

Role of E-shopping Management Strategy in Urban Environment

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Received 10 May 2010;

Revised 28 June 2010;

Accepted 24 July 2010

ABSTRACT: Considering rapid growth and migration, higher accumulation of communities along with the high number of shopping trips in mega cities such as Tehran brings environmental consequences like excessive amounts of energy use, air pollution and massive urban congestions in all urban trips ending to shopping areas. The present study has been performed in Tehran, capital of Iran in 2009-2010. With the advancement of information, communication technology great access to the electronic devices such as internet, telephone and cell-phone had showed a remarkable increase. Moreover, as a result, the governmental support for elimination or modification of trips through application of tele-presence in various activities has been also developed. The study has investigated the willingness of people in changing their shopping habit from physical to electronic form. A comprehensive questionnaire was designed based on various demographical, geographical and technological competences. For this purpose, final data were collected from 3580 respondents including customers, sellers and governmental sectors in order to achieve the present situation of e-shopping activity in Tehran. Furthermore, cluster analysis were performed and the results showed a significant relationship between e-shopping activities and demographic elements such as; income, education, occupation, marital status. Besides, e-shopping activities have a strong correlation with geographic distributions like distance and time to shopping areas as well as technological competence such as time spent, working, browsing on the net plus the mode of connection. Finally, in order to find out e-shopping management strategy in Tehran, the SWOT analysis along with QSPM and SPACE matrices were performed. In this regard, internal and external factors were gained 3.03 and 2.99, respectively. Subsequently, 22 strategies were developed and the scores of each strategy were defined. Space matrix was also indicated that the e-shopping strategy grows to suggested competitive strategy type.

Key words: Electronic shopping, Urban Environment, Municipal air pollution, Environmental management strategy

INTRODUCTION

To date, rapid growth of population and high rate of migrations along with the high number of shopping trips in metropolitan areas such as Tehran brings environmental consequences like excessive amounts energy use, air pollution and massive urban congestions in all urban trips (Siikavirta *et al.*, 2003; Pourahmad, *et al.*, 2007; Shafie-Pour Motlagh, 2007; Panjeshahi and Ataei, 2008; Pijanowski, *et al.*, 2009). Advantages of electronic shopping from economical, easiness, transparency, as well as environmental points of view are clear and accepted, not only in developed countries with more than two decades of

experience, but also in developing countries (Tehrani and Karbassi, 2005; Chien and Shih, 2007; Tehrani *et al.*, 2009). To purchase a product, the customers can of course visit a store or shopping centers and alternative way is to buy product through the internet (Browne and Allen, 2001; Farag, 2002; Weltevreden and van Rietbergen, 2009), but home shopping via other electronic tools such as telephone, cell-phone and TV are also practiced (Ferrell, 2004; Mokhtarian, 2004; Ferrell, 2005). Several factors are of significant value in accepting and performing this activity. These factors are; individual characteristics (Li *et al.*, 1992); Shopping accessibility-time and distance (Ren and

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Kwan, 2006); products classification and delivery and possession (Mokhtarian, 2004); Internet literacy, working, browsing and shopping experience (Brown *et al.*, 2001; Liao and Cheung, 2001; O'cass and Tino 2003; Cho, 2004). Environmental benefits counted for the studied strategy include elimination or modification of shopping trips, air pollution control, minimization of energy consumption, land use saving and finally solution to urban congestions (Handy and Yantis, 1997; Puanakivi and Holmstrom, 2001; Hjorthol, 2002; Rotem-Mindali and Salomon, 2007; Huang and Shih, 2009). Strategic planning is currently an extended tool for regional development, territorial structuring and business management. Cities, regions, firms and business organization have carried out their strategic plans on the basis of participation processes, which have driven the later development of their own territories (Terrados, *et al.*, 2005). Environmental analysis can also be used as a critical part of the strategic management planning process. SWOT framework (Strength; Weakness; Opportunity and Threat) along with QSPM strategy and SPACE matrix are proposed by many as an analytical tool which should be used to categorize significant environmental factors both internal (strengths; weaknesses) and external (opportunities; Threats) to

the organization (Pickton and Wright, 1998; Mirkia, *et al.*, 2008).

The present study on e-shopping has been performed in Tehran, capital of Iran in 2009-2010.

