



ORIGINAL ARTICLE

Study of Factors affecting on electronic making of cities and Introducing the barriers facing it (case study: the city of Karaj)

Hamideh Goodarzi¹, Parastoo Khanloo¹, Masoomeh Shemshad^{2*}

¹Department of Urban Design, Shahr-e-Qods Branch, Islamic Azad University, Tehran, Iran.

^{2*}Department of urban planning, Shahr-e-Qods Branch, Islamic Azad University, Tehran, Iran.

*Corresponding authors E-mail: Shemshad.m87@gmail.com

ABSTRACT

Due to the difficulties and problems like traffic and overpopulation and lack of some of the issues raised by inappropriate management, electronic city as an opportunity to reduce the problems has been proposed and emerged and creating this virtual world, such as municipalities, banks, service organizations, government offices, enterprises and cultural and even health agencies provide the opportunity to enter the virtual space at all hours of day without calling and non-attendance at these places and do works related to this centers easily. In this case, information communication technology has main and important to achieve this issue, so, creating suitable conditions to public achieving to these information and technology is of managers' distress in planning of such cities. In a letter of making e-city, the e-citizen is one of the basic principles that will help to advance this issue. Karaj city with a large number of immigrants in recent years has been faced of the immigrants that are different in education and culture. Since in the adoption of technologies, cultural factors such as its social dimension play an important role, so Karaj city was chosen as the study population in order to study and examine factors affecting in e-city establishing and barriers that citizens encounter for making e-city in different cultures. This study was a quantitative study that was performed by descriptive-analysis method. Data collection performed using a questionnaire pack-answer and data were analyzed using the software SPSS 21. The results showed that there were negative and significant correlation between age, obstacles, risks and the dependent variable, establishing e-cities at the level of 0.99. There were significant and positive correlation between trust, education and self-efficacy and establishing e-cities. The results of Stepwise regression analysis showed that trust variable had the most effectiveness in explaining the dependent variable, establishing e-cities. Based on these results the regression coefficient $R = 0.36$, $R_2 = 0.21$, and the adjusted coefficient of determination calculated $R_{2adj} = 0/19$ ($F = 30.48$, $P = 0.000$). The results showed that 19% of the variation in the dependent variable was explained by the independent variable, trust, and the rest was explained by other factors that were invisible.

Keywords: *electronic city, electronic citizen, trust, risk*

Received 18.12.2014

Revised 19.01.2015

Accepted 21.01.2015

INTRODUCTION

Information technology plays an important role in professional and personal life of citizens and its importance has increased, today, computer, communications, digital information, tasks, information factors could be seen everywhere. Finally, skills in information technology involve three types of knowledge including contemporary skills, fundamental concepts, and intellectual ability, and these three knowledge prepare persons to be skilled in information technology by different ways [1]. Nowadays, information and communication, are as the most important management tools and due to the importance of giving information, IT in the world is developing with remarkable speed and have affected all activities of human life. In this regard, electronic city has ability to solve complex problems in all cities and has the best way for urban management for urban managers in the virtual world. In fact, electronic city is one of the cradles of managers and citizens in providing and use of urban services. A virtual community is a group of people who are related to a particular form of technology. The fans of virtual communities believe that human communication, regardless of the medium, create social harmony and can be the source of many societies in the real world. The electronic city means electronic access to municipal services and other urban organizations whole day and night and in seven days a week in a consistent manner, reliable, secure and confidential [2]. Bauer (1960) for the first time formally proposed that the consumer behavior is seen as a risk. In a test carried out by Gürhan-Canli and Batra's [2] it was showed that the imagine of

company in relation to innovation in comparison to when the consumer perceived high risk in purchasing the product, it has more impact on product evaluation. In the empirical test carried out by Erdem et al., [3] on consumer choice behavior it was concluded that the perceived risk influenced on decisions. Cunningham (1967) classified the risk into six categories including dimension of performance failure, financial, time, safety, social, and psychological disorders. Flavian et al., 2006, in his research showed that there was a direct correlation between privacy and trust in the use of technology. Privacy refers to the amount of personal information protection. In particular, Protection of privacy is individual's perception of other parts ability to protect the privacy of personal information from unauthorized use or disclosure [4]. If people are confident that their personal private data are protected from unauthorized use or disclosure, their ability to trust will increase [4]. Eastin and LaRose [5] pointed out there is significant correlation between personal skills to perform certain tasks related to the Internet such as writing HTML by the browser, downloading files, and the ability to search online or troubleshooting problems searches and Internet use. Credible reports indicate that Iran in terms of digital readiness among the 69 countries of the world has located in the last category and in the world rankings of e-government it has located in place 95 (Strategic Research Center of the Expediency Council, www.csr.ir). Surface diffusion, adoption and use of information technology vary according to cultural factors and social dimensions. Karaj city due to the proximity to the capital, Tehran, and low price lands in case of immigration has located in second place after Tehran and in recent years, many people have been migrated to this city. The aim of this study was to investigate the factors influencing the adoption and use of technology from the perspective of the citizens of Karaj. Hypotheses of the study were there is positive and significant correlation between the use of the Internet or ATM and self-efficacy; there is negative and significant correlation between the use of the Internet or ATM and risk. There is significant correlation between the use of the Internet or ATM and trust; there is negative and significant correlation between the use of the Internet or ATM and current obstacles.

