

A Survey Aimed at E-Commerce Applications in Firms Operating in Diyarbakir Organised Industrial Zone¹

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Abstract

Today, it is inevitable for companies and ,in particular SMEs (Small and Medium Sized Enterprises) to keep up with rapidly growing technological innovations and their implementation in company activities. Within the scope of this study, use of e-commerce by the firms located in Diyarbakir Organized Industrial Zone during execution of their activities was identified. Through the survey, we aimed to gain access to approximately 130 firms operating within the aforementioned region. However, it has not been possible to access to some companies due to their seasonal activities, non-availability in their addresses or unwillingness to respond questionnaire. Eighty-four firms participated into the questionnaire. The questionnaire results were transferred to Excel and SPSS program, and the evaluation was performed by means of Excel and SPSS. As a result, it was determined that 14% of the firms make use of e-commerce, while 86% of the do not perform e-commerce. The reason for non-usage of e-commerce was identified as “the system is not a widely acknowledged trading method within their related sector” in accordance with the responses of 36% of the participants. As for the reason for application of e-commerce, 42% supports this type of commerce to “ get access into new markets”.

Key words: E-commerce, Competition, International Market, SMEs, DOIZ.

Introduction

Although SMEs are small enterprises producing goods and services, they also produce inputs for larger enterprises. Therefore, such enterprises produce both intermediate and final goods. Today, SMEs can compete with not only national, but also international enterprises due to globalization. These enterprises need to pursue both developing technology and innovations to compete at global level. Within this context, e-commerce is one of the instruments ensuring production, marketing and cost advantage for SMEs.

Hence, e-commerce is inevitable within developing world economy. Enterprises not adopting this development shall not sustain their operations, lose their capacity to compete and to increase their trading volumes.

1. Investigation of E-commerce Applications of Companies Operating within the Diyarbakir Organized Industrial Zone

1.1. Objective of the Survey

In order to sustain their existence within global competition environment, to survive in the long-term, to protect their regional development related missions, to contribute more to the regional development, the firms in the Diyarbakir Organized Industrial Zone should improve their production, marketing and sales strategies as well as benefit from technological developments at maximum level. Within this framework, it is aimed to analyze current status of these firms in terms of e-commerce, and accordingly, to improve policies for elimination of gaps and to arrange training plans by identification of their training needs to make them benefit more from technological opportunities.

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1.2. Importance of the Survey

Rapidly growing technology, innovation and production techniques make the role of this kind of information important. Facilities are required to improve new products, decrease costs, increase their profitability and catch competition opportunities. Timely supply and utilization of the information is also significant, which shall bring specific benefits to the companies. Therefore, the companies should develop their e-commerce infrastructure and shift from conventional trading to e-commerce.

First of all, an assessment should be conducted for dissemination of e-commerce. The Diyarbakır Organized Industrial Zone has a background of 20 years. Diyarbakır has significant economic potential due to its position as trading center of the region, and has a key location opening to the Middle East. The terrorism issue in the region still stands as a bottleneck preventing development of the Organized Industrial Zone.

However, it is not possible for companies within the Organized Industrial Zone to stay away from monetary savings in transaction costs, time saving in delivery of goods and services, combination of purchasing systems, decrease in order deliveries and bureaucracy, convergence between the customers and partners, impacts on small and large scaled suppliers, inventory and stock systems, all of which are brought by the e-commerce system. Utilization of e-commerce by SMEs producing both intermediate and final goods is inevitable. Hence, firms within the Diyarbakır Organized Industrial Zone should follow and implement e-commerce. Within this context, it is essential to analyze e-commerce status of these firms, their e-commerce related problems, and to present possible solutions.

1.3. Problem

The main subject of this study is “To Investigate Use of E-commerce by Firms Operating in the Diyarbakır Organized Industrial Zone” located in Diyarbakır. Within this framework, problematic area of the study was identified by determination of problems encountered by firms using e-commerce, and reasons for non-application of e-commerce by other firms, and thereby presenting suggestions.

1.4. Assumptions

Main assumptions considered during site survey are as follows;

2. It has been assumed that participants respond the questionnaire truthfully and accurately and may evaluate their current status and environment.
3. Data collection questionnaire used in the scope of site survey is in a state to measure the analysis called “Investigation of E-commerce Usage by Firms Operating in the Diyarbakır Organized Industrial Zone”.

3.1. Limitations

Site survey has certain limitations due to the following reasons;

1. Questions covered by the questionnaire are limited with the analysis called “Investigating of E-commerce Usage by Firms Operating in the Diyarbakır Organized Industrial Zone”.
2. Site survey is limited with variables covered by the questionnaire.
3. The survey is limited with 130 companies located in the Diyarbakır Province.