MATERIALS & METHODS

In order to test the five significant factors and sub-factors amongst Tehran residents, a questionnaire has been provided based on socio demographic, daily and non daily in-store shopping and e-shopping behavior. In addition, technological questions such as Internet experience (time, interval use, method of access), geographical questions as distance and time distance to the nearest shopping center and local store and questions about environmental awareness and responsibilities were designed and distributed in two forms of Internet based as well as through face to face interviews in 22 Districts of Tehran using simple sample taking technique (Fig. 1). The total of 3580 completed questionnaires was collected. Cluster analysis using MVSP software performed. Furthermore, SWOT analysis, QSPM and SPACE matrix for reaching to the most important e-shopping management strategy were carried out.

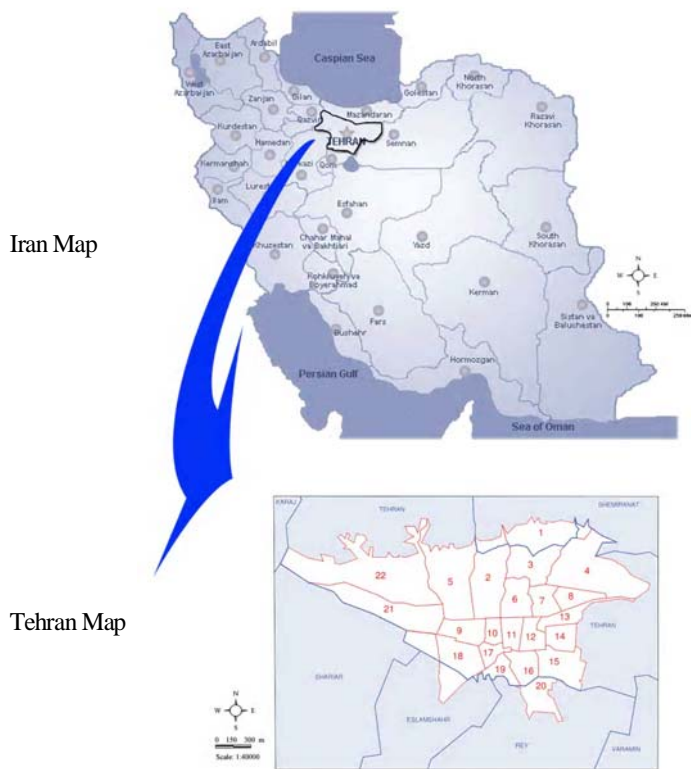


Fig. 1. Geographic location of the study area

RESULTS & DISCUSSION

Although a very systematic and well structured strategy is not available for e-shopping in the study area, but 3580 completed questionnaires from respondents showed a very interesting result from their past e-shopping experience (75%). Table 1

illustrates a complete sample analysis from the questionnaire for all the 31 studied variables. Table 2 shows the percentage of respondents in 22 Districts of Tehran where Districts 1, 2, 3, 4 were responded more actively than other Districts. Statistical classification technique in which e-shopping data

