

Effective Factors on Adaptation of Small and Middle Towns to Electronic Business

(Case Study of Small and Middle Manufacturing Units of Isfahan Province)

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ABSTRACT

In this study, two independent strategic processes, strategic value and adaptation with electronic business have been exploited based on the perception of superior managers of small and middle towns of Isfahan. Main purpose of this study is to plan one research model that to fundamental assumption is the existence of a causal relation among perceived strategic values against the electronic business and accept it.

The managers of unit will find necessary understanding relative to strategic and helping to strategic decisions. Thus adaptation and application of electronic business are depended on the factors including electronic readiness, external pressure, adaptation to culture and values, availability of applying superior managers, perspectives of this study for evaluating validity assumption of a model of study. We gather the information of small and middle towns that confirms data analysis, assumptions and study model with high pressure.

KEYWORDS: Electronic business, small and middle towns, perception, strategic value, adaptation to electronic business, managerial exploitation, and electronic readiness

INTRODUCTION

Nowadays, application of electronic business has considerably developed in most countries all over the world, while it is manifested in the year 2011, the size of global electronic transactions reaches to 680 billions dollars by 18.9% rising in comparison with previous year. (Morgan 2011). A basic cause of global prosperity of electronic business is that it is able to make considerable evolutions in the business world and change basically traditional business transactions and occasions. The privileges including removing place and time limitation and increasing the speed and accuracy transactions, decreasing administrative the costs of purchase in the value 81%, decreasing effectively marketing and selling costs, changing the system of security hierarchy, decreasing store's asset and its costs and assisting to fulfill JIT and reengineering business process (BPR), changing the definition of economy due to the scale, making new channel of the purchase and improving considerably products and services quality etc. that lead to rise the exploitation and competitive power of companies.

It's obvious that in such circumstances, adaptation to electronic business for the countries that maintain competitive power is a vital and unavoidable issue. Therefore, every year electronic readiness of countries are measured and announced by international organizations. Regarding to Iranian reports in a 5 year period, electronic readiness has decreased from the grade 50 in 2006 to 65 in 2006. In the year 2008, it reached to last grade (75) and in the 2009 had had 2 grades uplifting. It shows that some countries like United Arab Emirates (grade 35), Malaysia (38), Turkey (43), Jamaica (research), Thailand(49), Jordan(50), Saudi(51) and Nigeria(61) have the conditions by many degrees better than Iran. The measures of electronic readiness are containing technological and communicative infrastructure (20%), business environment (15%), adaptation to the consumers and the agents (25%), social-cultural environment (15%), legal environment (10%) policies and perspective of government (15%) (economist intelligent 2009).

Based on last report of electronic government in economical and social affairs of United Nations in 2010, South Korea, USA, Canada are in the peak of countries in the world for state development and advancement of electronic readiness. The south Asia has already been under mean global level and has lowest grade in Asia. Regarding to what is pointed out in this report; Iran after Maldives with the index 4234 has grade 2 and the grade 102 among 183 countries in the world (Survey 2010)

The purpose of this study is to investigate and analyze Effective factors on adaptation of small and middle towns to electronic business

For recognizing the views and the perspectives of managers about strategic value of electronic business and determining effective variables on their adaptation to electronic business in these companies, necessary basis for suitable planning is provided in state and private sectors.

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Research model

By exploiting the model of Crandon and Pearson (2004) and reviewing the literature of strategic value, electronic business and theory of planned behavior (TPB) have been designed and presented as the model of this research.

1. Perception of strategic value of electronic business: corresponding to the perspectives of Subramanian and Nosek (2001), three main variables are considered as a resource of strategic value of electronic business including operational supports, managerial exploitation, helping strategic decision. Operational support is a variable whose roles are to decrease the costs and improve the customers' services and distribution channels, playing an effective role of distribution is to assist the relation between the customers and suppliers and increase the competitive power. Managerial exploitation points out this fact that how electronic business can make a possible the place for accessing information and provide a proper instrument for helping making deciding and improve organizational communication and increase managers' exploitation. It helps to make deciding the managers to know how electronic business can support between shareholders and provide necessary information to take a strategic decision.
2. Effective factors on adaptation to electronic business:
The factors of previous researches about adaptation to the technology have been used in this model. The summary of related research documents that is used in the study are presented in table (1)

