Identification of the Electronic City Application Obstacles in Iran

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Abstract—Amazing development of the information technology, communications and internet expansion as well as the requirements of the city managers to new ideas to run the city and higher participation of the citizens encourage us to complete the electronic city as soon as possible. The foundations of this electronic city are in information technology. People's participation in metropolitan management is a crucial topic. Information technology does not impede this matter. It can ameliorate populace's participation and better interactions between the citizens and the city managers. Citizens can proffer their ideas, beliefs and votes through digital mass media based upon the internet and computerization plexuses on the topical matters to receive appropriate replies and services. They can participate in urban projects by becoming cognizant of the city views. The most significant challenges are as follows: information and communicative management, altering citizens' views, as well as legal and office documents

Electronic city obstacles have been identified in this research. The required data were forgathered through questionnaires to identify the barriers from a statistical community comprising specialists and practitioners of the ministry of information technology and communication, the municipality information technology organization.

The conclusions demonstrate that the prioritized electronic city application barriers in Iran are as follows:

The support quandaries (non-financial ones), behavioral, cultural and educational plights, the security, legal and license predicaments, the hardware, orismological and infrastructural curbs, the software and fiscal problems.

Keywords—Electronic city, urban management, populace's participation, electronic government, electronic services, electronic organization, electronic infrastructure.

I. INTRODUCTION

CITIES have always been hubs of generation, dynamics, life and vitality. Nowadays humans are witnessing an epoch in which all the interactions comprising sale and purchase, diurnal transactions, banking operations, education and learning, correspondence and conversation, meeting and confabulations, canvassing and opinion polls, declaration of views, voting, referendums and people's participation's are actualized on the computer screens in virtual environments. The astonishing growth of such technologies assists managers in all diverse fields to carry out their duties in better manners. They are also a better platform in urban matters to proffer novel ideas and methodologies and operations.

Ideas such as electronic city, electronic government, electronic democracy, and electronic services pave the way for internet utilization. Cognitive manner of entering this city demands awareness of obstacles and their obliteration.

II. THE THEORETICAL BASES OF THE RESEARCH

A. The Establishment of a Virtual Organization

One of the most crucial information technology applications is the establishment of a virtual organization.

A virtual organization is an entity which uses information technology to communicate with other organizations, people, assets and ideas.

Internet, intranet and other germane technologies are the vital components for the startup of a virtual organization.

B. City

The urbanization theorists describe city as a space phenomenon. This description stems from 3 hypotheses of planning, operations and norms [3]. These postulations are the basis of attitudes which accentuate the role of space in an urbanization formation. City definition from a system point of view signifies an arrangement made up of human activities which are interconnected by processes induced by people, commodities, energy and other information which act within a particular framework[2].

C. Electronic City

The foundations of electronic cities are latent in information technology. Telegraph invention which paved the way for an essential development in communications was the first crucial action to diminish temporal and locational distances to augment information efficiency subsequent to a great development made in information conveyance together with the print industry [4].

Electronic city is a metropolitan whose most activities are realized by internet facilities and electronic systems. Such facilities make it feasible for citizens to access all offices, internal urban zones, as well as other required data round the clock the whole week in a stable, reliable and confidential manner [1]. An electronic city is composed of various

sections and components whose intelligent interactions bring about a virtual environment for electronic living [1]. An electronic city consists of 4 chief sections:

- An electronic life
- An electronic organization
- An electronic government
- An electronic infrastructure

Apart from citizens the organizations of an electronic city should act together with the updated technology. Those organizations which do not make such alterations will be doomed to defeat in the business world. An electronic government makes it feasible for citizens to access electronic services. Hence the interactions between the citizens and other governmental and private organizations are one of the most pivotal factors causing an electronic city success. An electronic city infrastructure is one of the factors regarded in its appraisals. An electronic city development will encounter quandaries sans any appropriate infrastructures in the cultural, human labor and technology fields [1].

D. The Urban Management and the Populace's Participation

When citizens perceive a sense of belonging, their social accountability will realize. Such a sense of belonging is not induced in an urban surrounding unless citizens elect their representatives in a free and democratic atmosphere to formulate urban councils so that they will be able to partake in the metropolitan management in indispensable cases.