METHODOLOGY

This quantitative survey has been carried out by descriptive methods. Data collection in the process of theoretical study included documents study, books reviews, theses, and search the Internet and in the field process, close-ended questionnaire was used that were asked by face to face interviews with residents. The study population consisted of residents of area 9 of Tehran municipality that were selected and studied using simple random sampling. SPSS 21 software was used for data analysis. Variables studied included age, sex, and marital status, income, using ATM, using internet, trust, self-effectiveness, risk and barriers of using internet.

STUDY AREA

Karaj city with an area of 2457 square kilometers, which until recently was as a summer resort town for the people of Tehran, now, due to the temperate climate and proximity to Tehran and relationship importance to the west and north, has a special status and is located in a row of large cities. In recent years, Karaj city has been exposed with a large number of immigrants that these immigrants have different levels of education and culture (Karaj climate studies). Information technology is a social phenomenon in which both organizational technology and material and social aspects could be achieve in it. It is recognized that cultural factors like social aspects play an important role in technology adoption [6,7]. So, the city was chosen as the study population in order to study the factors affecting the adoption and use of technology in different cultures.

RESULTS AND DISCUSSION

Descriptive Statistics

Frequency distribution of respondents according to age

As Table 1 shows, the most of the respondents were aged 28-38 years old at the rate of 39.6%. People aged 17-27 years old, consisted 35% of the samples that after the age group of 28-38 years old had the highest rate for the age groups. The citizens of the age group of 39-49 were the third group in case of having a large population of 20.8%. People with the age of 50 and older than 50 years old ($50 \leq$), in terms of population, consisted the lowest number (Table 1).

TABLE 1: FREQUENCY DISTRIBUTION OF STUDIED PERSONAL CHARACTERISTICS IN RELATION TO AGE

Cumulative percentage	%	Frequency	age
34.9	34.9	15	17-27
74.5	39.6	61	28-38
95.3	20.8	9	39-49
100	4.7	2	50 \geq

Mode: 30 years old, median: 30, minimum: 17 years old, maximum: 52 years

Frequency distribution of respondents according to their level of education

The majority of respondents (30%) stated that their highest level of education was Bachelor of Science. Almost a fifth of respondents (7%) had high school degrees or less. 25% of the respondents had university degrees (Associate of science) that were the second largest group in terms of population. 18.2% of the persons were equally in degree of diploma and Master of Science. Only 2% of the respondents indicated that had the degree of Ph.D. (Table 2).

TABLE 2: FREQUENCY DISTRIBUTION OF RESPONDENTS ACCORDING TO THEIR LEVEL OF EDUCATION

Cumulative percentage	Relative percentage	Frequency	Level of education
6.8	6.8	3	High school or less
25.0	18.2	8	Diploma
50.0	25.0	11	Associate Degree
79.5	29.5	13	Bachelor of science
97.7	18.2	8	Master of science
100.0	2.3	1	Ph.D
	100.0	44	Total

Mode: Bachelor of Science, Median: Bachelor of Science
View: Middle BA: BA

Barriers to the use of Internet in business from the perspective of the respondents

The majority of respondents (16.07%), reported the lack of basic Internet skills as the first priority in not using of internet in business. Lack of trust (15.44%), lack of support from the cooperatives (14.81%), limitations or no Internet connection (14.50%), lack of time (14.28%), lack of knowledge about software (14.18%) and limited numbers or no computers as barriers in the use of Internet or ATM.

The use of the Internet or ATM

The results showed that the majority of respondents (68.2%) were equally calling on the bank and use of ATM to pay bills. 20% of respondents use their mobile banking to pay bills. Use of internet to pay bills was with the lowest frequency (13.62%) in the last category.