Table 1. Descriptive analysis of 3580 respondents in the study area

Factors	%	Factors	%	Factors	%	Factors	%
Gender:		Marital Status:		Age: (Year)		Car ownership:	
Male	52	Single	31	18-28	39	Yes	80
Female	48	Married	69	29-39	33	No	20
				40-50	19		
				51-61	7		
				Over 62	2		
Education:		Profession:		Income: (\$ US)		Computer ownership:	
Under diploma	3	House-keeper	13	Less than 300	16	Yes	89
Diploma	17	Private Employee	21	Less than 600	47	No	11
Higher diploma	13	Governmental E.	27	Less than 1000	27		
BA.; BSc.	24	ICT Expert	5	Less than 1,500	5		
MA; MSc., MD	29	University Student	14	More than 1,500	5		
Ph.D.	4	Self-employed	17				
		Retired	3				
Distance to the nearest local store (km):		Time distance to the nearest local store (min)		Distance to shopping center (km):		Time distance to shopping center: (min)	
Less than 1	62	Less than 30	93	Less than 1	10	Less than 30	27
Between 1-3	36	30 to 60	6	Between 1-3	39	30 to 60	67
Between 3-5	1	More than 60	1	Between 3-5	30	More than 60	6
More than 5	1			More than 5	21		
Physical shopping transportation hardship:		Shopping transportation method:		Cost per shopping (\$US):		Time saving in shopping:	
Yes	63	Personal car	72	Less than 10	7	Yes	92
No	37	Public	11	Less than 50	72	No	8
		On foot	17	Less than 100	17		
				More than 100	4		
Internet access methods:		Internet literacy:		Daily internet use:		Future e-shopping tools:	
Dial up	36	Very high	22	More than 2 h.	13	Internet	82
ADSL	27	High	32	1 - 2 h.	32	Phone	12
Wireless	28	Medium	22	30 – 60 min.	38	Cell-phone	2
Inaccessible	9	Little	13	Less than 30 min.	14	TV	1
		None	11	None	12	None	4
Environmental protection cost:		E-activities acceptance for environmental benefits:		Responsibility towards environmental issues:		Economical saving in shopping:	
Yes	81	Yes	98	Yes	73	Yes	84
No	19	No	2	No	27	No	16
Time lost in shopping:		Physical shopping frequency:		Physical shopping enjoyment:		Cash payment preference in shopping:	
Yes	82	Daily	5	Yes		Yes	81
No	18	Weekly	32	No	78	No	12
		Twice a week	49				
		Monthly	14		22		
		E-shopping satisfaction experience:		E-shopping tools in past:			
		Very satisfied	54	Internet	46		
		Satisfied	19	Phone	27		
		Dissatisfied	2	Cell-phone	5		
		NA	25	TV	2		
				None	20		

were sub-divided into the cluster group was then performed with the variables using MVSP software to show the relationship between the variables. The output of this analysis was subdivided into 6 cluster

groups of A.B.C.D.E. F. (Fig. 2). First cluster showed that gender had small role in e-shopping acceptance while variables in cluster B had positive with meaningful relation to acceptance of e-shopping activity and classified as “Important variables”.

Group C of variables had also strong and important effect in choosing the new system of shopping by the respondents. Group D of variables which was the most important factors showed that those mentioned elements were the critical variables and classified as the “Essential variables” in accepting e-shopping. In group E, seven variables were taken into account and dominating relation over these factors was considerably weak and insignificant. However, a relatively logical relation between profession and economical saving were observed. Finally, in group F, the cluster analysis showed that respondents living in the classier Districts (1 and 2) had higher desire of acceptance

Table 2. Residential area of respondents in accordance with Tehran Municipality Districts

Tehran Districts	Respondents (%)	Tehran Districts	Respondents (%)
1	12	12	4
2	13	13	2
3	9	14	4
4	10	15	3
5	7	16	3
6	5	17	2
7	6	18	2
8	2	19	2
9	4	20	2
10	1	21	1
11	4	22	3