People should partake in all the diverse stages of planning, design, implementation, and appraisal of projects or an urban scheme so that the participation will be efficacious.[5]

E. The Information Technology Role Role in Amelioration of Citizens' Participations

Internet has made it facile to share the most mattering components of people's participation. Some of the positive consequences of information sharing comprise establishment of insights, intelligent decision-making, planning and some similar matters.

Hence information makes it possible for citizens and other organizations to partake Online in these activities. The crucial matter in information is the provision of correct information in appropriate time to be proffered to citizens.

Internet makes it viable to utilize a ginormous quantity of information in a categorized and systematic manner. The provision of information matching the users' desiderata has become more facile due to the feedback loops and other communicative facilities which are available in internet sites. Internet has proffered abundant services in 3 scopes in urban services.

1. The requests' processing: This is a manner of gathering scattered data in questionnaires. The mailing list provision as regards the social development and planning enables the citizens to send messages or express their views by becoming members.

2. Sharing ideas: governments, non-governmental organizations, university institutes, advisors, national and global organizations, etc proffer some information about their entity and operations through their web sites which facilitates

better information-rendering and the possibility of matching desiderata with sources.

3. Databases with special topics: numerous databases have been formed on diverse subjects. These databases comprise components such as bibliography, documents, the newsgroup information, mailing lists, relationships with other internet sites, electronic addresses, and internet addresses of the organizations associated with the topics of the databases.[6]

F. The Challenges of the Electronic City

The citizens and the urban managers have to solve 3 challenges to enter the electronic city: 1.The information management and the communicative trends 2.The alterations of the citizens' views 3.The legal and administrative documents

(1) The information management and the communicative trends: The components which have to be taken into account are as follows: relationships between the organizers and the executors to propagate information, internal communication channels in the urban structures, possession of a clear information strategy to make an efficient relationship and participation, a powerful political support for information management systems and the manner of analyzing a huge quantity of electronic emails.[7]

Information management is an inevitable matter to guarantee accountability before people and to access reliable secure data. We need a culture in which information is regarded as a source to be managed correctly. The information management infrastructures should include citizens' services, regarding information as a valuable capital, legislative measures for free exchange of data, protecting the private bounds, retrieval of records, electronic documents to substantiate the claims, electronic archives and business, the accountability and supervision units, executive policies, ameliorated practical methodologies, information-rendering programs and thorough enlightenments.[8]

(2) Alterations of the citizens' views: the next challenge concerns the alterations of the citizens' attitude towards the services rendered by the municipality, governmental and non-government organizations, industrial and commercial sections.

(3) The documentations of the legal and administrative pursuing: if the mayor or the city council encounters a controversial subject, will it be viable to forgather all the reports, documents, files, decisions, correspondences and electronic mails? Can we lay assured that the replies are all-inclusive? How will various drafts and numerous copies of a document be treated? Can the personnel computers be shaken down? Is it feasible to proffer accounts which have been provided in 50 different manners on the spot?

Should electronic mails be kept? Will such mails be regarded as official records? What about acrostic mails? What about collective databases? What will occur if the cases are propounded in a court? [9]

III. THE CONCEPTUALIZED BLUEPRINTS

The hindrances of the electronic city establishment and development are as follows:

1. The hardware, infrastructural and orismological quandaries

2. The software and fiscal predicaments
3. Non-financial supportive impediments
4. The security, legal and license plights
5. The behavioral, cultural and educational difficulties
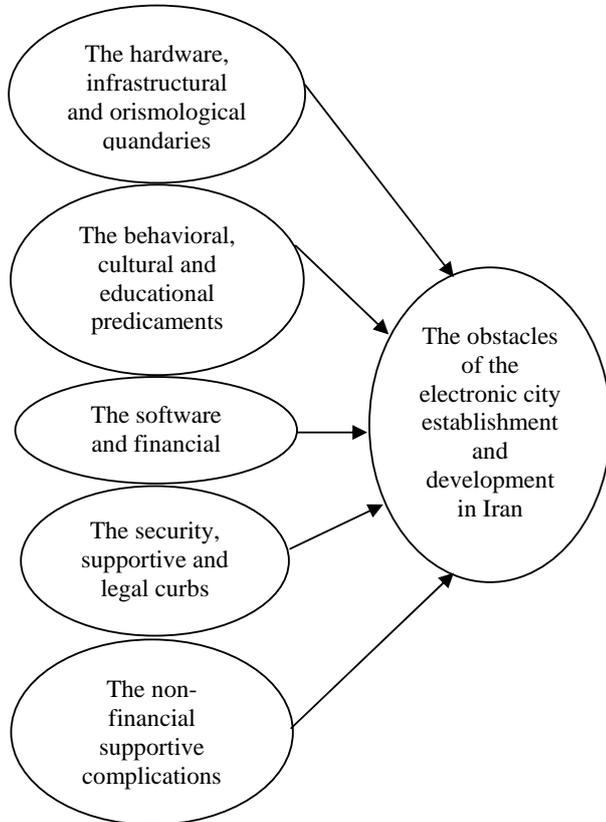The aforementioned obstacles have been propounded as an office blueprints in Fig. 1:

