ISSN 2278-3091
Volume 8, No.6, November – December 2019
International Journal of Advanced Trends in Computer Science and Engineering
Available Online at http://www.warse.org/IJATCSE/static/pdf/file/ijatcse148862019.pdf
https://doi.org/10.30534/ijatcse/2019/148862019

Evaluating the Readiness of Organizations to Deploy IT
(Case Study: Municipality Organization of Birjand, South Khorasan, Iran)

Hossein KardanMoghaddam [1], Amir Rajaei [2], Zahra Hosseini [3*]
[1]Department of Computer Engineering, Birjand University of Technology, Birjand, Iran
h.kardanmoghaddam@birjandut.ac.ir
[2]Faculty Member of Computer Engineering, Velayat University, Iranshahr, Iran
[3]Department of Computer Engineering, Birjand University of Technology, Birjand, Iran
Zahra_hoseini1996@yahoo.com

ABSTRACT

The benefits of using information technology (IT) in municipalities help expedite and improve the process of serving citizens. Information technology is capable to address a large number of human errors. Additionally, the organizations, where IT-based equipment is operating, are relatively more efficient than other organizations. Birjand municipality in South Khorasan Province (Iran) was selected as the case study to measure the readiness to deploy information technology. To collect data, 100 experts were asked through a 26-question questionnaire. Five dimensions including ICT infrastructure, IT human resources and their culture, IT-based processes, management and security were evaluated to measure the electro readiness of Birjand municipality.

Key words: IT, ICT, IT infrastructure, Readiness of IT

1. INTRODUCTION

Information technology (IT) provides a key element in removing spatial and temporal constraints, better and faster access to information, up-to-date data, etc. to the users. Using information technology is one of the ways that empowers the company and organization with a distinct competitive personality, and the flexibility of information technology enables the company or organization to respond quickly to changes and meet the customer needs. With the proper IT infrastructure, organizational learning will improve company capabilities as a process whereby a company or organization develops new knowledge and incorporates it with people's usual experiences in organizations. IT infrastructures are essential for development in any country. The importance of these infrastructures is to such an extent that IT can be considered as a means of supporting the goals of each country's GDP and as one of the important factors in changing and improving business conditions. This has led to the investment of major economic powers and large commercial corporations around the world in the field of information and IT and its necessary information infrastructure. However, what is important, regarding the ongoing evolution of human life, is the challenge of using information technology infrastructures to meet the new and ever-increasing information needs of users. Therefore, it has been argued that investment in current infrastructure should be responsive to future demands. With the increasing importance of Internet, companies and organizations involved in various industries are utilizing it to gain more competitive advantages [1]. Internet is one of the drivers of change in industries, and the need to make fundamental changes to traditional processes has been repeated in government, industrial and academic studies [2]. In order to implement Internet-based processes and provide online services in various sectors of government and other organizations, the most important factor to consider is to evaluate the processes of acceptance and implementation of electronic processes in organizations to ensure its effectiveness and efficiency [3]. It is widely believed that information technology is an engine for growth, development and assistance to nations and that some changes are necessary in this field [4]. One of the requirements of administration in information society governments is the use of information technology to re-engineer government architecture, increase accessibility, enhance efficiency and government responding, which has created a reality known as e-government [5]. Since municipalities are responsible for a major part of government activities in cities and play a major role in any kind of urban planning and decision making, they can be the focal point for access to e-city and ultimately e-government. E-municipality is an organization utilizing ICT provides its services in the area of municipal duties in a fast, accessible and secure way to citizens.