Table (1) summary of related documents of adaptation factors in this study

Backgrounds relating to previous studies	Factors relating to this study	Reference
Financial readiness	Organizational factors	Beatty et al (2001)
Technical readiness		Beatty et al (2001)
Organizational readiness		Iacovo et al (1995)
Proper condition of organization Adaptation to firms	Adaptation	Kuan and Chau(2005), Chang and Cheung (2001) MirChandani and Motwani(2001)
External pressures	External pressure	Iacovo et al (1995)
Social environmental factors		Kuan and Chau(2005), Chang and Cheung (2001)
Perception of perceived simplicity	Perceived ease	Davis (1989)
Perception of advantages	Perceived advantages	Davis (1989)

As it is observed in table (1), adaptation factors are including organizational readiness, adaptation to external pressure, the ease of applying and profitability of electronic business. Research model is drawn by establishing the relation between two sets of factors (perceived strategic value and adaptation to the electronic business)

Questions and Assumptions

Question 1: what are determinants of perceived strategic value of electronic business in small and middle manufacturing units of Isfahan?

Assumption relating to question 1:

- 1-supporting the organization loads to promote strategic value of electronic business
- 2-managerial exploitation results in strategic value of electronic business
- 3-Level of assistance of electronic business to take strategic decisions of organization loads to promote strategic value

Question 2: corresponding to the managers' perspectives of small and middle manufacturing units of Isfahan what factors do act on their decisions based on adaptation to electronic business?

Assumption relating to question 2:

- 4-organizational readiness has an effective role on electronic business.
- 5-External pressures are effective on adaptation to electronic business.
- 6-the level of adaptation of electronic business to the culture, values and daily organizational affairs have effective role on accepting it.
- 7- The ease of applying electronic business plays an effective role on accepting it by small and middle manufacturing units.
- 8-adaptation to electronic business is depending on managers' perception of its profitability.

Question 3: is there a relation between perception of strategic value of electronic business and electronic business to it?

Electronic business is including the process of purchase, selling, transactions, services and organizational information through internet (Turban, 2006). In recent years, small and middle manufacturing units have an important role at the economics of countries. The role of these companies has been considered by the researchers since 1970s. The companies based on their flexibilities, higher speed to present new and irreadinessovative products and lower excessive costs (in comparison with firms) have increased the role of electronic business and its importance. Typically, almost 95% existing firms in the operational are between. Moreover, it is mentioned that nearly 60 to 70 % employed ones if every value are working in these firms. It's

obvious that according to further advantages electronic business has for organizations; its application in business has an effective role to increase competitive power, profitability and effectiveness of them.

research backgrounds: Sohrabi and Khanlari(2010) conducted a research under the title "impressive factors on applying electronic business in small and middle units of Isfahan" on 102 senior managers of small and middle units of Isfahan and found that evolution of online markets and infrastructure of technology in a firm have highest impact and cohesion. Salimifard and Abbasi (2010) studied different assessment models of electronic readiness in a research under the title "studying electronic readiness of small and middle units for electronic business" also they presented a practical method for measuring electronic readiness. Obtained results of this research show that studied firms have acceptable readiness for electronic business.

Vilaseca et al (2007) studied the effect of six independent variables (competitive environment, organization features, organizational trend, innovation, level of training managers, Information Technology) on accepting and expanding electronic business in the firm by a research under the title "one synthetic model of accepting and expanding electronic business in the firm". This research is consisting studying 2038 firms in Catalonia from Spain. One of the purposes of the research is to realize and evaluate internal and external factors that evoke the firms to develop the capacities of electronic business based on internet. The instrument of gathering information is a self made questionnaire that is provided by the researcher is totally consisting 13 sections of categorizations. Also, multifold linear regression is used for analyzing data, one of constraints of the research. From limitations of this research for generalizing these results is that the data have only been collected from the firms of one country (Spain) based on obtained results of these researches about internal factors of the firms, strategic trend, innovation level and the level of innovation and training the managers to get a decision for entering into 11 to trade products. Also a part of decision to accept electronic business has external origin. As the firms are competing with foreign vitals, they feel more pressure on accepting electronic business. Parcel and Tolland (2004) performed a research under the title "electronic business for south specific ocean: reviewing on electronic readiness." The aim of this research is to explore the grounds of made opportunities through developing in the area and that how these countries want to obtain the advantages by triggering toward last update technologies and eliminate some stages of making expensive infrastructure. In this study, 12 businesses were studied that were chosen from 4 sections including manufacturing, tourism retailing and consultation firms. The results of this research show that developing electronic business in south specific ocean is a preventive factor containing shortage of human sources, lack of the awareness assumption the advantages of electronic business based on internet, how capacity of institution and high cost of information management system. Also it is predicted in the studies that development of electronic business in the south specific ocean will improve in the sections such as health, training, agriculture, external investment and all economy.