TABLE 3: FREQUENCY DISTRIBUTION OF RESPONDENTS BASED ON BILL PAYMENTS

	Relative percentage	Frequency	Comments of respondents regarding the payment of bills
	34.1	15	Calling on banks
	34.1	15	Using ATM
	18.18	8	The use of mobile banking
100	13.62	6	Using the Internet

The use of the Internet or ATM

Respondents comments regarding the methods of payment at the time of purchase indicated that more people (20%) were paid in cash at the time of purchase, 32% of them used both the card and the cash to pay the amount purchased. In the case of using card with the lowest prevalence (23%), used for the payment of purchased.

TABLE 4: FREQUENCY DISTRIBUTION OF RESPONDENTS ACCORDING TO PURCHASE METHOD

relative percentage	Frequency	Comments of respondents regarding the method of payment at the time of purchase
45.45	20	Cash
22.72	10	Card
31.83	14	Both

In the case of correlation of independent variables using internet and ATM, Pearson's correlation coefficient was used. The results suggested that there was positive and significant correlation between self-efficacy and technology adoption (sig=0.01, r=0.154). There was a significant and negative correlation between risk and technology adoption at the level of 0.99 (sig=0.01, r= -0.314). There was negative and significant correlation between age and the technology adoption at the level of 0.99 (sig=0.01, r= -0.454). There was positive and significant correlation between respondents education and technology adoption at the level of 0.95 (sig=0.05, r= 0.248). There was significant and negative correlation among the obstacles to the use of the Internet and technology adoption at the level of 0.99 (sig=0.01, r= -0.251). There was significant and positive correlation between the trust to use the ATM and the Internet and the use of technology at the level of 0.99 (sig=0.001) (Tables3-5).

TABLE 5: PEARSON CORRELATION TEST RESULTS

Significant level	r	Dependent variable	The independent variable	Row
** 0.01	0.154	Electronic cities establishing	Self-efficacy	1.
** 0.01	-0.314		Risk	2.
** 0.01	-0.454		Age	3.
*0.05	0.248		Education	4.
** 0.01	-0.152		Barriers	5.
***0.001	0.411		Trust	6.

In the case of investigating on the effect of independent variables on the dependent variable, technology adoption, the results of Stepwise regression analysis showed that trust had the most effectiveness in explaining dependent variable, technology adoption. Based on the results, regression coefficient $R = 0.36$, $R_2 = 0.21$, and the adjusted coefficient determination $R_{2adj} = 0.19$ were calculated ($F = 30.48$, $P = 0.000$). The results showed that 19% of the variability in the adoption of technology could be explained by the independent variables of trust and the rest of it was affected by factors that were invisible (Table 5). Regarding the coefficients of the following table it could be understood that the regression equation $Y = a + bx_1 + bx_2 + \dots$ was as $Y = 6.781 + 401x$ trust and its standard equation was $Y = .361x$ TRUST (Table 6,7).

TABLE 6. DETERMINATION OF FACTORS EXPLAINING THE FACTORS AFFECTING ON ADOPTION

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.361 ^a	.213	.192	3.88582	.635	30.48	1	137	.000

TABLE 7. SUMMARY OF REGRESSION ANALYSIS BASED ON THE AMOUNT OF TECHNOLOGY ADOPTION BASED ON TRUST

Sig.	t	Beta	Standard error B	B	variable
0.000	4.842	0.361	0.015	0.401	Trust
	-	-	4.33	6.781	Fixed number

DISCUSSION AND RECOMMENDATIONS

The results showed that individuals older than 52 years were less likely to use the ATM. This may be due to lack of use of skill about using the devices. Study of barriers and asking about, what factors can contribute and be effective to the adoption and use of ATM in their opinion, the results showed that respondents reported the lack of basic skills in using internet and training as the first priority. So, training can increase the use of internet in business. On the other hand, the results showed that respondents do not trust the use of Internet in business. The results showed that about barriers to Internet use the majority of respondents (18.7%) reported the lack of basic Internet skills as the first priority in the use of internet in business. Limited or no Internet connection (17.08%), the lack of trust (16.8%), and lack of time (15.5%) were reported as barriers to Internet use by the respondents. The results of investigating on the self-effectiveness of the implementation of mechanisms showed that helping of professional person when faced with a difficult, the first time helping to user, using the same System to do the same work before it and see the other person (including colleagues) using the system, and referring to manuals or online guidance had important role in the use of ATM. These results obtained from this study confirmed the results of Eastin and LaRose (2000). The results of the use of mechanisms for risk of using technology indicated that from the citizens view, fear and anxiety due to the loss of large amounts of data by pressing the wrong button, inadequate government policies and regulations in order to maintain trust and security in the use of web sites, spend a lot of time to correct the errors, financial loss following the use of web sites, and loss of the user's position in colleague group following the use of web sites, had impact on ATM. The obtained results confirmed the research findings of Cunningham (1967). The results of using mechanisms of trust to system showed that in the opinion of members, the lack of security of the user's personal information on websites, the lack of security features and the lack of belief in the use of information provided on this website had effect on the use of ATM machine. Perhaps the reason is that