2. RESEARCH BACKGROUND

Pollack & Adler (2017) [6] in a study titled “Skills that Improve Profitability”, studied the relationship between project management, IT capabilities and the profitability of

SMEs in Australia. In this study, it was assumed that the use of project management and IT capabilities would be appropriate for the business performance of the organization. This study investigates the above hypothesis by examining the positive impact of using project management and IT capabilities on total sales of work and profitability. Models were developed to describe the relationship between project management, IT capabilities, profitability, and total sales using multiple linear regression and binary logistic regression. The results showed that while controlling for the impact of other business skills, project management and IT capabilities have a positive and significant effect on sales and profitability. Colin et al. (2015) [7] conducted a study to analyze the relationship between ICT, supply chain management (SCM). To do so, a survey was conducted among 288 managers of manufacturing SMEs in Aguascalientes. The data were analyzed using structural equations, EQ software support, and linear regression with SPSS software. The results show that, in fact, ICT strategies have an impact on SCM performance. The use of ICT facilitates the management of information resources and avoids delays, which not only reduce costs and increase customer compliance but also increase the overall competitiveness of the organization. Peng et al. [8] in China showed that information technology can deliver business value only by consistent integrating IT capability with a firm's ability to optimize business processes and improve supply chain management. Integration of supply chain and IT capabilities is one of the positive and significant factors for improving company performance. Movahedi et al. [9] have investigated the role of information technology on the performance of Tehran mobile communication company in Iran. In their research, the role of information technology on the performance of mobile communication company in Tehran province has been studied. The results of the research showed that IT is effective on performance factors including low cost leadership and differentiation.

Using IT, digital municipality delivers fast, accessible and secure municipal services to its citizens. In such a system, citizens receive all the services they need in the best possible way. The municipality by using IT and the concentration of services and information will also be in control of its activities and citizens and ensure the accuracy and quality of the services provided [10]. Sarfarazi and Memarzadeh (2007) have defined e-municipality as an organization utilizing ICT to provide services in the area of municipal duties in a fast, accessible and secure way to citizens. On the other hand, municipalities are learning to operate optimally through transforming and deploying a comprehensive electronic system including online services, re-engineering the organization, citizen-centric processes and integrating across various sectors to simplify interaction, reducing the costs and expanding urban services [11]. In Norway, municipalities are considered a layer of government with the most contact with citizens and businesses and are responsible for providing basic services to them [12]. However, in developing countries this is less implemented and the municipalities have less power in their area of local responsibility. In these countries, municipalities adopt e-government after implementing ICT in the upper layers of government. This started with the creation of simple municipal websites and progressed over time to e-government [13]. In these countries, municipalities have distinct incentives to implement e-government, and this will vary depending on local economies. They may even pursue different goals than e-government implementation due to differences in provincial governments [14]. Brueckner (2002) [15] while stating that IT can enhance the quality of life of citizens of a city or country, assessed the e-readiness of the Michigan municipality and finally provided a web site to the municipality under the name WAES. Flak et al. (2005) [16] designed a model called 3MEGAP and used it to evaluate Norwegian municipalities, electronically. The results showed that the authorities view was simplistic about e-government and the bureaucratic government would be more prevalent.

Ghapanchi, in a study, identifies the most important factors affecting e-government implementation planning based on Panel theory [17]. Farmanbar, Seyyed Javadi and Yazdanpanah (2009) in a study entitled "Electronic Evaluation of Isfahan Municipality" based on the model presented by Dr. Hamid Nouri, performed electronic evaluation of Isfahan municipality in Iran. The study concluded that the municipality of Isfahan should focus more on integrating systems and electronification of different sectors of city services. [18]. Also, Shirvani and Baneshi (2009) using the model developed by Dr. Hamid Nouri, have evaluated the new city of Baharestan in Iran in a study entitled "Evaluation of e-Readiness of New City of Baharestan Municipality Regarding the Realization of e-Municipality". They assessed the e-readiness of the municipality of Baharistan at 38% and concluded that it should increase its e-readiness in three dimensions of technical infrastructure, electronic systems and services and organizational readiness [19]. Zarkesh zade, Rahimov and Soleimani present a model for evaluation, including three dimensions of technical infrastructure, electronic systems and services, and organizational readiness, in a research in Iran titled "Measuring the Development of Information Technology in the Municipality; Case Study: Shahroud Municipality ". They concluded that the problems of Shahroud municipality include lack of attention to the culturization of information technology among the organization's staff and citizens, improper implementation of IT in the organization, and lack of sufficient budget allocation to implement IT [20]. Musa (2010) [21] evaluated e-readiness for municipalities in Iraq. He proposed an electronic readiness measure in municipalities and implemented it in two provinces. Tavanaa et al. (2013) [22] presented a hybrid fuzzy model, using TOPSIS and ANP, to provide a comprehensive model for evaluating the e-readiness of US municipalities and measured

the US municipalities by their model.

