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Use of e-commerce in Small and Medium Size Enterprises: An Application in Ankara

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Abstract

A great deal of efficiency and productivity increase has been achieved in the production process through the use of information and communication technologies (ICTs) in recent years. These developments have created remarkable opportunities for the small and medium size enterprises (SMEs) whose advertising and marketing budgets are relatively limited.

A comprehensive survey and interviews are carried out with a sample of SMEs in OSTIM and Sincan Industrial Districts in Ankara in order to find out the present use of e-commerce in the SMEs, its perceived advantages, potential problems and the future expectations.

The ordered logit models are estimated to investigate the factors affecting the use of e-commerce in the firms, potential advantages of e-commerce use and the main obstacles in implementing the ICTs.

The results reveal that the firms are aware of the fact that e-commerce would increase the speed of business, lower the cost of production, give competitive advantage, enable to reach the customers easily and expand the markets and that B2B and B2C e-commerce and the use of ICTs are more common in relatively bigger firms (in terms of capital, sales revenue and employment).

The main reasons why the SMEs are not able to use ICTs are found as the lack of information and specialized personnel, security and legal framework.

Introduction

A great deal of efficiency and productivity increase has been achieved in the production process through the use of information and communication technologies (ICTs) in recent years. These developments have created remarkable opportunities for the small and medium size enterprises (SMEs) whose advertising and marketing budgets are relatively limited. Implementation of e-commerce by the SMEs, the most dynamic components of an economy, is expected to have significant impacts on the future of the country.

Invention of Internet probably one of the most important developments in the history of mankind. When the project called ARPANET which was designed as a defense system was opened to the civil use after the end of cold war, many changes has happened in the relations between citizen-to-citizen, citizen-to-government, citizen-to-business and business-to-business.

Internet covers almost all communication tools such as fax, telephone and TV, it is interactive, it removes the geographical barriers, it enables economic transactions as well as cultural and social relations in only seconds. Such a rapidly developing technology will make the world smaller in the information age. A remarkable increase has been achieved in efficiency and productivity in many areas by means of the ICTs.

From 2000, fiber-optics with 160 channels were able to transmit 1.6 trillion byte information. By this way, the whole American Library which contains 110 million documents can be transferred to somewhere else within 14 seconds (Schiesel, 1999)

Business life has also benefited significantly from the Internet technologies. Almost all commercial activities (except delivery) to sell or purchase a product can be done via Internet: Orders, advertising, marketing, payment, follow up of delivery and so on. This new type of trade is called as *e-commerce*.

ICTs has brought remarkable advantages particularly for the SMEs. It has become possible for the SME's to compete with the giant competitors at least in the cyber-world

Internet in Turkey

The use of Internet started in the universities in 1980s as a part of European Academic and Research Network (EARN), however, Internet service providers started in 1992. There were 600.000 pc with Internet connection in 1999, it has reached to 5.5 million pc in 2003. Business-to-Business (B2B) and Business-to-Customer (B2C) commerce have started in 1997, but spread after 2001. The pioneers of B2C e-commerce are Migros and TEBA. The supermarket chain Migros started cyber market in 1997, while TEBA has sold electronic kitchen equipments (Arıcı, 2000:26). In 2002 9,2 % of the firms use B2B and 8.7% of the firms use B2C commerce (Bilişim, 2002:65). E-commerce activities are still low when compared to the Europe. It is widely used in banking and financial sectors, travel and tourism sectors and now in goods markets. Table 1 presents some figures about the use of computers and Internet in Turkey.

The most comprehensive surveys on the use of Internet in business in Turkey are done by Turkish Institute of Statistics in 2005 and KOSGEB in 2005. 68% of SMEs are

connected to Internet, 37 % have web site and 7% does e-commerce (TUIK, 2005, KOSGEB 2006).

Table 1: Use of information technologies in Turkey

	1995	**2001**
Telephone lines (unit per 100 people)	211	295
Mobile phones (unit per 1000 people)	7	302
Personal computer (unit per 1000 people)	14,7	40,7
Internet users (1000 people)	50	2.500
Expenditures of ICTs (million $)	2777	9.333
Share in GDP (%)	1, 6	3, 6

Source: OECD, 2004

Turkey has recorded a significant increase in the use of ICT's and Internet, it is still low when compared to the EU, USA, Japan and OECD. Table 2 shows a comparison of basic figures.