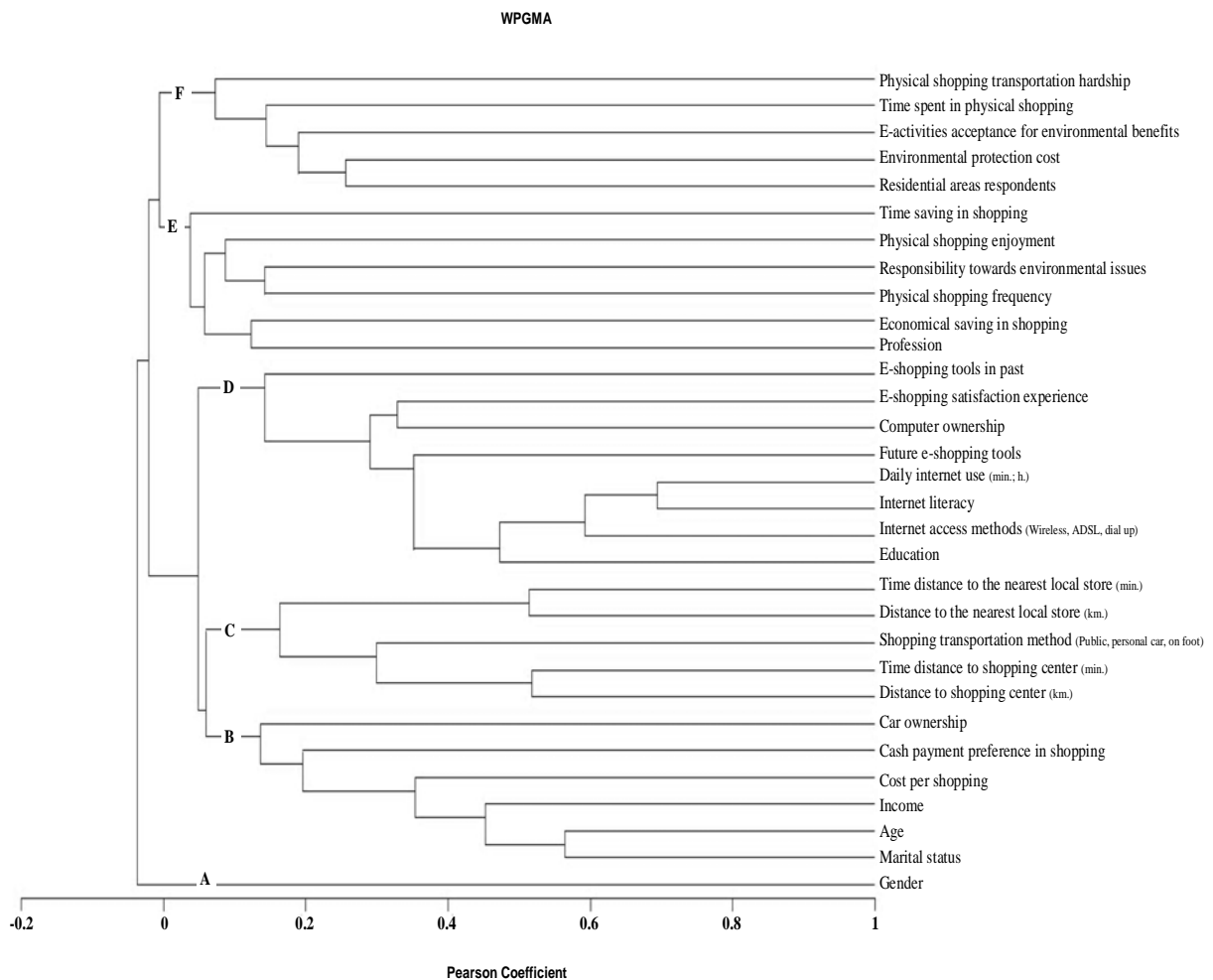


Fig. 2. Cluster Analysis of the e-shopping satisfaction experience management strategy in Tehran

Table 3. SWOT matrix: Derivation of the key strategies in the e-shopping management strategy