3. DATA GATHERING TOOL

A questionnaire was used for data collection in two parts: 1- demographic characteristics including gender, age, education level, number of households and marital status, and 2- evaluation of total years of employment in the organization. Organizational employment years questionnaire consisted of 26 items and 6 components including IT strategy and goals (4 items), IT infrastructure (5 items), IT human resource and its culture (5 items), IT management (4 items), IT-based processes (5 terms), IT security (3 items). Scoring is performed based on a 5-point Likert scale ranging from strongly disagree (score 1) to strongly agree (score 5). The score for each component is obtained by summing the scores for each component and dividing it by the number of items. Minimum score is 1 and maximum is 5.

4. METHOD OF DATA ANALYSIS

Data were analyzed using SPSS software. In the descriptive part, the descriptive statistics (frequency, percent, mean and standard deviation) were used, and in the analytical part, the single sample t-test, intra-group variance analysis, Bonferroni follow-up, independent t-test and one-way variance analysis (ANOVA) at the significant level of 0.05 were used to investigate the research hypotheses.

5. FINDINGS

This research is a quantitative research based on its nature, an applied research based on its goal, and a descriptive research based on its method. The statistical population of this study included all employees of Birjand municipality in South Khorasan province in Iran (180 people). The sample size was 100 according to the statistical population and based on Morgan table. Simple random sampling was used to select the staff.

6. DESCRIPTIVE FINDINGS

Frequency distribution of the subjects was 66 (66%) male and 34 (34%) female, based on gender, from whom 18 people (18%) were single and 82 people (82%) were married. The frequency distribution of the study population based on age was as shown in Table 1.

Table 1: Distribution of absolute and relative frequency of subjects by age

Age	Distribution	Percentage
35 years aged and younger	53	53
Older than 35 years	47	47
Total	100	100

As the table shows, 47 subjects (47%) were 35 years aged or younger, and 53 (53%) were older than 35 years. The frequency distribution of the study population according to the level of education is provided in Table 2. As shown in the table, 53 staff (53%) had associate and bachelor degrees and 47 (47%) had postgraduate and higher degrees.

Table 2:Distribution of absolute and relative frequency of subjects by education level

Education Level	Distribution	Percentage
Associate degree and Bachelor	53	53
Post-graduate and higher	47	47
Total	100	100

Frequency distribution of the study population in terms of number of households was as follows: 22 (22%) of the study population had 2-3 households, 59 (59%) had 4 households and 19 (19%) had 5 households.

Descriptive indices related to the deployment of the IT system variable as a whole and its components are presented in Table 3.

Table 3.:Descriptive indicators related to the deployment of the IT system variable as a whole and its components

Variable	Mean	Standard deviation	Median	Mod
IT goals and strategies	3.13	0.38	3.00	3
IT infrastructure	3.95	0.56	3.80	4.40
IT resource and its culture	3.14	0.46	3.10	3
Management and IT	3.45	0.51	3.38	4
IT based processes	2.86	0.53	2.60	2.60
IT security	3.83	0.77	3.67	4.67
IT system deployment as a whole	3.37	0.31	3.46	3.62

As the above table shows, the highest mean score for IT system deployment was 3.95±0.56 and the lowest mean was 2.86±0.53 according to the viewpoints of subjects in the study related to information technology infrastructure. The mean score for launching IT system was obtained totally as 3.37 ± 0.31 according to the viewpoints of subjects in the study.

7. INFERENTIAL FINDINGS

Inferential findings from evaluating Birjand municipality readiness in South Khorasan, Iran, is according to the following tables.