Fig. 1 The conceptualization obstacles of the electronic city establishment and development in Iran

IV. THE RESEARCH OBJECTIVE

This research aims to identify the limitations of the electronic city application in Iran.

V. THE RESEARCH HYPOTHESES

The postulations tried out in this research are as follows:
1. The hardware, infrastructural and orismological quandaries impede the electronic city establishment and development in Iran
2. The software and financial predicaments hinder the electronic city establishment and development in Iran
3. The non-financial supportive curbs hamper the electronic city establishment and development in Iran
4. The security, supportive and legal plights inhibit the electronic city establishment and development in Iran
5. The behavioral, cultural and educational quandaries restrain the electronic city establishment and development in Iran

6. The obstacles of the electronic city establishment and development in Iran are prioritized as follows: (A) The behavioral, cultural and educational quandaries (B) The hardware infrastructural and orismological predicaments (C) The legal supportive and safety plights (D) The fiscal and software problems E) The supportive non-financial curbs.

VI. THE RESEARCH METHODOLOGY

The research methodology executed here is scanning from temporal aspect and descriptive from objective aspect. The research methodology is as follows:
A) The theoretical research bases studies.
B) The presentation of the conceptualized blueprints on the electronic city hindrances in Iran.
C) Provision of a questionnaire and data collection.
D) Trying out the factors and indices of the propounded blueprints in accordance with the information obtained from the census community questionnaire.

- The statistical community

The statistical community of this research comprises the specialists of the ministry of communication and information technology and the information technology organization of Tehran municipality which possess information on electronic city and information technology fields. 32 individuals were identified in the statistical community and they were questioned on the hindrances of the electronic city establishment and development as well as the pragmatic strategies.

- The data gathering methodology

A particular contraption was utilized to forgather the information. A 34-item questionnaire was devised to identify the hindrances in Iran which was filled in by the statistical community. 22 questionnaires were returned which denotes a good return rate of almost %69.

- The research variables

Two types of variables were probed in this research
A) independent variables include the hardware, infrastructural and orismological quandaries, the software and fiscal predicaments, the security, legal and license problems, the behavioral, cultural and educational plights, the (non-financial) supportive curbs.
B) The dependent variables comprise the electronic city application in Iran.

- The validity and stability

The validity and stability are two crucial components of each tool. The research content was validated. The devised questionnaire was proffered to 7 elites. They opined that the questionnaire could be used to extract the required data; hence the research validity was corroborated. The research elites are virtuosos bearing postgraduate or doctorate degrees in the ministry of the communication and information technology and the information technology organization of Tehran municipality. The devised questionnaire was tried out in a 12-item specimen. The research tool stability was calculated to be %7165 by means of Kronbach Alpha which is a high rate. Thus the tool in question is stable.

- The data analysis procedure

Since totally 32 individuals underwent census and calculation descriptive statistics were utilized for testing the hypotheses. The rejection or acceptance of the postulations was based upon the mean. The Likert Spectrum was regarded as a 5-point one and $u = 3$ was postulated.

