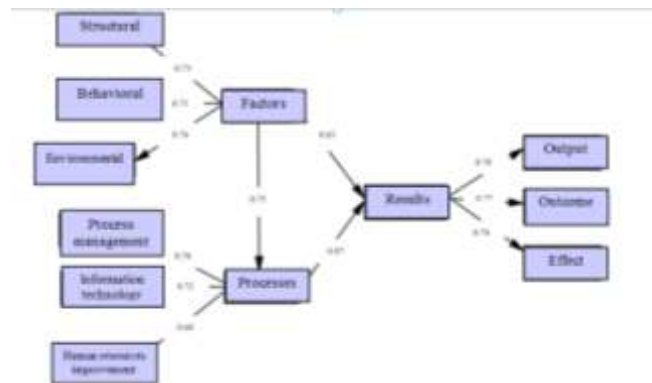

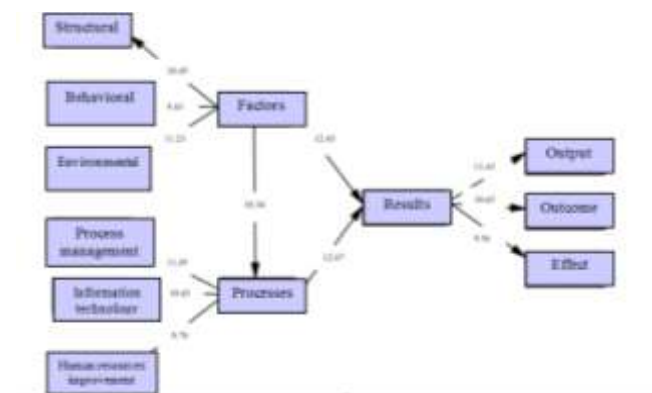**Figure 1: Causal relationships between model variables in standard estimation mode**

Figure 2: Causal relationships between model variables in significant estimation mode

According to the table, it can be stated that all structural, behavioral and environmental factors affect the processes by 0.83 with a t value of 12.45 and all structural, behavioral and environmental factors will affect the results by 0.75 and a t value of 10.34. And also all process dimensions (process management, information technology and human resources improvement) affect the results by 0.87 and a t value of 12.67. It can be stated that the causal relationships existing in the research model are confirmed and the model is also appropriate.

Table 1: Path test results

Row	From	To	Standard path coefficients	T statistic	Result
1	Factors (structural, behavioral, environmental)	Results (output, outcome, effect)	0.83	12.45	Confirmed
2	Factors (structural, behavioral, environmental)	Processes (process management, information technology and human resources improvement)	0.75	10.34	Confirmed
3	Processes (process management, information technology and human resources improvement)	Results (output, outcome, effect)	0.87	12.67	Confirmed

Model fitting

The goodness of fit indices including GFI, AGFI, and RMSEA are used to fit the model. The values in Table (4-15) show that the model results are reliable. Because both GFI and AGFI indices were estimated above the desired range, this statistic was greater than the 0.90 criterion. Also, the ratio of chi-square to degree of freedom (X^2 / df) shows a good value. Also the RMSEA error criterion was estimated to be 0.03 which was less than 0.08. Based on the estimations presented, it can be concluded that the model tested in the population had a

relatively good and acceptable fit. Therefore, the results of the research model show that the model used in the present study had good fit.

Table 2: Statistics on goodness of fit of e-government effectiveness model

Fit indices	Symbol	Criterion	Research values	Fit result
Dividing Chi-square by degree of freedom	X^2/df	$3\leq$	1.34	Good fit
Root Mean Square Error of Approximation	RMSEA	$0.08\leq$	0.03	Good fit
Goodness of fit index	GFI	$0.9\geq$	0.94	Good fit
Adjusted goodness of fit index	AGFI	$0.9\geq$	0.91	Good fit
Comparative Fit Index	CFI	$0.9\geq$	0.95	Good fit
Incremental Fit Index	IFI	$0.9\geq$	0.93	Good fit
Normed Fit Index	NFI	$0.9\geq$	0.92	Good fit
Non-normed Fit Index	NNFI	$0.9\geq$	0.96	Good fit