<p style="text-align: center;">Internal Factors</p> <p style="text-align: center;">External Factors</p>	<p style="text-align: center;">3) Strengths (S)</p> <p>S₁: More access to goods descriptions (According to the name, branch, color, weight and price) and ability of goods comparison from quality standard and price point of view in various stores S₂: Interaction ability and exchanging views amongst the customers and close relations with the sellers due to system interaction S₃: Ability of 24 hours shopping system from home or workplace S₄: Buying and receiving simultaneously for some products electronically such as; music, books, software ... S₅: Lower offer prices of goods due to elimination of overhead in whole seller S₆: Elimination of push system and absence of stress in comparison with physical shopping and ability of control in shopping process by the consumers S₇: Easiness in payment transaction and price transparency due to standard coding system S₈: Receiving goods and groceries without personal urban trip making S₉: Less operational cost of e-shopping store versus brick and mortar stores S₁₀: Possibility of customer classification according to their needs and styles for the sake of better goods selection S₁₁: Earnest attention to the needs of customer due to customer orientation system S₁₂: Elimination of third parties in goods distribution chain and transportations S₁₃: Urban management close attention in development of application of e-commerce system</p>	<p style="text-align: center;">4) Weaknesses (W)</p> <p>W₁: Inadequate skills in ICT and computer usage W₂: High cost and inadequate access to broad band internet W₃: High cost of computer ownership W₄: Lack of trust and confidence in the ordered goods quality W₅: Lack of confidence in safe keeping of consumer and sellers personal information W₆: Absence of trust in unacquainted e-shopping sites W₇: Lack of tactile sense before shopping W₈: Lack of competence in presence of goods return policy W₉: No adequate and compiled laws and regulations specific for e-shopping system W₁₀: Inadequate investment in establishment of technology related to e-commerce W₁₁: In ability in forecasting environmental reactions W₁₂: Lack of credit cards ownership</p>
	<p style="text-align: center;">1) Opportunities (O)</p>	<p style="text-align: center;">Strategies on the basis of strength points and opportunities (SO)</p>
<p>O₁: Trips reduction through e-shopping O₂: Energy consumption reduction as the cause of trip elimination of consumers and utilization of efficient transportation by e-retailers O₃: Air pollution and greenhouse gases reduction O₄: Goods price reduction due to overhead elimination O₅: Saving shopping time and its allocation to other activities O₆: Less psychological tension through urban traffic jam diminishing O₇: Groceries and goods elimination of truck delivery to the local supermarkets O₈: providing a suitable business model based on new technology O₉: Rapid and feasible interactions between government and business O₁₀: Providing appropriate plans and policies along with constant monitoring and access to business state by government O₁₁: Reduction of current bureaucracy amongst producers and sellers O₁₂: Increasing of speed in shopping processes O₁₃: Decreasing of unsold goods waste in wholesalers and their transportation to producers O₁₄: Promoting culture of information and communication technology usage</p>	<p>1- To compel the producers and sellers to create their website in order to show the specification, standards coding related to their products providing the case of company quality and prices before any commitment for shopping to the customer in direction of minimizing urban traffic and environmental pollution along with time saving and promoting speed of shopping process 2- Providing interactive facilities between customers and sellers through 24/ 7 shopping websites 3- Price reduction of goods and groceries bought online (Due to third parties and overhead elimination and competitive prices) to encourage customers to substitute physical shopping trips with e-shopping 4- Promoting and encouraging acceptance of e-shopping culture amongst the customers in order to eliminate stress factors coming from friction between customers and sellers and promoting environmental awareness culture 5- Creation of compelling circumstances for standardization and bar coding systems of products for price reduction purposes and application of a systematic model based on new technology in supply chain 6- Urban management attention and support in providing facilities for e-commerce system development 7- Providing applicable software's of e-shopping for establishment of better interaction between customers and e-sellers 8- Elimination of third parties and transparency of transactions in distribution, selling and buying of products chain as an encouragement sellers and customers and producers for e-commerce acceptance 9- Mass media advertising for magnifying the fact about elimination of urban shopping trips as the result of e-shopping</p>	<p>1- Providing awareness, education, transparency and persuasion of customers and sellers in understanding full dimensions of e-shopping in accordance with sustainable development and consumption patterns from policy makers 2- Compulsion to acquire IT skills through educational trainings in different school levels by government for benefiting from all opportunities of e-shopping in future 3- Economical savings through e-shopping activity 4- Providing a suitable business model based on new technology opportunities of goods and groceries by retailing government sector with monitoring and surveillance indirect of trust building amongst customers and sellers</p>
<p style="text-align: center;">2) Threats (T)</p>	<p style="text-align: center;">Strategies basis of the strength points and threats (ST)</p>	<p style="text-align: center;">The strategies basis of the weak points and threats (WT)</p>
<p>T₁: Elimination of physical shopping enjoyment T₂: Elimination of social communication T₃: Rapid variation in ICT industry and its cost T₄: Over consumption due to lower prices and shopping accessibility T₅: Excessive shopping orders due to easy delivery system T₆: Solid waste growth resulting from packaging T₇: Electricity consumption growth resulting from PC usage</p>	<p>1- Designing and implementing websites and e-catalogues in accordance with standards and high digital quality in order to attract customers and creation of enjoyment from using web environment 2- Updating and strengthening e-shopping sites along with ICT development 3- Providing multilateral interactive relation between sellers and customers in order to encourage them to achieve new experience in social relations 4- Encouragement and training of sellers to have better interaction with customers and accepting their point of views about packaging and delivering of goods 5- Providing education and awareness in choosing and buying products in regards with family consumption patterns by urban management</p>	<p>1- Providing complimentary education in the field of IT from beginner to advanced levels and putting into effect the notion of "E-citizen" 2- Providing necessary facilities for free or minimum price of access to internet with appropriate broad band 3- Constituting necessary facilities for sufficient investment for establishment of relating technology to e-commerce 4- Providing necessary facilities for allocating credit cards and internet access to bank accounts</p>

Table 4. Priorities of the executive strategies for e-shopping management strategy

