Electronic Municipality Role in the Citizens' Contentment

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Abstract: This study relies on the experiences, the usage of influential information and communication technology in presenting the electronic civil services. Evaluating the readiness levels of electronic municipality in Esfahan which is the second big city of Iran after Tehran is the case study of the present study. Regarding the purpose of the study, it is an applicable-developmental study. The methodology of the present study is documental and analytical. The data collection method is also inductive. The evaluation of the hypotheses has been done by using the one sample t-test, variance analysis and the Spearman and Kendall correlation coefficient.

Key words: Electronic city, electronic services, electronic municipality, Esfahan, Spearman and Kendall correlation

INTRODUCTION

One of the recent municipal theories which are paid attention by the civil sciences is using the information and communication technology in the cities. Information and communication technology is in fact the dominated technology in the new Millennium (Hafkin and Taggart, 2001). Since, the age of wisdom and the subject of education in all the eras has been the main subject of discussion and also in the recent years has occupied a specific place in different discourses (Mohammadi and Asl, 2010). Therefore, the information and communication technology should be used in the managing and planning of the city regarding the training of the citizens and removing the social deprivation (Chigona et al., 2009). Because the management of civil problems and issues is inversely related with the increase of citizens' knowledge; in a way that the city managers regard the citizens' education and their level of learning as important factors both in development, ease and optimization of metropolises and in attraction of citizens' participation in the decision making processes. Applying the new technologies will change the faces of the cities and also would increase the citizens' choice trough accessing the information (Mohammadi et al., 2013). Regarding the common problems in the cities, it only will be possible by using the new communication devices and also employing the new knowledge. Employing the new technologies, the consummation costs will decrease and finally this economization will lead to more profitability and comfort. Nowadays, regarding the concept, dimensions, strategic importance and geographical concentration, the civil

services have greatly changes. Serving people in the form of "civil electronic cervices" is considered as an effective and efficient strategy in the interaction among the citizens and public and private organizations which present some services (Pastor et al., 2007). In order for the realization of electronic municipality, to achieve some goals like presenting better services to the citizens, exactly informing of people, clarifying the processes, coordinating and transmitting the information among different units of civil management will be accomplished.

The most important effect of electronic municipality is the cost reduction by both citizens and also the managers. The decrease of traffic inside the city, increase of rate of services, the decrease of environmental problems (air pollution and also noise pollution) and the possibility of presenting more efficient and optimized services for 24 h a day and 7 days of the week. Presenting spatially unlimited services is one the advantages of this perspective (Chakrabarty, 1998). The movement of population including both the movement of vehicles and movement of population in the shopping centers and also in administrative and welfare centers is among the main reasons of city problems in the metropolises (Ameli, 2008). The virtual services of the city management which are now presented to people as the electronic services have been implemented in most of the developed countries and metropolises in the world; the findings have a great impact on absorbing the citizens' attention and also their welfare, furthermore it was able to achieve so many success in this field. Regarding the previously done examinations, the organization of environmental protection of Iran has declared that at least 20% of the

trips within the cities are unnecessary. The importance and necessity of the research is allocated to the obstacles of presenting municipal services in the form of electronic services.

We hope the present study to recognize the obstacles of electronic municipality developments and explain the effect of electronic municipality development on the environment of Esfahan. It is only in this case that the importance and the role of making policies and implementation of a documented national plan for the realization of the electronic cities of Iran are reminded to the officials and the IT scholars and it will motivate the national will to make the cities electronic to have a proper place in the informational society of the world.

Theoretical principals: From the communication and information technology to the electronic municipality: generally speaking, the process of creation, design and documentation of ideas is called "technology" and if the activities are related to the information, it is called information technology. On the other hand, information and communication technologies refers to techniques, tools and sciences which participate in the activities (collecting, storing, retrieving, processing and distribution of different kinds of information and images, data, sound and...) in different quality and quantity.

If there is no interaction among the electronic government, municipality and electronic city and citizen, it is not possible to present the electronic services in the best way (Fig. 1).

Research hypotheses
First hypothesis: There is a significant correlation among the use of electronic services of portal of Esfahan municipality and the citizens' contentment.