According to the findings, it was found that at 95% confidence level all paths are significant and thus the three main dimensions and components associated with the model are confirmed and presented in the operational and final model of e-government effectiveness evaluation (Figure 3-4).
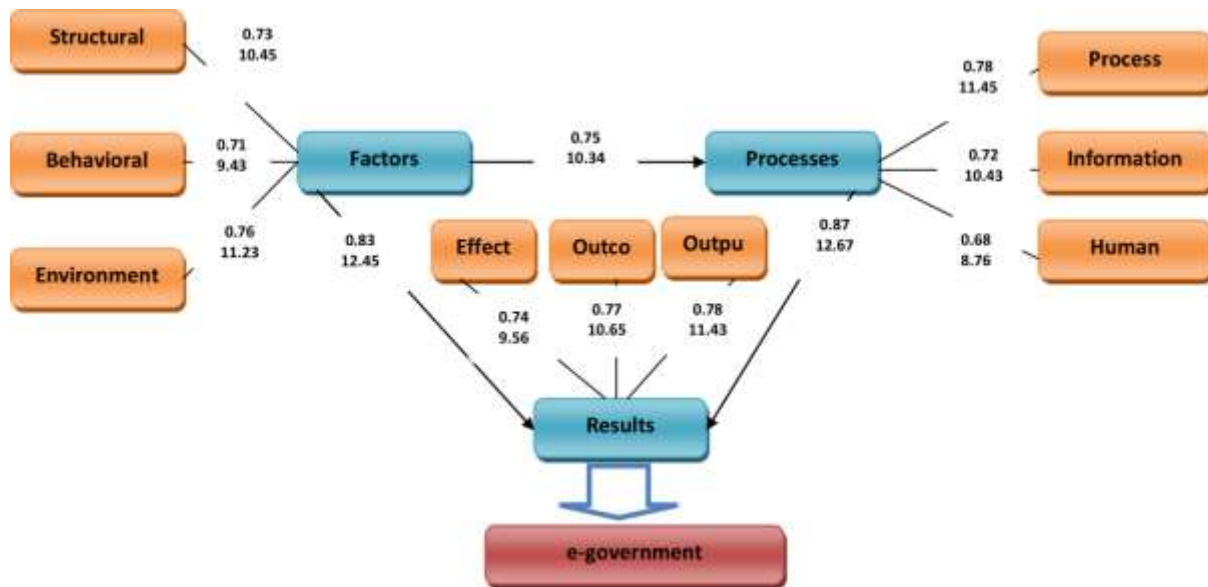

Figure 3. Operational model of the research

CONCLUSION
Answering the first and second research questions
1. What are the components and indicators of the proposed model of e-government effectiveness evaluation indicators?

To answer this question, all the components and indicators of the e-government effectiveness evaluation model were identified from theoretical and empirical literature to determine the model and theoretical framework. By investigations, 7 main dimensions and 75 important sub-components were identified. Delphi technique was used to finalize them. After completing three rounds of the technique it was found that the theoretical consensus among the experts on the sub-component was approximately 0.944 indicating high consensus on the sub-components including structural factors, behavioral factors, environmental factors, processes, outputs, outcomes, and effects, each of which had sub-components as shown in Table 1-5. In this regard, it can be stated that researchers in dimension of structural factors have been trying to push the organizational structure toward being organic and pyramid reduction, which will increase e-government efficiency in the organization, with respect to sub-components such as non-pyramidal structures, proper communication and paying attention to management styles. On the other hand, in the behavioral dimension, it was found that attention to education, learning, nurturing of talents as well as ethics can improve employees' work and non-work behaviors and help the organization achieve its goals. It was also found in the environmental dimension that stakeholders, ie customers, government, employees, etc. should always run an organization according to the laws, regulations and changes and in line with global developments and increase e-government productivity. Also in the dimension of processes, paying attention to process management, paying attention to the use of technology in

doing business, and finally paying attention to improving human resources for doing work activities will play an important role in improving the organization's processes to improve e-government effectiveness. All of these factors will also provide conditions that will have outputs, outcomes, and effects that can ultimately affect organizational cohesion, rapid responsiveness, increased creativity and innovation, customer orientation and stakeholder satisfaction, and all the results will somehow make e-government effective.