Table 2: Information and communication technologies

	Turkey	**EU**	**USA**	**Japan**	**OECD**
Internet access per 100 people (2001)	27,55	44,33	53,03	40,09	45,58
Internet channels per 100 people (2001)	27,5	58,9	62,5	58,4	54,5
Mobile subscribers per 100 people (2001)	26,8	74,3	49,1	58,8	8,9
Broad band subscribers per 100 people (2003)	0,06	4,95	8,25	8,6	6,05
Telecom investment per capita (US$ 2001)	42	129,67	330	190,04	109,23
Public telephone investment per access channels (US$, 2001)	152	212,68	493,97	331,94	310,61
PC per 100 people (2001)	2,65	27,5	81,77	38,79	39,48
Internet users over fixed service providers per 100 people (2001)	5	16,8	27,2	18,9	13,7

Source: OECD, 2004

Use of Information Technologies in Small and Medium Size Enterprises

The coverage of Internet use in businesses change from simply having a website to using ICTs in all production process. In order to exploit the potential benefits of ICTs, the companies should have good management organization, technical capacity and innovative skills. The United Nations e-commerce report draws attention to particularly three issues in using Internet in businesses:

1. Broad band Internet access should be expanded to cover rural areas.

2. Legal and regulatory framework should be settled to proceed to e-businesses.

3. If we want the SMEs to use Internet not only for mail and research but also for an integrated e-business, additional investment should be done and e-business strategies should be developed (UN, 2004:XXIV).

A statistical survey in the UK reveals that half of the big firms, 20% of the medium size firms (50–249 employees) and 8% of small size firms use e-business systems (Goodridge and Clayton, 2004). Another research on 2000 firms in Canada finds that e-business increases remarkable productivity, increases revenues by 7%, decreases sales and management costs by 7,5% and decreases general costs by 9,5 % (CeBI, 2002).

Data and Methodology

There are 4074 small and medium size enterprises in Ankara and total employment is 57414 in 2005. A comprehensive survey is carried out with a sample of SMEs in OSTIM and Sincan Industrial Districts in Ankara in order to find out the present use of e-commerce in the SMEs, its perceived advantages, potential problems and the future expectations. A questionnaire with 21 questions is designed for that purpose. 250 of them are filled by face-to-face interviews and 50 questionnaires are filled by electronic survey on the Internet.

Empirical Analyses

Initially, the data obtained are analyzed by correlations and cross tabulations. Then ordered logit models are estimated to investigate the factors affecting the use of e-commerce in the firms, potential advantages of e-commerce use and the main obstacles in implementing the ICTs.

Descriptive statistics

Before testing the hypotheses, Table 3 present information about the respondents. About 90 % of the respondents are secondary and high school graduates. 36 % of the firms employ between 50 to 100 people. Sectoral composition of the firms are varied thus 60 % of the firms indicated as the other sectors than the listed.

Table 3: Descriptive statistics about the respondents

	Factors	Numbers	%
Education levels	Primary school	4	1,3
	Secondary school	125	41,7
	High school	146	48,7
	University	18	6,0
	Graduate	7	2,3
	TOTAL	**300**	**100,0**
Number of employees	1-9	84	28,0
	10-24	40	13,3
	25-49	65	21,7
	50-99	108	36,0
	100 +	3	1,0
	TOTAL	**300**	**100,0**
Sectors	Textiles	24	8,0
	Furnitures	34	11,3
	Industrial products	50	16,7
	Food	13	4,3
	Others	179	59,7
	TOTAL	**300**	**100,0**
Average age of the employees	18-25	27	9,0
	26-35	231	77,0
	36-40	32	10,7
	41-50	10	3,3
	TOTAL	**300**	**100,0**
Annual sales revenues (YTL)	Less than 20.000	16	5,3
	20.000-50.000	63	21,0
	51.000-100.000	21	7,0
	100.000-250.000	31	10,3
	More than 250.000	169	56,3
	TOTAL	**300**	**100,0**

77 % of the employees are the age of between 26-35 years. Finally annual sales revenues are 250.000 YTL for 56 percent of the companies. One of the critical questions asked to the firms is whether they use e-commerce in their businesses. More than half of the sample use e-commerce as indicated in Table 4.