Second hypothesis: There is a significant correlation among the use of electronic services of the portal of Esfahan municipality and the reduction of traffic in Esfahan.
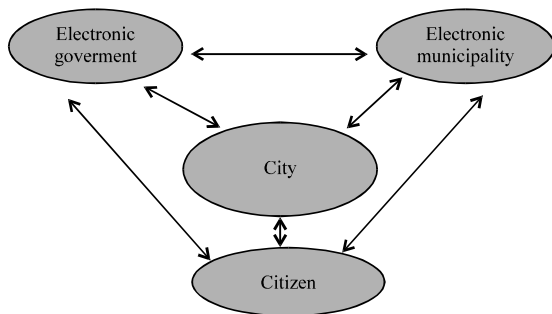

Fig. 1: The needed indexes for the hypothesis

MATERIALS AND METHODS

The methodology of the present study is descriptive-analytic and also it is an application-developmental research. The participants of the research are citizens of Esfahan. Regarding this fact and also according to the documental and field studies, the collected data is analyzed using the SPSS and Excel Software. The questionnaires were distributed among the citizens, managers and experts of Esfahan municipality. The sampling method is random. The estimation of the sample size is done through using the Cochran approach. Regarding the whole population by Esfahan (1908968) and also using the Cochran approach, the needed questionnaires were 322 which were increased to 390 to get a better result. Cochran eqaution:

$$n = \frac{t^2 pq/d^2}{1 + \frac{1}{N}\left(\frac{t^2 pq}{d^2} - 1\right)}$$

$$n = \frac{1908968(1.96)^2 \times 0.5 \times 0.5}{1908968(0.05)^2 + (1.96)^2 \times 0.5 \times 0.5} = 322$$

The reliability of the research was tested by using Cronbach alpha. The Cronbach alpha fluctuates between zero and one ($0 \leq \alpha \leq 1$). The alpha was achieved using the SPSS Software. The amount of alpha was 0.9 for the present research which shows high reliability and validity of the research questionnaires. SPSS was used in this research to analyze the collected data through descriptive and inferential approach. The descriptive statistics were used to analyze the demographic variables and the inferential statistics were dedicated to analyze the research hypotheses.

The descriptive findings of the questionnaires included some particulars as: age, sex, marital status, education and among the dependent and independent variables, the needed indexes for the hypotheses can be stated as follow (Table 1):

Reduction of traffic
Citizens' contentment: The descriptive findings of the study were achieved through using the SPSS Software. These findings included some particulars like age, sex, marital status, education, job, using the communication-information technology facilities, the address of their house and the address of their work. 89.07% of the participants are >20 years old. The sex combination shows that the participants are 274 male which is 70.26% of the whole participants and 116 female which equals 29.74% of the whole population. The marital

status demonstrates that 84.1% of the participants are married and 15.9% are single. Analyses of the education shows that most of the participants (57.43%) have diploma. The 20.26% have bachelor degree or they are bachelor students. The 13.08% don't have a diploma and 5.9% have master degree or higher degrees.

The job status of the participants shows that most of the respondents (33.33%) are employed in the governmental offices. The 26.41 are employed in the private sector. The 16.15% have their own business, 15.13% are studying, 7.95% are retired and 1.03% are the others.

Regarding their accessibility to the ICT facilities in their house, the people have stated that 98.2% of them have television, 96.2% of them have telephone, 79.5% have cell phone and 34.1% of them have computers and the least accessibility belongs to internet.

Getting familiar with the portal of presenting electronic services of Esfahan municipality: Along with the fast development of technology, the municipalities have done effective activities to present information and services to the citizens. Therefore, having established an electronic portal and >50 websites and also presented different electronic services from 2009 up to now, Esfahan municipality has stepped toward presenting electronic services to the citizens. Now creating a concentrated and integrated portal, Esfahan municipality presents some electronic services to the citizens through the following websites: eservice.isfahan.ir and www.Isfahan.ir

According to the extracted data from the questionnaires, 29.3% of the participants are familiar with the presented electronic services of the portal of the Esfahan municipality while 3.5% are completely ignorant of the electronic services (Table 2).

According to the extracted data from the participants familiarity with the services which can be presented through the electronic portal of the municipality, 37.5% of the participants got familiar with the electronic services by the municipality and 34.5% got familiar through the advertisements in the public places in Esfahan (Table 3).