Table 4: Components and indicators of e-government effectiveness model

Description of factors	Sub-components	Description of factors	Sub-components	Description of factors	Sub-components
Structural factors	Organizational structure	Behavioral factors	Experience	Environmental factors	Common vision
	Delegation of authority		Education		Acceptance of customer rule
	Optimal division of tasks		Learning		Law and regulations
	Monitoring and control.		Individual talent		Stakeholders' demand.
	Multiplicity of working components.		Work ethics		Economic management
	Management style.		Individual suggestions and criticisms		Government policies
	Organizational communications		Human relationships		Competitiveness
	Democratic structure				Environmental change management
	Unofficial organization				Alignment with globalization
	Appropriate career path				social responsibility
					Pay attention to customers' demands

Description of factors	Sub-components	Description of factors	Sub-components	Description of factors	Sub-components	Description of factors	Sub-components
Processes	Modifying work processes - workflow.	Output	Structural cohesion and flexibility.	Outcome	Creating value for customers.	Effect	Increase in shareholder profits.
	Systematic thinking.		Fast response.		Innovation		Structural resilience.
	Team building.		Comprehensive communication.		Self-control.		Increase in freedom of action.
	Empowerment.		Self-assessment.		Behavioral and ethical disposition.		Unity of command.
	Technology deployment.		Teams with performance		Reduction of pyramidal structure		Low horizontal level.
	Performance evaluation		Customer orientation		Proportion of responsibility and authority.		Competent members and synergy .

	Access to information.		Spirit of transformism		Unofficial communications.		Finding talents.
	Proper supply of resources.		Value orientation of organization		motivating		Existence of customer management system
	Research and Development.		Management information system		Efficient management		Participatory leadership.
	Process orientation.		Individual responsibility		Existence of administrative health		
	Attention to motivation.						

Third research question

2. What is the priority and weight of each of the components and indicators of e-government effectiveness model?

Referring to Tables 4-17 and Figures 4-1 and 4-2, it can be stated that all structural, behavioral and environmental factors affect processes by 0.83 with a t value of 12.45 and all structural, behavioral and environmental factors will affect results by 0.75 and t value of 10.34 and also all process dimensions (process management, information technology and human resources improvement) will affect results by 0.87 and a t value of 12.67. It can be stated that the causal relationships existing in the research model are confirmed and the model is appropriate. Concerning the results, the significance and coefficients of the model it can be said that among the main factors, process factor had the greatest effect on results, which indicates that Water and Wastewater Company needs to pay more attention to its work processes to increase effectiveness of e-government. These processes are summarized in three main categories (process management, use of information technology in processes, and human resources improvement for process-related activities). Water and Wastewater Company should first identify all the activities of the organization by drawing up its work process map and then, using information technology approaches, try to drive all processes to being systematic and then, through tools such as reengineering, reverse engineering, value chain, eliminate or combine all inefficient and unnecessary and surplus activities which shorten the process flow and increase the speed and accuracy of the work and then train human resources according to the new processes and then evaluate the staff performance and provide periodic training through training need assessment and consider and always monitor them. Also, given the changes in processes, it can be expected that structural, behavioral, and environmental factors affecting processes should be adapted to new processes and changes in organizational structure design are attention to management type, how to empower employees and paying more attention to environmental changes to adapt to changes and bringing about the changes needed to increase the accountability of the organization to stakeholders, including employees, customers and other affiliated entities, which can ultimately lead to short-medium- and long-term results which leads to increased organizational cohesion, increased ability to adapt to environmental changes, increased employee creativity, increased customer satisfaction and institutionalization of professional ethics in Water and Wastewater Company.