Subba Roa, Glenn Metts and Mora Mong (2003) conducted a research under the title "development of electronic business in between and presented a model to investigate electronic business applications in between. This model is containing 4 stages: making a website, making portals, blending together the studies and synthesizing the firms that have specific equipments and barriers. In his research, a sample containing 153 firms from 8 industries and 17 countries are studied and for description the process of categorizing the firms as a case study, four firms from Australia and three firms from USA are selected. Moreover, Crandon and Pearson (2004) in the west of USA, Pronto and Jodi Mc Key and Peter Marshal (2003) in Australia, Elizabeth Daniel and Huge Wilson (2002) in England and a few researchers in different countries regarding to their models studied the level of adaptation of small and middle units of Isfahan with electronic business.

RESEARCH METHOD

In the view of the fact that this research present the situation within descriptive studies and the relation between the level of perception of strategic value of electronic business and its adaptation to electronic business, it's a correlative one. statistical pop of the study is including 2662 managers of small and middle manufacturing units of Isfahan that are positioned in industrial towns for determining sample size of this study, regarding to not access studied attribute variance, firstly the variance has been estimated by using 30 preliminary questions and then by using estimation of the ratio and related formula with reliability 65%, the number 336 ones are estimated. The instrument of this study is a questionnaire. This questionnaire that is prepared by a researcher has three basic sections including as follows:

Section 1: sociological data that has a descriptive aspect and is consisting the gender, education, managerial history, the number of computers, using internet and website and electronic business

Section 2: it is including questionnaires relating to the view of sampled members about strategic value of electronic business.

Section 3: it's the questionnaire about the view of managers about adaptation to electronic business.

Reliability and validity: for measuring reliability of measurement instrument, Cronbach's Alfa has been used and it is 97% for this questionnaire. Based on preliminary study, 30 questions are estimated that is a

sign of high reliability of measurement. For measuring validity of measurement, preliminary questionnaires are given to the professors as a referee and they confirmed validity of questionnaire.

Data analysis

Research findings are analyzed in two parts descriptive and inductive. Descriptive part of the study is including gender, education, managerial history of managers of manufacturing units and also the number of computers and using internet and web site and applying electronic business and inductive part is like followings:

Assumptions' test

Assumption 1- supporting the organization leads to promote strategic value of electronic business.

According to the assumption, if managers of mentioned units believe that electronic business supports organizational operation , strategic value of electronic business is increasing in managers' view and tend to adapt(accept) this in this assumption, the level of adaptation and acceptance of electronic business with level of managers' perception is relating to the role of supporting organizational electronic business. The results of statistical analysis and test relating to this assumption are presented in table (2).

Table (2) correlation coefficient between operational support of organizations and adaptation to electronic business

Correlation coefficient	Adaptation to electronic business		
	n	P	R
Organizational operational support	365	0.001	0.681

Based on the results of table (2), correlation coefficient between operational support of organizations and adaptation to electronic business is meaningful in the level $p < 0.05$ and thus there is a relation between operational support of organizations and adaptation to electronic business. According to the correlation coefficient of determining, the value 46% operational support of organizations and adaptation to electronic business is common.

According to this assumption , if managers of manufacturing units believe that exploitation of electronic business leads to promote organizational exploitation strategic value will be increased and the field of adaptation to it would be increased in these organizations. Table (3) shows the correlation coefficient of these variables.

Table (3) correlation coefficient between promotion of organizational profitability and adaptation to electronic business

Correlation coefficient	Adaptation to electronic business		
	n	P	R
Organizational operational support	365	0.001	0.637

Based on the results of table (3), correlation coefficient between promotion of organizational profitability and adaptation to electronic business is a meaningful in the level $p < 0.05$. Thus there is a relation between promotion of organizational profitability and adaptation to electronic business. Based on determinants correlation coefficient, 45 % promotion of organizational profitability and adaptation to electronic business is common, thus assumption 2 is confirmed.