VII. THE DATA ANALYSIS AND THE HYPOTHESES EXPERIMENTATION

- The first hypothesis test

9 minor indices were considered in the questionnaire for this research testing. These indices are as follows:

Inadequate familiarity of the orismological virtuosos on the activity process about the lack of electronic city development, The behavioral, cultural and educational quandaries, lack of staff participation to supply various modules, low-quality technology on lack of module integration and lack of electronic city development, the information and communicative problems to implement modules and lack of electronic city development, insufficient cooperation of the personnel in non-integrative nature of modules and the electronic city development, the structures of diverse organizational units of each city in modules implementation problems, their interconnections and lack of electronic city development, governmental policies and regulations lacking modules implementation, their integration and the lack of electronic city development, a scarcity of inexpensive equip and computers. The upshots of the statistical data have been illustrated in Table I.

TABLE I
THE CALCULATED DATA OF THE FIRST HYPOTHESIS

Index	Mean	Standard deviation	Obstacle
Insufficient familiarity of the orismological virtuoso on the lack of electronic city development	4.167	1.193	+
The behavioral, cultural and educational quandaries	3.667	0.888	+
Lack of the pertinent staff participation to supply variable modules	3.917	1.240	+
Low-quality technology in unintegrated modules and lack of electronic city development	3.500	1.087	+
The information and communicative infrastructures to implement modules and lack of electronic city development	4.250	0.754	+
Insufficient cooperation of personnel in unintegrated nature of modules and lack of electronic city development	4.000	1.128	+
The structures of diverse organizational units of each city in modules implementation, their interconnections, and the lack of electronic city development	4.000	1.206	+
Governmental policies and regulations in module implementation, their integration, and the lack of electronic city development	4.667	0.492	+
A dearth of cheap computers and equipment	3.083	1.379	+

The total mean of the aforementioned indices is 3.917. Hence the first hypothesis is validated so the hardware infrastructural and orismological problems are curbs in the electronic city development in Iran.

- The second hypothesis test

6 minor indices were regarded in this hypothesis to test this postulation, which are as follows:

High expenditures of installations and implementation of each unit module on unwillingness of organizations to cooperate in electronic city establishment and development, the staff tutorial charges, high cost of enlightening people and publicity, high expenses of the integrative modules support, lack of appropriate software access, insufficient correspondence of the picked out software with the activity process of that unit. The census data upshots have been proffered in Table II.

TABLE II
THE CALCULATED DATA OF THE 2ND HYPOTHESIS

Index	Mean	Standard deviation	Obstacle
The high expenditures of each module unit implementation on unwillingness of organizations to cooperate to establish and develop the electronic city	2.833	0.937	+
The staff teaching expenditures	3.000	1.206	
The high expenses of publicity and advertisements	2.817	0.996	+
High expenditures of integrative modules support	3.233	0.888	-
Lack of appropriate software access	3.750	0.965	+
Insufficient correspondence of the selected software in each unit	4.167	0.718	+

The total average of the above 6 indices is 3.30. Thus the 2nd hypothesis is accepted and software financial quandaries are taken to be a barrier in electronic city establishment and development however staff enlightenment expenditures index is neutral and the high expenses of integrative module support is rejected.

- The 3rd hypothesis test

3 minor indices were regarded in the questionnaire to test these hypotheses which are as follows:

Insufficient support of organizations in electronic city development, inadequate people's buttress in undeveloped nature of the electronic city, insufficient government support in the lack of electronic city development. The results of the statistical data have been illustrated in Table III.

TABLE III
THE CALCULATED DATA OF THE 3TH HYPOTHESIS

Index	Mean	Standard deviation	Obstacle
Insufficient organizations support in the lack of electronic city development	4.417	0.669	+
Inadequate people's support in the lack of electronic city development	3.833	0.937	+
Insufficient government's support in the lack of electronic city development	4.417	0.669	+

The total average of the aforementioned 3 indices is 222, hence the third hypothesis is corroborated so non-financial supportive quandaries are curbs in the electronic city establishment and development in Iran.

- The 4th hypothesis test

11 minor indices were regarded in the questionnaire for this experiment, which are as follows:

Unsuitable rules and regulations of the electronic city utilization, inappropriate copyright laws, encoding and encryption, the security concerns of organizations on the lack of electronic city development, inappropriate regulations of the written archives and documents, inappropriate legal rules on the utilization of paper-free reports, the data loss perils and unauthorized data access and mainframes, lack of facile cheap internet access in Iran, low internet velocity in Iran, low internet quality in Iran, internet and extranet quandaries in organizations. The upshots of the statistical data have been limned in Table IV.