Fourth research question

3. What are the characteristics of the evaluation system of the e-government effectiveness evaluation indicators' level?

According to Figures 4-1, 4-2, it can be stated that the e-government effectiveness model has causal and significant relationships between the model's dimensions in standard conditions and the results obtained can be cited and the final and operational research model can be presented which is provided in Chapter Four. According to Figure 4-3, which is the final model of the research, it can be stated that in dimension of structural factors, Water and Wastewater Company should redesign the organization in order to increase the structural flexibility to make the necessary changes and to institutionalize unofficial working relationships in order to improve organizational performance along with official relationships, leading to increased effect of structural factors on e-government effectiveness in the organization. On the other hand, Water and Wastewater Company should increase the effectiveness of e-government in Water and Wastewater Company by paying attention to work experience of employees, periodic training, creating learning, pay attention to individual talent and nurturing it, institutionalizing work ethics, paying attention to individual suggestions and criticism and ultimately improving human relations. The should be met in the form of organization vision, operational goals, strategic goals, ethical charters and formulation of organizational rules and regulations along with guidelines.

The organization then increases the speed and accuracy in performing organizational activities through modeling processes, designing processes and applications, integrating service-based architecture, performing processes, controlling and analyzing processes, and aligning processes with organizational goals and optimizing them through the use of information technologies which will ultimately increase the efficiency of processes. It is also important how to deal with issues in creating balance, reducing conflict, and making an optimal use of the potentials of individuals and elements. It will be insignificant to harness individuals' abilities and push them into conflict. Laws and regulations are arbitrary and decisions are temporary and based solely on personal beliefs and classical criteria that will make poor use of one's abilities and drive them to conflict. With the approach of specializing the area of quality in Water and Wastewater Company, the number of experts referred to as scientific staff will increase. On the other hand, the systematic view of these individuals will have a particular tendency to be useful to the system. Therefore, how to get them motivated will also be different. On the other hand, the systematic view of these people cause tendency to the performance of areas where the methods are known and ideas can be presented in a predictable way. Therefore, the effect of managing the organization on productivity by motivating is when it is possible to have all the employees, especially the scientific staff, present given their specific morale. Therefore, managing e-government organizational processes has had a good effect on employee participation. Simplifying processes, making software practical, and the possibility to use the hardware needed to deliver ideas are among effective measures. And as the results show, as organizational processes improve, the organization will see tangible results that can improve customer service quality, accelerate organizational responsiveness and meet the demands of all stakeholders, and ultimately achieve goals through process-oriented approach, which is important as the final results for the organization.

The results of the final model are examined with the results of various researches investigated in dimensions (structural, behavioral, environmental), processes, results (output, outcome, and effect), which are consistent with research results in sub-components as follows: with (Joan et al., 2016) in the sub-component of organizational structure and delegation of authority, with the results of the research (Wenhau et al., 2015) in the sub-component of optimal division of tasks, monitoring and control, with research results (Frank et al., 2015) in the sub-component of the multiplicity of work components, management style. organizational communications (Ronica et al., 2014), with the research results (Ronica et al., 2014) in the sub-component of modifying work processes and workflow, in the sub-component of systematic thinking, process performance with the research results (Alvani, 2004), in the sub-component of modification and redesign, organizational fault-finding with the research results (Xavoo, 2016), in the sub-component of structural cohesion and flexibility, structural resilience with the research results (Datis, 2013) in the sub-component of comprehensive communications, reduced pyramidal structure, unity of command, low horizontal level, experience, education, learning, leadership style, law and regulations, stakeholders' demands, government policies with the research results (Makai, 2014), in the sub-component of increased freedom of action, proportion of responsibility and authority with the research results (Lynn, 2017), in the sub-component of unofficial communications, clarity of roles and tasks, access to information, research and development with the research results (Lee, 2012), in the sub-component of participation, team building, staff empowerment, educational content with the results research (Sun, 2016), in the sub-component of finding talents, behavioral and ethical disposition, participatory leadership, self-evaluation, teams with performance with the research results (Beck, 2014), in the sub-component of common vision, acceptance of customer rule with the research results (Tayebi et al., 2009), in the sub-component of competitiveness, environmental change, globalization with the research results (Ebrahimi et al., 2004), in the sub-component of technology deployment and market need assessment, providing resources with the research results (Zhong, 2016), in the sub-component of performance evaluation, educational planning, focusing on daily activities, increasing creativity and accountability, and competent members and synerg with the research results (Lentz, 2013), in the sub-component of competitiveness, environmental changes, globalization with the research results (Ebrahimi et al., 2004), in the sub-component of work ethics, individual suggestions and criticism with the research results (Miandari et al., 2013), in the sub-component of individual talent with the research results (Nouriani et al., 2014), in the sub-component of performance management with the research results (Arnon, 2011), in the sub-component of self-control, motivating with the research results (Gaaw, 2014), in the sub-component of common vision, acceptance of customer rule with the research results (Tayebi et al., 2009), in the sub-component of economic conditions with the research results (Ansari & Mohammadi, 2004), in the sub-component of technology deployment and market need assessment, proper supply of resources with the research results (Zhong, 2016) and in the sub-component of fast and appropriate responsiveness of organization and value creation for customers, innovation with the research results (Hondaz, 1201). Each of the aforementioned researchers considered the sub-components to be effective on e-government effectiveness, which were also confirmed in the present study.