Table 4: Use of e-commerce

	Frequency	%
Yes	156	52,0
No	144	48,0
TOTAL	300	100,0

In addition to the descriptive question about the respondents, 21 questions are asked in five points scale of Lickert type as:

Fully agree : 1
Agree : 2
Non decided : 3
Disagree : 4
Fully disagree : 5

The answers and their averages are shown in Table 5. As can bee seen from the table, many of the managers agree with the advantages of e-commerce such as speeding up the commercial transactions, lowering costs, facilitating to reach to the customers, expanding the markets. They are worried about the security and legal framework. Moreover, lack of government support and skilled personnel are specified as the other barriers to do e-commerce.

Table 5: Dependent variables (answers) for e-commerce user companies

	1	**2**	**3**	**4**	**5**	**Average**
1-We have retail / wholesale sales over Internet	33	20	80	13	11	2,6752
2-We use Internet in business with our agents	38	112	4	2	1	1,8280
3-E-commerce is the trade model of the future	119	28	5	0	5	1,3694
4-E-commerce speeds up the commercial transactions	115	27	2	6	7	1,4904
5-E-commerce enables to reach to customer with lower cost	99	32	5	10	11	1,7389
6-E-commerce facilitates to reach the potential customers	39	101	4	6	7	1,9873
7-E-commerce facilitates to reach world markets by lowering costs	37	102	6	4	8	2,0064
8-E-commerce expands the market and solves marketing problem	41	91	9	11	5	2,0318
9-E-commerce gives a competitive advantage to my firm	114	17	8	9	9	1,6115
10-Having a website in Internet makes the firms' image stronger in the market	122	18	2	9	6	1,4650
11-Internet is necessary for R and D	126	14	4	5	8	1,4395
12- My company will be more dependent on e-commerce in the next 5 years	29	93	21	9	5	2,1592
13-We can decide to invest on e-commerce after seeing successful examples	39	26	79	6	7	2,4650
14-E-commerce is not secure	10	22	23	94	9	3,4430
15- Government's support e-commerce is not sufficient	22	105	14	9	8	2,2152
16-There is no sufficient legal framework for e-commerce	23	105	15	12	3	2,1582
17-We have lack of information and personnel for e-commerce	26	103	5	13	11	2,2405

Several questions are asked for those companies who do not use e-commerce about the causes, as presented in Table 6. Financial difficulties and inappropriateness of the products for the Internet sales are stated as main reasons why they do not have e-commerce. However, they all agree that they will use it in the near future.

Table 6: Dependent variables (answers) for non-e-commerce users

	1	2	3	4	5	Average
18-We do not use e-commerce due to financial problems	34	48	10	27	23	2,6972
19-We do not use e-commerce because our products are not appropriate for Internet sales	60	18	29	18	17	2,3944
20- We want to have a web site in the future	98	25	7	3	9	1,5915
21- We will connect to the Internet soon	111	18	6	1	6	1,4014

Test of hypotheses through correlations and cross-tabulations

Several hypotheses related to the use of e-commerce will be tested by cross-tabulations and bilateral correlations. Some noticeable results are reported in Tables 7 to 12.

Hypothesis 1: Use of e-commerce becomes more common as the firm gets bigger (in terms of no of employees)

Table 7: Use of e-commerce and company size (in terms of number of employees)

Use of e-commerce	No of employees in the firm					Total
	1-9	10-24	25-49	50-99	100+	1-9
Yes	27	19	24	85	2	157
%	17,2	12,1	15,3	54,1	1,3	100,0
No	57	21	41	23	1	143
%	39,9	14,7	28,7	16,1	,7	100,0
Total	84	40	65	108	3	300
%	28,0	13,3	21,7	36,0	1,0	100,0

$\chi 2=50.643$ d.f.=4 $\chi 2$ (table) =9.49 $P<0.05$

Cross-tab test ($\chi 2$ being greater than the table value) indicates that there is a positive relationship between the use of e-commerce and firm size. Both parametric and non-parametric correlation tests supports that conclusion:

Pearson Correlation: -0,342**
Kendall's tau_b: -0,330**
Spearman's rho: -0,360**

Hypothesis 2: Use of e-commerce becomes more common as the firm gets bigger (in terms of sales revenue)

Table 8: Use of e-commerce and company size (in terms of sales revenues)

	Annual sales revenue of the firm (YTL)					
Use of e-commerce	<20.000	20.000-50.000	51.000-100.000	100.000-250.000	>250.000	Total
Yes	5	16	7	8	121	157
%	3,2	10,2	4,5	5,1	77,1	100,0
No	11	47	14	23	48	143
%	7,7	32,9	9,8	16,1	33,6	100,0
Total	16	63	21	31	169	300
%	5,3	21,0	7,0	10,3	56,3	100,0