No.	S+T	Strategy	Rate	%
1	ST ₂₂	Providing a suitable business model based on new technology opportunities of goods and groceries by retailing government sector with monitoring and surveillance indirection of trust building amongst customers and sellers	5.34	6.91
2	ST ₁₉	Providing awareness, education, transparency and persuasion of customers and sellers in understanding full dimensions of e-shopping in accordance with sustainable development and consumption patterns from policy makers	5.14	6.65
3	ST ₁₂	Providing multilateral interactive relation between sellers and customers in order to encourage to achieve new experience in social relations	4.78	6.18
4	ST ₁	To compel the producers and sellers to create their website in order to show the specification, standards coding related to their products providing the case of company quality and prices before any commitment for shopping to the customer in direction of minimizing urban traffic and environmental pollution along with time saving and promoting speed of shopping process	4.56	5.90
5	ST ₇	Providing applicable software's of e-shopping for establishment of better interaction between customers and e-sellers in order to promote e-shopping system amongst the customers	4.20	5.34
6	ST ₁₆	Providing necessary facilities for free or minimum price of access to internet with appropriate broad band	3.99	5.16
7	ST ₉	Mass media advertising for magnifying the fact about elimination of urban shopping trips as the result of e-shopping	3.95	5.11
8	ST ₃	Price reduction of goods and groceries bought online (Due to third parties and overhead elimination and competitive prices) to encourage customers to substitute physical shopping trips with e-shopping	3.89	5.03
9	ST ₆	Urban management close attention in development of application of e-commerce system	3.81	4.93
10	ST ₂	Providing interactive facilities between customers and sellers through 24/ 7 shopping websites in order to minimizing urban traffic and environmental pollution along with time saving	3.79	4.90
11	ST ₁₃	Encouragement and training of sellers to have better interaction with customers and accepting their point of views about packaging and delivering of goods	3.46	4.47
12	ST ₁₇	Constituting necessary facilities for sufficient investment for establishment of relating technology to e-commerce	3.34	4.32
13	ST ₁₁	Updating and strengthening e-shopping sites in direction of ICT development	3.32	4.29
14	ST ₄	Promoting and encouraging acceptance of e-shopping culture amongst the customers in order to eliminate stress factors coming from friction between customers and sellers and promoting environmental awareness culture	3.19	4.12
15	ST ₂₁	Investment of all the economical savings resulting from e-shopping acceptance in relating ICT sector	3.01	3.89
16	ST ₁₀	Designing and implementing websites and e-catalogues in accordance with standards and high digital quality in order to attract customers and creation of enjoyment from using web environment	2.94	3.80
17	ST ₁₄	Providing education and awareness in choosing and buying products in regards with family consumption patterns by urban management	2.86	3.70
18	ST ₁₈	Providing necessary facilities for allocating credit cards and internet access to bank accounts	2.79	3.61
19	ST ₈	Elimination of third parties and transparency of transactions in distribution, selling and buying of products chain as an encouragement sellers and customers and producers for e-commerce acceptance	2.73	3.53
20	ST ₁₅	Providing complimentary education in the field of IT from beginner to advanced levels and putting into effect the notion of "E-citizen"	2.58	3.33
21	ST ₅	Creation of compelling circumstances for standardization and bar coding systems of products for price reduction purposes and application of a systematic model based on new technology in supply chain	2.41	3.11
22	ST ₂₀	Compulsion to acquire IT skills through educational trainings in different school levels by government for benefiting from all opportunities of e-shopping in future	1.17	1.51
			$\Sigma =$	$\Sigma =$
			77.25	100

and hardship of physical shopping with time loss for physical shopping were two distinctive variables related to shopping behavior changes. Finally it is believed that group D, which represents views of the respondents in regards with e-shopping had close relation with the variables in group B and C while, group A, E, F had less significant value in overall perspectives of respondents in relation with e-shopping activity.

In the further investigation, environmental analysis was used as a critical part of the strategic management planning process. SWOT framework categorized the significant environmental factors both

internal (strengths; weaknesses) and external (opportunities; Threats) to the e- shopping management strategy. Many factors for strengths and weaknesses were determined. These factors were weighted in a way that the sum of these weighs is equal to one. Then, a score was allocated to each factor, between 1 to 4 from severe weakness to important strengths. External factors consisted of opportunities and threats. In this regard, all the steps were similar to IFE matrix. According to Table 3, integration of these two matrices indicated the key strategies in the e-shopping management.