Assumption 3-level of electronic business assistance to take a strategic decision of organization lead to promote strategic value.

In this assumption, one of factors to promote the value of electronic business in the view of managers is to assist to take a strategic decision of the organization. In the view of managers if electronic business helps them to take a strategic decision and try to accept and adaptation to it Table (4) presents correlation coefficient among two variables .

Table (4) correlation coefficient between promotion of organizational exploitation and adaptation to electronic business

Correlation coefficient	Adaptation to electronic business		
	n	P	R
Organizational operational support	365	0.001	0.687

Based on the result of table (4) strategic between strategic decisions and adaptation to it is a meaningful relation in the level $p < 0.05$ thus there is a relation between assisting to strategic decisions and electronic business. Based on determinant correlation coefficient 47% assistance to strategic decision thus assumption 3 is confirmed.

Assumption 4- organizational readiness plays an impressive role to adapt electronic business

According to this assumption, organizational readiness has an effective role financially for adapting electronic business, analyzing the relation electronic readiness is calculated by constitutes that their results are described in table (5):

Table 5- correlation coefficient between operational support, organizational exploitation and assisting to take strategic decisions by electronic readiness

Correlation coefficient	Electronic readiness of organization		
	N	P	R
Operational support	365	0010.	0.44
Managerial exploitation	365	0.001	0.445
Helping strategic decisions	365	0.001	0.465
Total	365	0.001	0.859

Based on the results of table 5, correlation coefficient between operational support and electronic readiness is a meaningful in the level $p < 0.05$. Thus there is a relation between operational support and electronic readiness. Based on determinant correlation coefficient, 19 percent operational support is common with electronic readiness. Correlation coefficient between managerial exploitation and electronic readiness is meaningful in the level $p < 0.05$, thus there is a relation between managerial exploitation and electronic readiness. Based on determinant correlation coefficient, 21 percent strategic decision is common with electronic readiness. Correlation coefficient between managerial exploitation and electronic readiness is meaningful in the level $p < 0.05$, thus there is a relation between strategic decision and electronic readiness.

The assistance of electronic business is common with electronic readiness. Correlation coefficient between assistance of electronic business and electronic readiness is meaningful in the level $p < 0.05$, thus there is a relation between assistance of and electronic readiness. Thus assumption is confirmed.

Assumption 5- external pressures is effective to adapt electronic business

According to this assumption, another factor of adaptation to electronic business is external pressures that enter to the competitors, society, dependent institutions, industry and government on electronic business. For studying the relation of external pressures with adaptation of electronic business, correlation among external pressures and constituents has been used.

Table (6) correlation coefficient of operational support, organizational exploitation and helping to take strategic decisions with external pressures

Correlation coefficient	External pressures		
	N	P	R
Operational support	365	0010.	0.233
Managerial exploitation	365	0.001	0.246
Helping strategic decisions	365	0.001	0.247
Total	365	0.001	0.641

Based on the result of table (6), correlation coefficient between operational support and external pressures is a meaningful in the level $p < 0.05$. Thus there is a relation between operational support and external pressures. Based on determinant correlation coefficient, 5 percent operational support is common with external pressures.

Correlation coefficient between assistance of electronic business to the decisions and external pressures is meaningful in the level $p < 0.05$. Thus there is a relation between assistance of electronic business to take a decision. Based on determinant correlation coefficient 7 percent, the assistance of electronic business to decisions is common with external pressures. According to study fact that the relation among three above elements are meaningful with external pressures in the level $p < 0.05$. Thus assumption 5 is confirmed.

Assumption 6- level of adaptation of electronic business to culture, values and daily organizational affairs plays an effective to accept it.

According to this assumption, if electronic business is wholesome with the culture, values and external method of the affairs in theory managers' tendency of these units will be further to adapt it. For testing this assumption, correlation coefficient between adaptation and elements of perceiving strategic value leads to accept electronic business according to table (7).

Based on the results of table (7), correlation coefficient between operational support and adaptation to electronic business is a meaningful in the level $p < 0.05$. Thus there is a relation between operational support and adaptation electronic business. Based on determinant correlation coefficient of 40 percent operational support is common with electronic readiness. Correlation coefficient between managerial exploitation and adaptation to electronic business is meaningful in the level $p < 0.05$, thus there is a relation between managerial exploitation and electronic readiness.