2. Method

First of all, the name list of those firms operating in the Diyarbakır Organized Industrial Zone was provided from the DOIZ Directorate. Located in the 22nd kilometer of Diyarbakır-Elazığ Highway, Organized Industrial Zone is positioned both on east and west side of the highway. The questionnaire was applied by means of 13 pollster groups, 5 of which were assigned for the companies located on eastern side of the highway and the remaining 8 pollster groups for the companies located on western side. In total, 35 students were assigned as pollsters, who were distributed as 2 or 3 persons for each pollster group. Students assigned were selected among from the 4th class students of Department of Economy, Faculty of Economy and Administrative Sciences, Dicle University, on their own request. Each pollster group was aimed to implement the questionnaire in 10 firms. Therefore, it was planned to respond the questionnaire by interviewing with 130 firms.

While questions were prepared and literature review was carried out, similar questionnaires were analyzed and pre-interviews were conducted with authorized persons of the companies. By this way, it was aimed to achieve more scientific and realistic outcomes through the questionnaire.

Current status in terms of utilization of e-commerce in the DOIZ was identified by means of the questionnaire. Pollsters were informed of how the questionnaires should be responded by the director or managers of the firms or persons having similar positions and authorizations. Pollsters were provided with detailed information about application type of the questionnaire.

2.1. Model

SPSS statistical program was used in the scope of the survey to obtain descriptive and explanatory information.

2.2. Universe

Universe of the survey consists of all firms operating in the Diyarbakır Organized Industrial Zone.

2.3. Sampling

130 firms operating in DOIZ were selected as the sample of this survey. Therefore, the sample size can sufficiently represent the scope.

2.4. Data Collection Instruments

A questionnaire form consisting of 28 questions was prepared for “Investigation of E-commerce Usage by Firms operating in Diyarbakır Organized Industrial Zone”. Likert scale was used during the preparation of the questionnaire to increase quality and efficiency of the survey.

2.5. Data Analysis

Information obtained by means of the questionnaire conducted in the scope of the study for “Investigation of E-commerce Usage by Firms Operating in the Diyarbakır Organized Industrial Zone” was coded and transferred into the data file opened in SPSS package program. Data used in site survey were evaluated in accordance with the objectives planned.

3. Findings, Comments and Results

3.1. General Information of the Companies

3.1.1. Sectoral Distribution of Companies

Table-1 presents sectoral distribution of firms contacted in the Diyarbakır Organized Industrial Zone. Of the firms, 92% serve to the manufacturing sector. Agriculture sector takes the 2nd place at a rate of 4,8% followed by service sector rating to 3,5%. Four firms serving to the manufacturing sector stated that they also perform activities related to agriculture sector.

Table 1: Sectoral Breakdown of Firms

Sectors	Frequency	Percentage %
Manufacturing	77	91,7
Services	3	3,50
Agriculture	4	4,8
Total	84	100

3.1.2. Legal Status of Firms

Table-2 presents legal status of firms. Accordingly, 80% of the firms is limited company. Any ordinary partnership is not available. The rate of incorporate company is 14%, representing a high figure. It is expected that the rate of incorporated companies shall increase together with the economic developments in the region.

Table 2: Legal Status of Firms

Company Types	Frequency	Percentage %
Unlimited Company	4	5
Unincorporated Company	0	0
Collective Company	1	1
Incorporated Company	12	14
Limited Company	67	80
Total	84	100

3.1.3. Employment Status of Firms

Employment status of the firms is one of the significant issues required to be emphasized. As it is obvious in Table 3, 9,5% of the firms in Diyarbakır OIZ employ 1-9, 77% employ 10-50 and 9,5% employ 51-150 persons. The rate of firms employing 151 and more persons is 4%. In other words, 86,5% of the firms is micro and small enterprises employing 50 and less persons. The rate of medium scaled enterprises is only 13,5% (firms having more than 50 employees).

Table 3: Distribution of Personals Employed by Firms

Range of working employees	Number of employees	Percentage %
1-9	8	10
10-50	65	77
51-150	8	10
Over 150	3	4
Total	84	100

3.1.4. Age Status of Firms

Diyarbakır OIZ was established in 1991. In other words, Diyarbakır OIZ has a background of 20 years. In accordance with the data in Table-4, 36% of the companies have a background of 10 years and more. Most of the firms were established after 1991, i.e. after establishment of DOIZ. Therefore, it can be interpreted that nearly all of the firms started activities after establishment of DOIZ, meaning that DOIZ is important in terms of employment and commercial structure of the region.

Table 4: Age Status of Firms

Age Interval	Frequency	Percentage
Less than 1	6	7
1-3	13	15
4-9	35	42
More than 10	30	36
Total	84	100

3.2. Electronic Trading Status of Firms

3.2.1. Quantity of Computers used by the Firms

Of the firms, 42% have 1-3 computers, which is followed by those having more than 5 computers rating to 33%. In addition, 5% of the participants were determined not to have any computer.