χ^2=58.101 d.f.= 4 χ^2 (table) =9.49 P<0.05

According to the result of the test, the possibility of using e-commerce is higher as the sales revenue increases. Further support comes from the correlation tests below:

Pearson Correlation: -0,380**
Kendall's tau_b: -0,384**
Spearman's rho: -0,412**

Hypothesis 3: Use of e-commerce (B2C) becomes more common as the firm gets bigger (in terms of sales revenue)

Table 9: Use of B2C e-commerce and the firm size (annual sales)

	Annual sales (YTL)				**Total**	
Use of B2C	Less than 20.000	20.000-50.000	51.000-100.000	100.000-250.000	More than 250.000	
Fully agree	2	4	2	4	21	33
%	6,1	12,1	6,1	12,1	63,6	100,0
Agree	0	2	3	3	12	20
%	,0	10,0	15,0	15,0	60,0	100,0
Non decided	0	0	0	0	80	80
%	,0	,0	,0	,0	100,0	100,0
Disagree	1	10	1	0	1	13
%	7,7	76,9	7,7	,0	7,7	100,0
Fully disagree	2	0	1	1	7	11
%	18,2	,0	9,1	9,1	63,6	100,0
Total	5	16	7	8	121	157
	3,2%	10,2%	4,5%	5,1%	77,1%	100,0%

χ2=58.101 d.f. = 16 $\chi 2_t$ =26.30 P<0.05

The hypothesis 3 cannot be rejected at 5% level as the $\chi 2$ value is greater than the critical value. That is, bigger companies are more inclined to use B2C commerce. The correlation tests provides additional support to that argument as stated below:

Pearson Correlation: 0,423**

Kendall's tau_b: 0,407**

Spearman's rho: 0,455**

Hypothesis 4: Use of B2B e-commerce becomes more common as the education level of the employees gets higher

Table 10: Use of B2B e-commerce and the education level of employees

Use of B2B	**Average education level of the employees**				**Total**
	Secondary	High school	University	Graduate	
Fully agree	3	26	7	2	38
%	7,9	68,4	18,4	5,3	100,0
Agree	56	51	5	0	112
%	50,0	45,5	4,5	,0	100,0
Non decided	1	0	0	3	4
%	25,0	,0	,0	75,0	100,0
Disagree	0	0	0	2	2
%	,0	,0	,0	100,0	100,0
Full disagree	0	1	0	0	1
%	,0	100,0	,0	,0	100,0
Total	60	78	12	7	157
%	38,2	49,7	7,6	4,5	100,0

$\chi 2=119.789$ d.f. =12 $\chi 2_t = 21.00$ $P<0.05$

The test indicates that there is a positive relationship between the level of education of the employees and the business-to-business e-commerce use by the firms. Nonparametric tests supports that result.

Pearson Correlation : -0,012

Kendall's tau_b: -0,230**

Spearman's rho: -0,234**

Hypothesis 5: Relatively bigger firms (in terms of sales revenue) agree that use of e-commerce speeds up the transactions

Table 11: Use of e-commerce and the speed of commercial transactions

E-commerce speeds up transactions	**Annual sales (YTL)**					**Total**
	Less than 20.000	20.000-50.000	51.000-100.000	100.000-250.000	More than 250.000	
Fully agree	4	3	3	4	101	115
%	3,5	2,6	2,6	3,5	87,8	100,0
Agree	1	10	0	2	14	27
%	3,7	37,0	,0	7,4	51,9	100,0
Not decided	0	0	0	1	1	2
%	,0	,0	,0	50,0	50,0	100,0
Disagree	0	2	1	0	3	6
%	,0	33,3	16,7	,0	50,0	100,0
Fully disagree	0	1	3	1	2	7
%	,0	14,3	42,9	14,3	28,6	100,0
Total	5	16	7	8	121	157
%	3,2	10,2	4,5	5,1	77,1	100,0

χ^2=74,021 d.f.=16 χ^2_t =26.30 P<0.05

The hypothesis cannot be rejected, supporting the argument that bigger firms agree that use of e-commerce increases the speed of economic transactions. Bilateral correlation tests supports that view as well.