Based on determinant correlation coefficient of 39 percent strategic decision is common with adaptation to electronic business. Correlation coefficient between managerial exploitation and electronic readiness is meaningful in the level $p < 0.05$, thus there is a relation between strategic decision and electronic readiness.

Based on determinant correlation coefficient of 42 percent, the assistance of electronic business is common with adaptation to electronic business. Correlation coefficient between assistance of electronic business and electronic readiness is meaningful in the level $p < 0.05$, thus there is a relation between assistance of and electronic readiness. Thus assumption 6 is confirmed.

Table (7) correlation coefficient of operational support, organizational exploitation and helping to take strategic decisions with adaptation

Correlation coefficient	External pressures		
	N	P	R
Operational support	365	0010.	0.635
Managerial exploitation	365	0.001	0.623
Helping strategic decisions	365	0.001	0.650
Total	365	0.001	0.923

Assumption 7- the ease of applying electronic business plays an effective role to accept it by small and middle manufacturing units.

Based on this assumption, whenever managers of small and middle manufacturing units believe the ease, flexibility and understanding applying electronic business, they have further tendency to adaptation.

For testing this assumption, correlation coefficient 6 among the ease and elements of perceiving strategic value lead to accept electronic business regarding to table (8).

Table (8) correlation coefficient of operational support, organizational exploitation and helping to take strategic decisions with the ease

Correlation coefficient	External pressures		
	N	P	R
Operational support	365	0010.	0.544
Managerial exploitation	365	0.001	0.525
Helping strategic decisions	365	0.001	0.529
Total	365	0.001	0.617

Based on the results of table 8, correlation coefficient between operational support and the ease is a meaningful in the level $p < 0.05$. Thus there is a relation between operational support and the ease. Based on determinant 29 percent operational support is common with the ease. Correlation coefficient between managerial exploitation and the ease is meaningful in the level $p < 0.05$, thus there is a relation between managerial exploitation and the ease.

Based on determinant 27 percent, helping electronic business is common with the ease.

According to correlation coefficient of above tables, there is a meaningful relation between electronic business and accepting it in the level $p < 0.05$ and assumption 7 is confirmed.

Assumption 8- adaptation with electronic business to managers' perception is depending on the level of profitability.

According to this assumption, whenever the managers study small and middle business units believe that electronic business leads to increase their action speed in specialized affairs and improves operational performance; efficiency and effectiveness have different benefits in the occupational affairs. For testing this assumption, correlation coefficient has been used between profitability and (recovering strategic values that lead to accept electronic business according to table (9)).

Table 9-correlation coefficient of operational support, organizational exploitation and helping to take strategic decisions with profitability

Correlation coefficient	External pressures		
	N	P	R
Operational support	365	0010.	0.672
Managerial exploitation	365	0.001	0.630
Helping strategic decisions	365	0.001	0.630
Total	365	0.001	0.549

Based on the results of table 9, correlation coefficient between operational support and profitability is a meaningful in the level $p < 0.05$. Thus there is a relation between operational support and profitability. Based

on determinant 45 percent operational support is common with electronic readiness. Correlation coefficient between managerial exploitation and profitability is meaningful in the level $p < 0.05$, thus there is a relation between managerial exploitation and profitability.

Based on determinant coefficient of 40 percent, strategic decision is common with profitability. Correlation coefficient between managerial exploitation and electronic readiness is meaningful in the level $p < 0.05$, thus there is a relation between strategic decision and electronic readiness.

Based on determinant coefficient 40 percent assistance of electronic business is common with profitability. Correlation coefficient between assistance of electronic business and electronic readiness is meaningful in the level $p < 0.05$, thus there is a relation between assistance of and profitability. Thus assumption 8 is confirmed.

Assumption 9- the level of adaptation to electronic business is depending on the perception of managers of organizations on strategic value.

Based on the assumption 9, there is a relation between the level of adaptation to electronic business and the perception of managers. In simple words, whatever the managers of small and middle manufacturing units believe more to strategic value of electronic business, they act further to adapt to action. For testing this assumption, multifold correlation coefficient is used between strategic values of electronic business and adaptation to it.