Table 4: Comparison of the mean scores of the subjects' viewpoints regarding the deployment of IT system as a whole and its components by gender

Variable	Gender	Mean	Standard deviation	t	df	p
IT goals and strategies	Male	3.11	0.37	0.74	98	0.46
	Female	3.17	0.40			
IT infrastructure	Male	3.89	0.60	1.57	98	0.12
	Female	4.07	0.45			
IT resource and its culture	Male	3.10	0.47	0.99	98	0.32
	Female	3.20	0.43			
Management and IT	Male	3.43	0.50	0.43	98	0.67
	Female	3.48	0.53			
IT based processes	Male	2.85	0.50	0.49	98	0.63
	Female	2.90	0.58			
IT security	Male	3.78	0.77	0.80	98	0.43
	Female	3.91	0.77			
IT system deployment as a whole	Male	3.33	0.31	1.45	98	0.15
	Female	3.43	0.31			

The result of independent t-test in the above table shows that the mean score of the study population was not significantly different regarding the IT system deployment as a whole and its components by gender ($p > 0.05$).

Table 5: Comparison of the mean score of the subjects viewpoints regarding the deployment of IT system as a whole and its components according to marital status

Variable	Marriage status	Mean	Standard deviation	t	df	p
IT goals and strategies	Single	3.17	0.12	0.45	98	0.65
	Married	3.12	0.42			
IT infrastructure	Single	3.22	0.51	7.75	98	0.001<
	Married	4.11	0.42			
IT resource and its culture	Single	2.87	0.33	2.83	98	0.006
	Married	3.20	0.46			
Management and IT	Single	3.10	0.24	3.39	98	0.001
	Married	3.52	0.52			
IT based processes	Single	2.94	0.13	0.71	98	0.48
	Married	3.85	0.58			
IT security	Single	3.78	0.26	0.30	98	0.77
	Married	3.84	0.84			
IT system deployment as a whole	Single	3.14	0.07	3.65	98	0.001<
	Married	3.42	0.32			

The result of independent t-test in the above table shows that the mean score of the viewpoints about deployment of IT system as a whole and the components including IT infrastructure, IT resource and its culture and IT management are significantly higher in married people than single ones (P <0.05). But the mean score of the viewpoints regarding other components of IT system deployment was not significantly different in married and single people (p> 0.05).

Table 6: Comparison of the mean scores of the subjects' viewpoints regarding the deployment of the IT system as a whole and its components by age

Variable	Age	Mean	Standard deviation	t	df	p
IT goals and strategies	35 years aged and younger	3.04	0.34	2.35	98	0.02
	Older than 35 years	3.21	0.40			
IT infrastructure	35 years aged and younger	3.77	0.66	3.10	98	0.003
	Older than 35 years	4.11	0.39			
IT resource and its culture	35 years aged and younger	3.18	0.39	0.87	98	0.39
	Older than 35 years	3.10	0.52			
Management and IT	35 years aged and younger	3.51	0.47	4.17	98	0.25
	Older than 35 years	3.39	0.54			
IT based processes	35 years aged and younger	3.07	0.46	3.91	98	0.001<
	Older than 35 years	2.68	0.52			
IT security	35 years aged and younger	3.96	0.56	1.62	98	0.11
	Older than 35 years	3.71	0.90			
IT system deployment as a whole	35 years aged and younger	3.39	0.24	0.73	98	0.47
	Older than 35 years	3.35	0.37			

The independent sample t-test result in the above table shows that the mean score of the viewpoints about launching IT system in IT strategy and goals components and infrastructure was significantly higher in people older than 35 years compared with people older than 35 years and younger and the mean score of viewpoints about IT-based processes were significantly higher in 35 years old subjects and younger ($p < 0.05$), but the mean score of the viewpoints about the deployment of the IT system as a whole and its components in the studied subjects was not significantly different by age ($p > 0.05$).