unlike traditional transactions in which an interaction occurs with humans, in online transaction processing it is done from away and with no interaction with humans. The research findings confirmed the results obtained by Flavian et al. [4]. Based on the results of the study, the following recommendations are offered:

The results showed that trust had effect on establishing e-cities. From citizens' view, the user feel of safety to put their personal information on websites, security features, trust and honest to websites in providing correct information, were of the main determinant of attitudes toward a behavior that make up the trust finally. Since the institution of family, social, political, economic, religious organizations and educational institutions are of centers to create of trust in one's beliefs, therefore it is recommended to undertake enterprises and other third sector providers to inform citizens about honesty and the ability of e-services in cities. The results showed that the risk of using ATM systems had effect on tending to use the ATM. Loss of user position in the peer group following the use of web sites, psychological harm following the use of web sites, spend a lot of time to correct the errors, financial loss following the use of web sites, fear and anxiety due to the loss of large amounts of data by pressing the wrong button, uncertainty because of occurring errors that cannot be corrected, Loss of privacy following the use of websites due to the use of personal information without the user's notification, inadequate government policies and regulations in order to maintain trust and security in the use of websites and the absence of strong security systems built on the site to protect user accounts and personal information were of factors creating risk. It is recommended to make government policies and regulations on safety and trust in the use of websites. The results showed that self-effectiveness had effect on tending to establish e-cities. The results of investigating on the self-effectiveness of the implementation of mechanisms showed that helping of professional person when faced with a difficult, the first time helping to user, using the same System to do the same work before it and see the other person (including colleagues) using the system, and referring to manuals or online guidance had important role in establishing e-cities. Due to the increase in self-trust among citizens had effect in tending to establish e-cities, it is highly recommended that municipalities by providing educational classes and giving professionals to improve self-esteem and self-trust among citizens promote their tending to establish e-cities by their participation and their willingness. The results showed that citizens more used cash to pay for their purchases, probably that was due to lack of training in the use of the charge cards. The classes and giving professionals can influence their decision to use electronic cards [3-5]. No internet connection, slow connection and the high cost of connection were of obstacles and difficulties that citizens pointed on them. Measures in order to overcome these barriers are essential to encourage citizens to establishing e-cities.

REFERENCES

1. National Research Council Committee on IT literacy of American States. (2002). Skills in information technology. Translated by Ali Hossein Ghasemi. Chabahar publication. Tehran.
2. Sanaee A, Torkestani MA. (2007). A citizenship education, a prerequisite for successful implementation of e-city. The first conference. Tehran.
3. Cox DF. (1967). Risk taking and information handling in consumer behavior. Boston: Graduate School of Business Administration, Harvard University.
4. Flavian C, Guinaliu M, Torres E. (2006). How brick-and-mortar attributes affect online banking adoption. *International Journal of Bank Marketing*; 24(6): 406-423.
5. Cunningham SM. (1967). The major dimensions of perceived risk. In D. F. Cox (Ed.), Risk taking and information handling in consumer behavior. Boston: The Harvard University Graduate School of Business Administration.
6. Bauer RA. (1960). Consumer Behavior as Risk Taking. Proceedings American Marketing Association.
7. Erdem T, Zhao Y, Valenzuela A. (2004). Performance of store brands: a cross-country analysis of consumer store brands preferences, perceptions and risk. *Journal of Marketing Research*; XLI: 86-100.
8. Eastin M, LaRose R. (2000). Internet self-efficacy and the psychology of the digital divide. *Journal of Computer-Mediated Communication*;6(1). Retrieved November, 21st. 2005 from JCMC website: <http://www.ascusc.org/jcmc/vol6/issue1/eastin.html>.

CITATION OF THIS ARTICLE

Hamideh G, Parastoo K, Masoomeh S Study of Factors affecting on electronic making of cities and Introducing the barriers facing it (case study: the city of Karaj). *Bull. Env.Pharmacol. Life Sci.*, Vol 4 [3] February 2015:133-137