The portion of short trips inside the city to do the common affairs including personal affairs like shopping or administrative affairs such as paying the bills is very high. The total daily trips of Esfahan are 1220220 out of which 55.46% allocates to the trips to do the common affairs. However, the level of visiting in person is very high (Table 4).

According to the extracted information from the questionnaire, 55.3% of the participants have stated that they personally go to the municipality to do their affairs while 44.7% have said that they use the Electronic portal to do their affairs (Table 5).

Regarding the services which have been presented in the electronic portal of municipality, the participants have mentioned that the parameters like 24 h services, cost reduction, time economization with the mean of 4.29, 4.06 and 3.96 are respectively among the most important advantages of using the electronic services of the municipality (Table 6).

Table 1: Questionnaire's finding

Electronic municipality	
Parameters	Description
Communication with people	Registration and following the requests of 137
Taxes and income	Electronic payment of automobile tax
	Electronic payment of renovation tax
Urbanization	Receiving urbanization forms
	Getting informed of notes
Transportation	Taxi and bus fair
	Taxi and bus routing
	Electronic ticket
Daily shopping centers	The prices of daily shopping centers
Waste management	The calendar of garbage carrying and recycling
Investment	Participation in the projects
Information system	Call for tender
	Esfahan statistic calendar
Cultural-recreational	Library services
	Social-cultural consults
	Virtual touristic tours

Table 2: The amount of citizens' awareness of the services presented through the electronic portal of Esfahan municipality

Citzen awareness	Values
Very low	1.40
Low	10.80
Middle	23.10
High	29.30
So high	27.70
Never	3.50
No idea	3.20
Mean	2.17

The findings of the field research done in 2014

Table 3: The familiarity with the portal of electronic services of Esfahan municipality

Familiarity	Values
By the municipality	37.5
Friends and relatives	8.4
Multimedia	19.6
Public advertisements	34.5

The findings of field research done in 2014

Table 4: The frequency of citizens' trips to do common affairs

Trip purpose/ statistics	Getting information about the bank account	Doing bank affairs	Paying the bills	Buying goods and services	Getting information about the administrative affairs	Total
Monthly mean of trip per citizen	2.5	3.1	0.80	4.8	1.90	13.3
Daily mean of tri for Esfahan	129158.3	160156.3	41330.67	247984.0	98160.33	676789.7

Researcher's computations 2014

Table 5: The study of participants' usage from the portal of electronic services of Esfahan municipality

The activities	Very low	Low	Middle	High	Very high	Never	Mean
Paying the renovation tax	7.0	3.1	7.8	36.3	50.1	2.1	4.36
Paying the union tax	8.8	10.8	21.0	37.3	20.7	1.3	2.74
Paying the vehicle tax	0.0	2.4	9.2	41.4	44.5	2.6	3.55
Getting information about regional price of land	8.1	7.1	24.3	30.5	27.5	2.5	3.62
Getting information about the results of commission of article 100	13.6	18.5	16.1	22.4	28.0	1.4	3.57
Call for the building permit	9.8	24.7	27.3	32.4	9.8	4.9	2.99
Call for the new detailed design of the city	2.0	3.1	19.6	29.1	41.0	5.2	4.09
Call for renovation visits	21.9	14.6	18.6	18.8	22.1	4.3	3.03
Searching the confirmed engineers of municipality	1.0	2.1	18.3	33.2	43.0	1.4	4.06
Call for the permit for drilling	17.7	28.6	35.2	12.6	2.0	3.9	2.53
Call for the limitation of traffic project	9.6	17.0	21.7	23.9	25.4	2.4	2.73
Seeing the traffic map	21.9	14.6	15.5	18.8	22.1	7.1	3.03
Routing the taxi line	15.8	17.9	22.2	19.3	21.5	3.3	2.88
Routing the bus line	2.0	5.1	20.7	38.0	30.5	3.7	3.97
Charging the bus credit cards	0.0	7.0	18.0	44.2	29.9	7.2	4.10
Searching for the lost objects in buses and taxies	56.5	26.7	11.0	3.1	7.0	2.0	1.83
Using the digital library of municipality	51.5	25.6	16.5	3.8	1.0	1.6	1.77
Getting information about the investment projects in the city and call for participation in them	2.0	5.1	20.7	35.7	34.2	2.3	3.97
Getting information about the date of garbage removal	0.0	2.0	13.6	44.6	38.3	2.5	4.21
Positioning of cultural-commercial centers	0.8	4.3	18.4	35.0	34.4	7.1	4.07
Getting information about the fruit price in daily bazars	0.5	5.9	20.8	38.1	29.5	5.2	4.02
Registration of complaints and criticisms	2.0	3.1	22.7	28.0	41.0	3.2	4.09
Searching for the name of dead people in the cemeteries	31.0	25.9	22.4	6.5	3.3	10.9	1.98
Getting information about the approvals of city council	1.0	4.8	25.9	28.3	33.3	6.7	3.95
Call for the registration of voluntary firefighters	52.1	26.7	13.0	3.1	7.0	4.4	1.65