Table 5. SPACE matrix for evaluating situations and strategic measures

Items	Score
Financial Status (FS)	
1. Goods prices reduction	+5
2. Cost of access to the e-shopping system through electronic tools, telephone, mobile-phone and TV	+3
3. Cost of computer ownership	+3
4. Lack of adequate investment in technology establishment related to e-commerce	+5
5. Economical savings from energy consumption and social costs	+4
	20÷5 = 4
Industrial Status (IS)	
1. Providing a suitable business model based on new technology and reviewing of existing regulations related to technology of e-shopping system	+5
2. Presence of e-shopping attractions (Speed, time, price, environmental attitude and belief)	+3
3. Shopping 24/ 7 and Unnecessary handling and carrying cash	+3
4. Buying and receiving some products simultaneously electronically	+3
	14÷4 = 3.5
Environmental Stability (ES)	
1. Lack of proper access to electronic tools (Internet, Phone, Mobile, TV)	-4
2. Rapid variations in ICT	-2
3. Inadequate skills in IT and computer	-4
4. Lack of credit cards and internet accounts ownership	-3
5. Inadequate confidence in e-shopping sites (Quality of goods, safe keeping personal information, lack of tactile senses, goods return policy)	-5
	-18÷5= -3.6
Competitive Advantage (CA)	
1. Inadequate presence of force to oblige procedures for receiving standard products codes and establishing website	-5
2. Weak interactions between government and business	-4
3. Inadequate governmental support and investment in promoting e-shopping culture	-3
4. Inadequate security in e-shopping systems	-4
	-16÷4= -4
X = ES + FS = 4 - 3.6 = + 0.4	
Y = IS + CA = 3.5 - 4 = - 0.5	