Table (10) correlation coefficient between strategic values of electronic business to adaptation

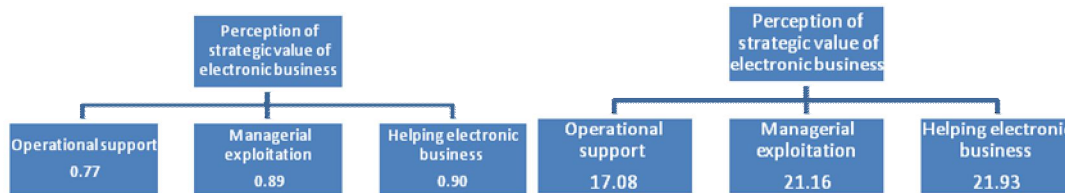
model	r2 Change	Sig	F change	Ad r2	r2	r
Operational support	0.472	0.001	323.27	0.470	0.472	0.678
Managerial exploitation	0.090	0.001	73.93	0.559	0.561	0.749
Helping strategic decisions	0.01	0.001	8.40	0.586	0.571	0.758

Based on the results of table(10) operational support confirms 47% adaptation to electronic business by entering the variable of managerial exploitation of adaptation to electronic business increasing by 55% and by entering the variable electronic business to take a decision, it increases 57%

Test of research model

For studying accuracy and inaccuracy of the research model and its components, its constituents are separately analyzed. Research model is drawn by using software Lizerel and following results are obtained that the relations among variables and correlation coefficients are presented in the table (11).

Figure (1) relations among hidden and obvious variables in the perception of strategic value of electronic business.



One f measures of profitability of research model is to converge the variable, thus the impact correlation coefficient have used that the calculations of the results are observed in the tables (11) and (12).

Figure (2) indexes of the variable of perception level of strategic value of electronic business.



Whereas observed t is more than the value 95%, thus there is a convergence among indexes that is suitable for measuring the perception level of strategic value of electronic business. Highest and lowest impact reliability to managerial exploitation is 0.91 and 0.75 respectively.

Table (12) indexes of variable of adaptation level with electronic business

	Significance	t	Impact factor
Organizational support	+	16.23	0.75
Managerial exploitation	+	21.15	0.91
perception level of strategic value of electronic business	+	20.8	0.90

Whereas observed t is more than 95% (1.96), thus there is a convergence among indexes highest impact is relating to adaptation with 95% and lowest is relating to external pressure with research% value.

United test of whole pattern through structural questions: for studying accuracy and inaccuracy of research model and its components, its constituents are separately analyzed. The research model is drawn by using software Lizerel and following results are obtained that the relations among variables and correlation coefficients are presented in the table (13).

Table 13- relations among main variable of study

	Significance	t	Impact factor
Perception level of strategic value of electronic business with adaptation to electronic business	+	11.45	0.8

Mentioned basic question is that is it a suitable model?

For answering the questions, we should study statistics X^2 and other measures of profitability of model measurement. According to Lizerel output, measured X^2 is equal to 1.8 and existing low X^2 is a determinant of proper measurement model. Because whatever value X^2 is lower, presented model is more proper, regarding to following results that have obtained from the output of software Lizerel.

Suggestions: whereas findings of this study, perception of strategic of electronic business that plays a determinant role to accept it, for developing small and middle manufacturing units ,it's necessary that related systems provide regular and complete programs for training and creating culture relative to electronic business and implement them.

1- In different levels of education containing primary school, guidance school, high school and high school, it can be presented practical and theoretical lessons relating to be familiar students with the conceptions of electronic business and their advantages.

2- electronic business course is as an independent bachelor level in the universities

3- Because technical infrastructure like high speed , internet and computer networks and hardware and soft ware equipment relating to electronic business, it's appropriate that the networks particularly government act necessary actions to enforce these infrastructures.

4- For providing technical equipments and creating culture electronic business inside small and middle manufacturing units, financial and technical facilities are presented by the banks and related authorities.

5- through mass media like radio, television, virtual networks , newspapers , general magazines , remaining and creating culture of people, mangers and directors of organizations relating to applications, purposes, diversity and advantages of electronic business have been done one by using the perspectives of specialized people and introducing of internal and external successful pattern

6- Through productive and continuous interactions of related state systems like the center of development off business and electronic business development organization and offices relating to commercial ministry and industries , necessary correspondence with manufacturing and commercial units has been established by making electronic communication with them.

7- Through gradual necessity of small and middle units to adapt to electronic business by applying vital encouraging strategies like prizes and tax exemption, due field fir using electronic business have been provided.

8- By manufacturing understandable and simple soft wares and electronic packages by state and private sectors and supplying to small and middle units and other organizations, the ease and the speed of using it are prepared.

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