The findings of field research done in 2014

Table 6: Studying the participants' usage of electronic website of Esfahan municipality

Parameters	Very low	Low	Middle	High	Very high	Mean
The increase in efficiency and speed	13.6	18.5	16.1	23.8	28.0	3.94
Increase in using the internet	14.3	17.8	27.8	26.4	13.7	3.01
Economizing the time	0.0	3.0	23.1	46.1	30.5	3.96
Exact organization of affairs	9.6	17.0	21.7	23.9	27.8	2.59
Presenting 24 h services	0.0	0.0	1.7	16.3	82.0	4.29
Not visiting personally	7.0	2.7	42.5	39.1	15.0	2.42
Citizens' cost reduction	0.0	0.0	1.7	16.3	82.0	4.29
Reducing ambiguity in accessing the services	8.3	16.5	29.6	28.7	16.9	3.26
Reducing nepotism and administrative violations	2.0	12.6	39.1	28.6	17.7	3.41

Findings from field research done in 2014

Table 7: Studying the important factors in increasing the usage of services of electronic portal of municipality

	The used services through the internet network					
Explanation	Very low	Low	Middle	High	Very high	Mean
The citizens' knowledge about computer and internet	2.0	3.1	22.7	31.2	41.0	4.18
Reducing the costs paid for the services through the portal	0.0	2.0	13.6	46.1	38.3	3.75
The quality of the internet services	21.9	14.6	22.6	18.8	22.1	3.68
Citizens' trust on the electronic services	2.0	5.1	20.0	38.0	34.2	4.11
The speed of doing the affairs in the portal	0.5	5.9	20.8	42.2	30.6	3.73
The number of services presented in the portal	41.9	25.9	22.4	6.5	3.3	3.94

The findings of the field research done in 2014

The more the citizens gain information about the communication and information technology (computer and internet), the more they will accept this technology in their life. Table 7 shows that the citizens of Esfahan are satisfactorily acquainted with computer and internet and they play an important part in using the electronic services presented by the municipality (mean: 4.18). According to the participants' idea, the parameter of trusting on the presented electronic services with the mean of 4.11 is another important factor which affects the citizens' usage of internet network a lot. According to the participants' views, the parameter of the number of existing services in the website of municipality with the mean of 3.94 can effectively meet their needs. Furthermore, nowadays a large portion of the family income is allocated to daily use of transportation system inside the city which can be managed properly by adopting correct policies.

Table 8: Studying the participants' contentment of the electronic services presented by the Esfahan municipality

Explanation	Very high	High	Somehow	Low	Very low	Never	No idea	Mean
Are you satisfied with the electronic portal of esfahan municipality?	22	25.4	35.3	15.5	7	1.1	0	3.92

The findings of field research done in 2014

Table 9: Studying the participants' idea about the effect of using electronic portal of Esfahan municipality on traffic reduction

Explanation	Very high	High	Somehow	Low	Very low	Never	No idea	Mean
Does using the electronic portal of esfahan municipality decrease the traffic in the city?	34.4	41.1	18.2	4.3	0.8	1.2	0	4.07

The findings of field research done in 2014

Based on the results of the research shown in Table 8, it is evident that the citizens' contentment of the electronic services of Esfahan municipality which aims at presenting services is in a pleasant level (mean: 3.92). In Table 7, you can observe that the citizens' contentment is in a proper level which demonstrates that the people in charge pay good attention to presenting electronic services.