Regarding the fitting of the model with reference to Table 4-18 it can be stated that the model has a good fit. Regarding model fit indices it can be said that

- **Root Mean Square Error of Approximation (RMSEA) Index**

The RMSEA index is used in most confirmatory factor analyses and structural equation models. According to McCallum, Brown, and Shogawarawa (1996), the fit of the model is good if the value of this index is less than 0.05, and the fit of the model is mediocre if it is between 0.05 and 0.08.

- **Goodness of Fit (GFI) Index and Adjusted Goodness of Fit (AGFI) Index**

The GFI and AGFI indices suggested by Yorksk and Sorbum (1989) do not depend on the sample size. GFI value must be equal to or greater than 0.9. The Adjusted Goodness Index or AGFI is another goodness index. This index is equivalent to using mean squares instead of sums of squares in the numerator and denominator of GFI. The range of variation of GFI and AGFI is between zero and one. The acceptable value of these two indices must be equal to or greater than 0.9.

- **Normal Chi-Square Index (relative)**

One of the general indices for calculating the free parameters in the calculation of the fit indices is normal chi-square, which is calculated by the simple division of the chi-square by the degree of freedom of the model. If this value is less than 2 it is desirable and if it is less than 5 it is acceptable with negligence.

- **Normed Fit Index (NFI)**

Normed fit index, also known as the Tucker-Lewis index, is used to compare the chi-square values of an independent model (a model in which there is no relationship between the model variables and their covariance is zero) and evaluates the chi-square a saturated model. The range of acceptance of this index is considered above values of 0.9. If this value is above 0.95, the model has a good fit.

- **Non Normed Fit Index (NNFI)**

Due to the sensitivity of the normed fit index to samples less than 200 that show lower values, the non-normed fit index is employed. The only disadvantage of the non-normed fit index is that it sometimes shows values above 1, the acceptance range of this index is above 0.95 indicating good fit.

- **Incremental Fit Index**

Incremental fit index was introduced based on the comparison between the theoretical model and the independent model. The acceptance range of this index is 0.9 for acceptance of the developed model and at least 0.95 for confirmation of goodness of fit model.

- **Comparative Fit Index (CFI)**

One of the most appropriate and widely used interpretative indexes for good or poor fit of a developed model is comparative fit index, which compares the existing model with the independent model. One of the advantages of the comparative fit index is its insensitivity to sample size, which can be used instead of the root mean square error of approximation which is sensitive to sample size. The range of acceptance of this index is between 0.9 and 1, and if the CFI is greater than 0.95, the model has a very good fit. But what matters is goodness of the developed model. In this section, the model fit was performed taking into account the indices proposed. It can be stated that the x^2/df index is 1.34 which is less than 3, RMSEA index is 0.03 which is lower than 0.08, GFI index is 0.94 which is higher than 0.90, AGFI index is 0.91 which is higher than 0.90, CFI, IFI, NFI and NNFI indices are greater than 0.90 (0.95, 0.93, 0.92, 0.96, respectively) indicating that the model has a good fit and that the model presented can increase the effectiveness of e-government in Water and Wastewater Company according to the developed goals.

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