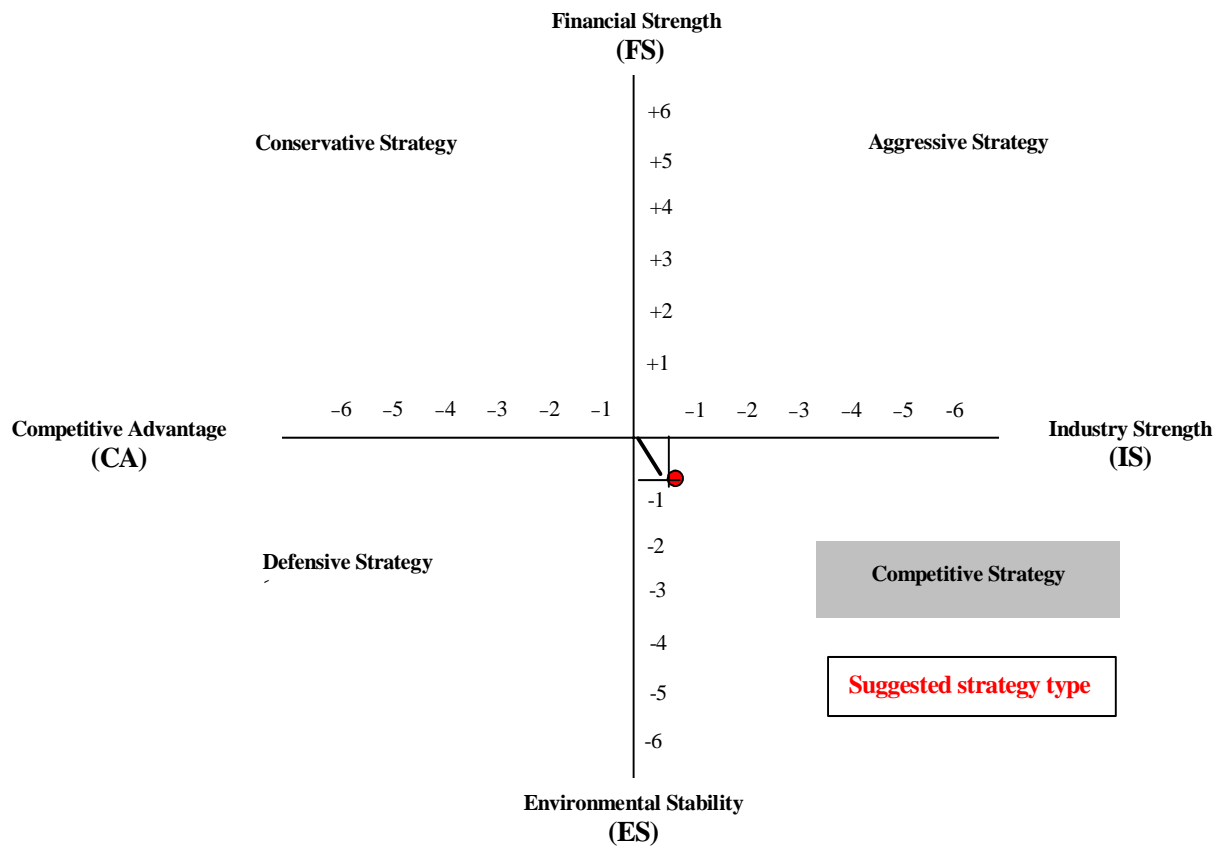


Fig. 3. Position evaluation diagram of SPAEC matrix

In order to weigh the strategies of SWOT matrix, the quantitative strategic planning matrix (QSPM) were applied. Determination of cumulative effects of each important internal and external factor could show the proportional attractiveness for each strategy. For presenting a quantitative strategic matrix, quadric factors (strength, weaknesses, opportunities and threats) from IFE and EFE matrixes were extracted. Allocated weight is illustrated in the following column. The first row shows the strategies. For score determination, internal and external factors that had a role in success are evaluated. A score from 1 to 4 was allocated to each factor. If a factor had not any important role in strategy selection process, it would not receive any score. This method considered collection of strategies simultaneously. With this matrix, infinite strategies could be evaluated. In the next step, sum of attractiveness of each strategy was computed. According to the Table 4, the results showed that the most important strategy was ST_{22} which acquired 6.91% of scores. This indicated that providing a suitable business model based on new technology opportunities buy the governmental relating sector along whit license issuance for starting of e-

shopping web sites by the same sector would be the most important strategy which can also be accompanied by monitoring and surveillance in order to building trust and confidence amongst the customer and sellers. The last strategy was belonged to ST_{20} with the score of 1.51%.

In order to prepare the strategic position and action evaluation (SPACE) matrix, the factors of IFE and EFE matrix should be considered fore-shopping strategy purposes, variables that introduce financial strengths (FS), competitive advantage (CA), environmental stability (ES) and industry strength (IS) were determined. IS and FS were scored between +1 (the worst) to +6 (the best). Then the mean of IS factor and the mean of FS factor were distinct on IS and FS axes. ES and CA are scored from -6 (the worst) to -1 (the best). The mean of ES factors and the mean of CA factors are averaged on ES and CA axes. Furthermore, algebraic sum of values on the X axes and algebraic sum of values on the Y axes were averaged. The results indicated that the X score was + 0.4 and Y score was - 0.5 (Table 5).

These two points determined the Cartesian coordinate of position point. With zero point and

position point, the diagram of position evaluation was drawn (Fig 3). Space matrix result indicated that the e-shopping strategy grown to be as suggested competitive strategy type (Fig. 3).

CONCLUSION

A comprehensive questionnaire was designed based on various demographical, geographical and technological competences. Data were collected from 3580 respondents including customers, sellers and governmental sectors in order to achieve the present situation of e-shopping activity in Tehran. Furthermore, cluster analysis were performed and the results showed a significant relationship between e-shopping activities and demographic elements such as; income, education, occupation, marital status. Besides, e-shopping activities have a strong correlation with geographic distributions like distance and time to shopping areas as well as technological competence such as time lost, working, browsing on the net plus the mode of connection. The SWOT analysis along with QSPM and SPACE matrices were performed. Thus, internal and external factors were obtained. Subsequently, the total strategies were developed and the scores of each strategy were defined. Space matrix indicated that the e-shopping strategy grows to competitive strategy type.

ACKNOWLEDGEMENTS

The authors would like to express their sincere appreciation for the scientific support of Dr. J. Goddossi for his generous help, also grateful to Dr. H. Nikoomaram for his scientific support. Moreover, sincere thanks are devoted to Dr. F. Gaffari for his great assistance throughout the project statistical exercises. At last not at least, authors are most grateful to Mrs. S. Mirkia for her continuous advice.

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