Due to increasing number of vehicles, the traffic problems in Esfahan are about to be a threatening factor for the life of the city. Heavy traffic jam in some of the hours and also the ecological problems caused by it are among the basic issues of the city. Each personal visit to do the common affairs is considered as a short trip. Using the electronic portal of the municipality would decrease the number of these trips. Table 9 shows the participants' idea about the fact that using the electronic portal causes the traffic jam to decrease (Table 9).

RESULTS AND DISCUSSION

The results of hypotheses testing: Esfahan has a lot of historical monuments which has separated this city from other cities and this fact has emphasized on paying good attention to the problems of the city. Having specific features and limitations, Esfahan sometimes equals the most polluted city which not only jeopardizes human life that is the most important factor but also it threatens the life of other creatures and even the physical structure of the city.

High level of air pollution of the city of which 60% is because of motor vehicles. Therefore, most of the problems of the city can be solved though using the electronic services. Besides, the citizens will be more satisfied.

Testing the hypotheses: In order to achieve the result, we need to correctly use the methods which are able to comprehensively cover the research subject and the findings of the research help the researchers in that specific field. Therefore, to examine the citizens' and

experts' views and also through the application of SPSS Software and some tests like one-sample t-tests, variance analyses and also Kendall and Spearman Rank Correlation test and multi-variation regression, researchers have achieved some findings which will be followed.

Regarding the significant correlation and the mean of t answers achieved through the test (p = 0.000), people have used the electronic portal of municipality 35.65% whose significance is 0.01 and is 99% reliable.

First hypothesis: It seems that there is a correlation between the electronic services of Esfahan municipality and citizens' contentment.

Regarding the hypothesis of the research which states that there is a significant correlation between the electronic services and citizens' contentment, it can be concluded that according to the mean of the parameters and also considering the significant achieved by the research, the H_0 is rejected in favor of H_1 and we accept that there is a significant correlation between the electronic services of Esfahan municipality and the citizens' contentment.

To measure the variables and test the above mentioned hypothesis, the Kendall Rank test and Spearman Likert scale. According to the achieved results, the significance correlation (Sig. = 0.000) is <0.01. Therefore, as it can be observed, there is a significant correlation with the reliability of 99% between two variables. So, it can be concluded that there is a direct relation between the citizens' contentment and their usage of these services and facilities because the correlation coefficient between these variables in Spearman and Kendall tests is respectively 0.526 and 0.685.

Second hypothesis: It seems that there is a relationship between the electronic services of the municipality and the traffic reduction?

The Kendall Rank test and Spearman Likert scale were used to measure the variables and test the second hypothesis. The significant correlation (Sig. = 0.000) is <0.01 according to the achieved results. Regarding the

hypothesis of the research, there is a direct relation between using the electronic services and decreasing the traffic jam in the city. Finally, we found out that regarding the mean of the parameters and also the amount of significant correlation, the H_0 is rejected in favor of H_1. It can be accepted that due to the high mean of using the presented electronic services has caused the personal visits to decrease which is statistically significant and therefore, there is an indirect relationship between the increase of using the electronic services and the reduction of traffic jam inside the city.

Besides, the regression test and the results of the analysis showed that the independent variables not only have direct impacts but also they indirectly affect the amount of using the electronic portal in a way that the variables like citizens' computer and internet knowledge, cost reduction and the money paid for the electronic services through the portal, the quality of the internet services, citizens' trust on the electronic services, the speed of doing the affairs through the electronic portal, the number of presented services through the portal directly affect the dependent variable (the amount of using the electronic portal of the municipality. The ranking of the variables that are inside the equation demonstrates that the citizens' computer and internet knowledge and their reliance on the electronic services have respectively the highest positive and significant direct (0.407) and indirect (0.236) effect on the usage of electronic services of the portal of municipality. The result could be predicted before and is matched with the existing theories.

CONCLUSION

There is a significant correlation between the usage of electronic services through the municipality portal and citizens' contentment and also traffic reduction in Esfahan.

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