Table 7.: Comparison of the mean score of the subjects' viewpoints regarding the deployment of the IT system as a whole and its components by education level

Variable	Education level	Mean	Standard deviation	t	df	p
IT goals and strategies	Associate degree and bachelor	3.15	0.41	0.45	98	0.65
	Post-graduate and higher	3.11	0.35			
IT infrastructure	Associate degree and bachelor	3.98	0.64	0.67	98	0.51
	Post-graduate and higher	3.91	0.44			
IT resource and its culture	Associate degree and bachelor	3.12	0.48	0.44	98	0.66
	Post-graduate and higher	3.16	0.45			
Management and IT	Associate degree and bachelor	3.38	0.48	1.37	98	0.17
	Post-graduate and higher	3.52	0.53			
IT based processes	Associate degree and bachelor	2.70	0.29	3.45	98	0.001
	Post-graduate and higher	3.05	0.66			
IT security	Associate degree and bachelor	3.75	0.66	0.99	98	0.32
	Post-graduate and higher	3.91	0.87			
IT system deployment as a whole	Associate degree and bachelor	3.32	0.28	1.50	98	0.14
	Post-graduate and higher	3.42	0.35			

The result of independent t-test in the table above shows that the mean score of the viewpoint about IT system deployment regarding the components of IT processes is significantly higher in those with postgraduate and upper degrees than those with associate degree and bachelor degree (p=0.001). But there was no significant difference between the mean scores of viewpoints regarding the deployment of IT system as a whole and its components among the subjects according the education level (p> 0.05).

Table 8: Comparison of the mean score of the subjects viewpoints regarding the deployment of IT system as a whole and its components in terms of number of households

Variable	Households number (number of people)	Mean	Standard deviation	F	df	p
IT goals and strategy	2-3	2.95	0.43	3.13	(97 و 2)	0.06
	4	3.18	0.34			
	5	3.18	0.41			
IT infrastructure	2-3	4.18	0.54	2.71	(97 و 2)	0.07
	4	3.91	0.49			
	5	3.82	0.70			
IT resource and its culture	2-3	3.31	0.40	2.69	(97 و 2)	0.07
	4	3.05	0.49			
	5	3.19	0.40			
Managemen t and IT	2-3	3.64	0.41	2.44	(97 و 2)	0.09
	4	3.41	0.57			
	5	3.33	0.34			
IT based processes	2-3	2.88	0.47	0.04	(97 و 2)	0.96
	4	2.85	0.59			
	5	2.88	0.37			
IT security	2-3	3.94	0.77	0.45	(97 و 2)	0.64
	4	3.77	0.85			
	5	3.88	0.45			
IT system deployment as a whole	2-3	3.47	0.21	1.42	(97 و 2)	0.25
	4	3.34	0.36			
	5	3.35	0.21			

The result of the ANOVA test in the table above shows that the mean score of the viewpoints about the deployment of the IT system as a whole and its components in the studied population was not significantly different based on the number of households ($p > 0.05$).

8. CONCLUSIONS AND SUGGESTIONS

So far, the researches on the e-readiness of municipalities in Iran have been carried out to assess the e-readiness of Isfahan [18], Shahroud [20] and Baharestan [19] municipalities. In all of them, the e-readiness of municipalities was studied from three dimensions including technical infrastructure, electronic systems and services and organizational readiness. Based on the results of these evaluations, Isfahan municipality has the readiness of 72% in terms of technical infrastructure, Baharestan has the readiness of 45% and Shahroud municipality has the readiness of 13.4% until the end of March year 2010. Accordingly, it can be seen that only the Esfahan municipality has a favorable electronic readiness from a technical infrastructure point of view. In the study [23], the e-readiness of Mashhad municipality regions in Iran has been investigated in order to realize e-municipality. In this study, a model based on seven criteria (technology, hardware, software, web site, human resources, training programs, organizational infrastructure) and their sub-criteria is presented and weighted using AHP hierarchical analysis, weighted criteria and sub-criteria. Eventually, using the obtained model, the electronic readiness of different regions of Mashhad municipality was evaluated and the results showed that the seventh region of municipality of Mashhad with 0.25 had the lowest e-readiness level and the fourth region of municipality of Mashhad with 0.4662 had the highest level. In the study [24], the Tehran municipality in Iran was evaluated electronically regarding four dimensions including ICT infrastructure, ICT hardware, human resources, software, and information systems. The results of this study showed that Tehran municipality is ready in three dimensions of ICT infrastructure, ICT hardware, software and information systems but in the dimension of human resources it is not ready and needed some effort in the field of human resource management policies and employee knowledge management.