TABLE IV
THE CALCULATED DATA OF THE 4TH HYPOTHESIS

Index	Mean	Standard deviation	Obstacle
Inappropriate rules and regulations to use electronic city	4.500	0.674	+
Encryption, security and copy right unsuitable laws	3.917	1.311	+
The security concerns of organizations on the lack of electronic city development	4.250	0.866	+
Unsuitable regulations of the archive and written official documents	4000	0.853	+
Unsuitable legal regulations on the use of paper-free reports	4.083	0.669	+
The data loss perils and unauthorized access to mainframe data	4.250	1.288	+
Lack of facile simple inexpensive internet access in Iran	3.583	1.165	+
Low internet velocity in Iran	4.000	1.206	+
Low internet quality in Iran	4.083	1.084	+
Intranet quandaries in organizations	3.667	0.985	+
Extranet quandaries in organizations	3.833	0.937	+

The total mean of the 11 indices above is 4.015 therefore the 4th hypothesis is substantiated. Hence the security, legal and license quandaries are among electronic city establishment and development curbs.

- The 5th hypothesis test

5 minor indices were regarded in the questionnaire to test this hypothesis, which are as follows:

Insufficient trust in the society, inappropriate edification of people to use diverse modules in various organizations, inadequate human adroitness, unsuitable organizational culture, inadequate utilization of the information technology to alter the people's comportment and culture. The statistical data results have been mentioned in Table V.

TABLE V
THE CALCULATED DATA OF THE 5TH HYPOTHESIS

Index	Mean	Standard deviation	Obstacle
Insufficient trust in the society	4.167	0.577	+
Unbecoming edification of people to utilize various modules in disparate organizations	3.917	0.793	+
Insufficient human dexterity	3.833	0.835	+
Inappropriate organizational culture	4.250	0.622	+
Inadequate utilization of the information technology to alter people's deportment and culture	4.167	0.577	+

The total mean of the above 5 indices is 4.067 thus the 5th hypothesis is corroborated so behavioral cultural and educational quandaries are among the electronic city establishment and development curbs in Iran.

- The 6th hypothesis test

The electronic city establishment and development curbs in Iran are prioritized in this hypothesis as follows:
(A) The behavioral, cultural and educational quandaries (B) The hardware, infrastructural and orismological problems (C) The legal, supportive and security problems (D) The software and fiscal predicaments (E) non-financial supportive plights.
The mean rating was utilized to test this hypothesis the prioritization of these obstacles has been limned in Table VI.

TABLE IV
THE PRIORITIZATION OF ELECTRONIC CITY OBSTACLES

Rating	Obstacles	Average
1	Non-financial supportive quandaries	4.222
2	Behavioral, cultural and educational predicaments	4.067
3	Security, legal and license plights	4.015
4	Hardware, orismological infrastructural quandaries	3.917
5	Fiscal and software plagues	3.333

The priority of the obtained obstacles is different from the priority portended in the 6th hypothesis. Hence the 6th hypothesis is refuted.

VIII. CONCLUSION

Electronic city is a reflection of new communication and information technology in the urban management. These are the advantages and facilities that such a technology provides for citizens and local organizations. New applications are being expanded increasingly.

The aforementioned development can be accurate only within electronic infrastructures in all dimensions. It is necessary to enable citizens to utilize internet. Establishment of local area networks is one of the infrastructures of the electronic city. Electronic services which are proffered online by governmental and non-government organizations do not realize the electronic city on their own the application of new communicative and information technology is for the sake of furthering people' cooperation to run the city to make its electronic aspects come true. The essential point in any type of information technology such as electronic city concerns

diverse data rendered to people at requirement stages in disparate formats to make the populace aware of the urban views and formation of new ideas.

The upshots of this research are harmonious with those of the previous ones. All the hypotheses of this research have been corroborated. Only the hypothesis related to the electronic city curbs prioritization was rejected. The electronic city curbs in Iran are prioritized as follows:

The non-financial supportive quandaries, the behavioral, cultural and educational problems, the security, legal and license predicaments, the hardware, infrastructural and orismological impediments, the fiscal software barriers.

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