Pearson v-correlation: -0,314**
Kendall's tau_b: -0,385**
Spearman's rho: -0,482**

Hypothesis 6: Lack of legal framework makes the use of e-commerce difficult

Table 12: Use of B2C e-commerce and sufficiency of legal framework

	We use B2C e-commerce					Total
Legal framework of e-commerce is not sufficient	Fully agree	Agree	Undecided	Disagree	Fully disagree	
Fully agree	13	3	0	1	5	22
Agree	13	11	76	2	3	105
Undecided	2	3	0	10	0	15
Disagree	4	3	2	0	3	12
Fully disagree	1	0	2	0	0	3
Total	33	20	80	13	11	157

χ^2=140.153 d.f.=16 χ^2_t =26.30 P<0.05

The users of B2C e-commerce agree with the view that the legal framework of Internet use is still not sufficient. Nonparametric tests gives further support for that view.

Kendall's tau_b:	0,167*
Spearman's rho:	0,173*

Econometric Analyses

In this section, the factors affecting the use of e-commerce by the SMEs, the potential benefits of using e-commerce in business and the main barriers to use e-commerce will be analyzed by econometric logit models. Logit and probit models are useful models for discreet dependent variable and discreet data. Logit models are preferred if the observations are skewed towards to the end or beginning (Emcee, 2002:14). As the data obtained through the survey seem to show non-normal distribution, ordered logit model is used in this study.

The first empirical analyses investigates whether the characteristics of the company have an impact on the use of e-commerce. The following ad hoc model is estimated for that purpose:

Use of e-commerce = f (No of employees, education level of employees, annual sales revenue of the firm, average age of employees).

Table 13 presents the estimation results of the model. Likelihood Ratio (LR) statistics indicates that the model is significant as a whole. While interpreting the results, the codification of the survey data should be kept in mind: 1 indicates ‘fully agree’, while 5 indicates ‘fully disagree’.

Table 13: The factors affecting the use of B2C e-commerce (Dependent variable: B2C e-commerce)

	Model 1		**Model 2**	
Variables	**Coefficient**	**Z-statistics**	**Coefficient**	**Z-statistics**
Education	-0.172	-0.675	---	---
No of employees	1.272**	6.441	1.309**	6.924
Sales revenue	-0.792**	-4.578	-0.817**	-4.806
Age of employees	1.036*	2.466	0.936*	2.399
Limit Points				
Limit_2	0.347	0.315	0.612	0.598
Limit_3	1.325	1.175	1.585	1.505
Limit_4	4.429	3.864	4.679	4.329
Limit_5	5.409	4.648	5.665	5.158
Diagnostic Statistics				
LR statistics	63.542		63.083	
LR prob value	0,000		0.000	
Pseudo-R^2	0,154		0.152	
N	156		156	

*p< 0.05, ** p<0.01.

The electronic commerce between the firm and the customer (B2C) is affected positively by the sales revenue of the company and education level of the employees. The implementation of e-commerce increases as the company size increases and education level of the employees rises. On the other hand, smaller firms with respect to number of employees seems to use more e-commerce probably in order to reach the markets easily. Younger people are more familiar with the Internet using, thus the companies with relatively younger employees are more inclined to use e-commerce in their businesses. Excluding the education variable, which is found to be nonsignificant statistically, from the model does not change the results as seen in Model 2.

The above model is re-estimated by changing the dependent variable as B2B e-commerce and the results are given in Table 14.

Table 14: The factors affecting the use of B2B e-commerce (Dependent variable: B2B e-commerce)

	Model 1		**Model 2**	
Variables	**Coefficient**	**Z-statistics**	**Coefficient**	**Z-statistics**
No of employees	0.895**	4.474	0.935**	5.058
Sales revenue	-0.200	-1.092	-0.217	-1.208
Education	-0.171	-0.543	---	---
Age of employees	1.190*	2.540	1.091*	2.561
Limit Points				
Limit_2	2.570	2.012	2.883	2.650
Limit_3	7.348	5.201	7.674	6.010
Limit_4	8.265	5.457	8.609	6.232
Limit_5	9.396	5.414	9.744	6.021
Diagnostic Statistics				
LR Statistics	35.319	35.019		
LR prob value	0.000	0.000		
Pseudo-R^2	0.147	0.146		
N	156	156		

*p< 0.05, ** p<0.01.