In the study [25], Vikor model was used to evaluate e-municipality criteria-based management of critical district (on district 6 and 15 of Tehran municipality). Fuzzy Delphi method and expert opinion were used to analyze the data of this study in order to identify important indicators. The results of this research have demonstrated that areas of district 6 had better situations than ones in district 15 and the highest ranks were considered for areas of 1 and 5 in district 6 municipality center with scores of 0.957 Q and 1000 respectively.

The research [26] examines the infrastructures of electronic municipality deployment in Tabriz metropolitan area. The findings of the research showed that the infrastructure of leadership management, human, services and operating resources training for e-municipality deployment in Tabriz municipality has not been provided yet. But technical and networking infrastructures (hardware and support, software and application systems and information security) are provided for deploying e-municipality in Tabriz municipality. Additionally, there is a significant relationship between infrastructures including strategic management, human, services and operating resources training, network and communication, software and systems, hardware and support and network security with the status of electronic municipality deployment.

In Birjand municipality, as shown in Table 3, the highest average is related to the technical infrastructures, which indicates that the municipality has focused the most attention on this issue and is reasonably close to the desired readiness of e-municipalities. The lowest average is for IT-based processes which require more electronically collaboration between citizens, use up-to-date technologies and make them available to employees and citizens, make more use of IT in stakeholder and partners engagement. In the dimension of IT human resources and its culture and management and IT, married people have played a better role and in this regard. It can be suggested that more and more training must be provided to single people so that they can play well their role in the organization improvement.

Based on the results, there are suggestions for increasing the e-readiness of Birjand municipality including:

- Employment policies of Birjand municipality regarding ICT must be updated and more accuracy is needed in the field of employment of ICT specialist personnel.
- In the field of in-service training, more incentive policies must be used to encourage employees to learn and apply information technology skills.
- Birjand municipality possibly provide special training courses in the field of information and communication technology in accordance with international standards and make it possible for staff to take international exams of these skills.
- Human resource management in Birjand municipality should be implemented using strategies for managing intellectual capital and personal knowledge. Implementation and use of new knowledge management systems for creation, storage and transfer of knowledge is recommended.

Finally, some suggestions for future research are presented:

- Evaluation of Birjand municipality's e-readiness by citizens points of view.
- Evaluation of Birjand municipality's electronic readiness by other models
- Examine economic, social, legal and technical conditions as important elements in electronic readiness.

REFERENCES

1. Cheng, K., & Law, B. (2003) .Integrating project management applications as web services., in Proceeding of the 2nd International Conference on Innovation in Architecture, Engineering and Construction, Loughborough, pp. 367-376.
2. Egan, Sir J. (1998) .Rethinking Construction, Report of the Construction Task Force on the Scope for Improving the Quality and Efficiency of the UK Construction Industry. London: Department of Environment, Transport and the Regions (DETR).
3. Ruikar, K., Anumba, C.J., and Carrillo, P.M. (2006) .VERDICT-An e-readiness assessment application for construction companies. Journal of Automaton in Construction, 15: 98-110.
4. Toufani, S. (2009). E-Readiness assessment in Iranian B2C enterprise. (Master Thesis).Department of Business Administration, Lulea University of Technology.
5. Murnane, L. (2002).Digital Government: Digital Tools for the Electronic Dissemination of Government Information. Knowledge Network Unlimited, 10(2).
6. Pollack, J., & Adler, D.(2017) "Skills that improve profitability: The relationship between project management, IT skills, and small to medium enterprise profitability", International Journal of Project Management, 34(5), 831-838.
7. Colin, M.Galindo, R.& Hernandez, O.(2015) "Information and communication technology as a key strategy for efficient supply chain management in manufacturing SMEs", Procedia Computer Science, 55, 833- 842.
8. Peng, Jianping, Quan, Jing, Guoying, Zhang, Dubinsky, Alan J.(2016). Mediation effect of business process and supply chain managementcapabilities on the impact of IT on firm performance: Evidence fromChinese firms, International Journal of Information Management 36,89-96.
9. Movahedi, M.M., Motamedi, M., & Katal, A., (2010) "Investigating the Role of Information Technology on Corporate Performance of Mobile Communications Company", Management Quarterly, Eighth, No.21, pp.67-78.(In Persian).
10. M.Afsharpour, Ali Akbar Jalali, "Experiences of implementing e-municipality in Iran and other countries",1st International Conference on Electronic Municipality, Tehran, 2007, In Persian.
11. M.Sarfarazi, G.R.Memarzadeh,"The paradigm of E-municipality necessary for the virtual era", 1st International Conference on Electronic City, Tehran, 2008, In Persian.
12. Flak, L.S. Olsen, D, H., and Wolcott, P.(2005) .Local E-Government in Norway. Scandinavian Journal of Information Systems, April.
13. Holden, S.H., Norris, D.F., & Fletcher, P.D. (2003). Electronic government at the local level: Progress to date and future issues. Public performance and management review, 26(4): 325-344.
14. Koh, C., and Prybuok, V.R., (2002). E-Government Readiness: A Research Framework and an Action Research Case of a Municipal Government. Proceedings of the Decision Sciences Institute:1168-1173.
15. Brueckner, A. (2002). Government & Community Building: A Study of Michigan Local Governments Online. Proceedings of the 65th Asist Annual Meeting, E.G. Toms (ed.), Medford, 539-541.
https://doi.org/10.1002/meet.14503901101
16. Flak, Leif. Olsen, Dag & Wollcat, P. (2005). Local E Government in Norway. Scandinavian Journal of Information Systems, 17(2), 41-84.
17. Amirhosein Ghapanchi, "Development of UNDP Model for Implementation of E-Government of Tehran Municipality", Master of Science Degree in Information Technology Engineering, Spring 2007.
18. Amir farmanbar, h.s.javadi, homayoun.yazdanpanah, "Isfshan Electronic Municipality evaluation", Urban Management (ISSN: 1607-2227), Volume: 6 Issue: 22, pp.77-84, 2009.
19. H.R.Shirvani, Z.Baneshi, ,"Baharestran New City Electronic Municipality's Preparation Evaluation according to Electronic Municipality", Urban Management, Volume:7 Issue:23, pp.59-70, 2009.
20. Mahdi Zarkesh Zade, H.Rahimov, Mina soleimani, "Measuring the development of information technology in the municipality of Shahroud", 1st National conference on Soft Computing and Information Technology (NCSCIT2011), In Persian.
21. Musa, Mohammed Raji (2010). An e-readiness Assessment Tool for Local Authorities:A Pilot Application to Iraq. A Thesis submitted to Department of Public Policy and Administration In partial fulfillment of the requirements for The degree of Master of Public Policy and Administration.
22. Tavanaa, M., Zanadic, F., & Katehakis, M. N. (2013). A hybrid fuzzy group ANP–TOPSIS framework for assessment of e-government readiness from a CiRM perspective. Information & Management, 50(7), 383-397.
https://doi.org/10.1016/j.im.2013.05.008
23. Shima Alikhani., Zahra Naji Azimi, Mohammad Lagzian,"Evaluation of E-Readiness of Mashhad Municipal Areas for Realization of E-Municipality", Public Administration Perspaective, Vol. 8, No. 3 , pp.79-96, 2017, ISSN : 2251-6069, (In Persian).
24. Azizi Shahriar, Safaei Farahani Ronak, " TEHRAN MUNICIPALTY E-READINESS ASSESMENT ", Journal of Public Administration Perspective, FALL 2012 , Volume 3 , Number 11; Page(s) 113 To 132.
25. Leila Aghaei, hamid reza varesi , saeed zangeneh shahraki, "Evaluating the Area-based Management Plan Based on the Criteria of Electronic Municipality With Vikor Model: A Case Study of Districts 6 and 15 of Tehran Municipality", Geographical Urban Planning Research (GUPR), Volume 7, Issue 1, Spring 2019, Page 39-59. DOI: 10.22059/jurbangeo.2019.244414.801 .
26. Ghorbani, A., Sarmast, B., Mahdi Pour, F. (2016). 'Examine the Infrastructure of E-municipality in the Metropolis Tabriz', Quarterly Journal of Public Organzations Management, 4(2), pp. 137-148.