Sales revenue of the firm does not seem to affect e-commerce with their agents. However, the number of employees and average age have negative effects on the use of e-commerce. Smaller firms with younger employees seem to prefer to use e-commerce.

Second group of econometric analyses relates the characteristics of the firm to the perceived benefits of e-commerce. It investigates whether the perceived benefits of e-commerce vary with the characteristics of the company. The following model is estimated accordingly:

Benefits of e-commerce = f (No of employees, education level of employees, annual sales of the firm)

Table 15: Perception of e-commerce

Benefits of e-commerce	**No of employees**	**Sales revenue**	**Education**
Commercial model of future	-0,803** (-3,467)	-0,455** (-0.455)	-0.829* (-2.176)
Lower cost	-0.614** (-3.508)	-0.557** (-3.258)	0.962** (3.525)
Easier reach to customers	0.545** (3.066)	0.182 (1.093)	0.452 (1.805)
Faster trade	-0.239 (-1.281)	-0.655** (-3.699)	0.671* (2.234)
Opening to world markets	0.248 (1.367)	0.222 (1.311)	0.446 (1.762)
Expanding markets	0.321 (1.789)	0.229 (1.283)	0.512* (2.009)
Competitive advantage	-0.457* (-2.538)	-0.479* (-2.811)	0.926* 3.270
Powerful image	-0.412* (-2.219)	-0.357* (-1.945)	1.472** (4.872)
Research & development	-0.150 (-0762)	-0.579** (-3.023)	1.423** (4.702)

*p< 0.05, ** p<0.01. The figures in brackets are z-statistics

According to the results given in Table 15, as the firm size increases with respect to both number of employees and annual sales revenue, e-commerce is perceived to be the trade model of future. Education level of the employees influences that perception positively. Relatively bigger companies think that use of e-commerce would lower the costs, speeds up the commercial activities, gives competitive advantage and provides a powerful image for the firm. On the other hand, the perception of the potential benefits such as expanding the markets, opening up to the world markets, supporting R & D facilities do not seem to be affected by the characteristics of the firms.

The last group of empirical analyses focuses on the barriers to use of e-commerce. The literature as well the face-to-face interviews in the field expose several problems in using e-commerce in businesses, including the lack of sufficient legal framework, specialized personnel and information, government guidance and finding trade in cyber world insecure. The following model is estimated in order to examine whether these specified problems are valid for our sample of firms:

e-commerce = f (security, government support, legal framework , knowledge and

specialized personnel)

Again two models are estimated with two dependent variables: B2B commerce and B2C commerce. The results are presented in Table 16 and 17.

Table 17: Barriers to e-commerce (Dependent variable: B2B e-commerce)

Potential barriers	**Coefficient**	**z-statistics**
Security	1,004**	4,502
Government support	0.052	0.152
Legal framework	1.323**	3.204
Knowledge and specialized personnel	0.500*	1.849
LR statistics	56.864	
LR prob value	0.000	
Pseudo R^2	0.237	
n	156	

*p< 0.05, ** p<0.01.

Positive and significant coefficients indicate that lack of security, proper legal framework, knowledge and skilled personnel are main impediments to use e-commerce for many businesses. However, the lack of government support does not seem to be taken as a barrier to use e-commerce. The analysis is repeated by changing the dependent variable to B2C commerce to see if trade between the firm and the agents is influenced by these barriers. The estimation results are presented in Table 18. The results are almost the same with the previous estimations.

Table 18: Barriers to e-commerce (Dependent variable: B2C e-commerce)

Potential barriers	**Coefficient**	**z-statistics**
Security	0,441*	2,351
Insufficient Government support	-0.411	-1.693
Legal framework	1.003**	3.074
Knowledge and specials personnel	0.591*	2.547
LR statistics	18.314	
LR prob value	0.000	
Pseudo R^2	0.044	
n	156	

*p< 0,05, ** p<0,01.

Conclusion

Firms are aware of the fact that e-commerce would increase the speed of business, lower the cost of production, give competitive advantage, enable to reach the customers easily and expand the markets. Particularly small and medium size enterprises have to adopt changing information and communication technologies rapidly in order to exploit these benefits and become competitive in globalizing world markets..

B2B and B2C e-commerce and the use of ICTs are more common in relatively bigger firms in terms of capital, sales revenue and employment. The main reasons why the SMEs are not able to use ICTs are found as the lack of information and specialized personnel, security and legal framework.

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