Table 5: Number of Computers Used by Firms for Commercial Activities

Status of Computer Use	Frequency	Percentage
No computer	4	5
1-3	35	42
4-5	17	20
More than 5	28	33
Total	84	100

3.2.2. Internet Connection Status of Firms

It was determined that 95% of the firms have internet connection. The rate of those not having internet connection overlaps with the figure of firms not having computers as shown in Table-5. Of these 4 participants, two plan to establish internet connection as it is seen in Table-7. These figures indicate that internet and computer usage is disseminated in all sectors and companies. However, the same figures are not available for use of e-commerce.

Table 6: Status of Internet Connection of Firms

Responses	Frequency	Percentage
Yes	80	95
No	4	5
Total	84	100

Companies not having internet connection, but planning to provide such connection are presented in Table-7. Of these firms, 50% desire to install internet connection.

Table 7: Status of Possessing Web Page by Firms

	Frequency	Percentage
Yes, I plan	2	50
No, I don't plan	2	50
Total	4	100

3.2.3. Web Page Availability of Companies

One of the prerequisites for e-commerce is internet and web page. Although 95% of the firms in DOIZ have internet connection (table-6), 69% of the firms have web pages. The remaining 31% of the participants do not have any web page. This rate represents extremely a high figure in today's rapidly growing technology and internet world. In accordance with Table-9, 38% of those not having web page plan to create a page.

Table 8: Status of Possessing Web Page by Firms

	Frequency	Percentage
Yes, there is	58	69
No, there isn't	26	31
Total	84	100

Table-9 presents whether 31% of the firms plan to create a web page. 38% of those not having web page plan to create a web page and approximately twice of this figure do not have any web page plan. Bare chance was identified regarding planning of e-commerce by these firms. Therefore, it may be interpreted that technology is not efficiently used by these firms.

Table 9: Status of Firms' to Create Web Page

	Frequency	Percentage
I plan	10	38
I don't plan	16	62
Total	26	100

According to Table-10, 45% of the firms have web page for over 3 years. Web page of the remaining firms rating to 55% is active in recent 1-3 years. Utilization of web page being one of the prerequisites of e-commerce has been disseminated rapidly among those companies operating in DOIZ.

Table 10: Activity Time For Web Pages

Year	Frequency	Percentage
1	14	24
2	11	19
3	7	12
More than 3	26	45
Total	58	100

Frequency of web page updating is 6-12 months in 47% of the firms, 1-4 weeks in 29% of the firms, and finally, 1-3 months in 24% of the firms (Table-11).

Table 11: Updating Frequency of Web Pages

	Frequency	Percentage
1-4 Weeks	17	29
1-3 Months	14	24
6-12 Months	27	47
Total	58	100

3.2.4. Electronic Mail Usage Status of Firms

It was identified that 83% of the firms operating in DOIZ use electronic mail, representing a significant part of e-commerce (Table-12). The rate of firms not using electronic mail is 17%.

Table 12: Status of e-Mail Usage by Firms For Proceedings

	Frequency	Percentage
Yes	70	83
No	14	17
Total	84	100

When the reasons for use of electronic mail are investigated among participants in the OIZ, 79% are observed to support “customer relations”, whereas 11% use the electronic mail for “product marketing” reasons and 9% use for “other” reasons. Although 9% of the firms have electronic mail, this technology cannot be used efficiently during fulfillment of company activities.

Table 13: Types of e-Mail Use

	Frequency	Percentage
Customer relations	55	79
Product Marketing	8	11
Advertisement	1	1
Other	6	9
Total	70	100

Table 14 presents short-term investment plans of the firms in terms of web page. Of the firms, 38% plan to invest 1.000-2.000 TL, 38% support to make an investment of less than 1.000 TL and 29% plan to invest more than 2.000 TL.

Table 14: Investment Amount for Web Page in Short-term

	Frequency	Percentage
“0-1000	19	33
“1000-2000	22	39
More than “2000	17	29
Total	58	100

3.2.5. Possibility to Use E-commerce by the Firms

Of 84 firms participating in the questionnaire, 12 firms (14%) stated that they made use of e-commerce; however, 72 firms rating to 86% did not take advantage of e-commerce. These values are presented in Table-15 and Figure-15.

Table 15: Status of E-commerce Use by Firms

	Frequency	Percentage
Yes	12	14
No	72	86
Total	84	100

3.2.6. Planning of E-commerce by the Firms

Table-16 shows responses of the participants regarding whether those 72 firms not performing e-commerce in Table-15 plan to implement such commerce. Accordingly, it is seen that 62,5% of the firms not performing e-commerce do not have any intention to use e-commerce, whereas 37,5% plan to make use of e-commerce in the future.

Table 16: Status of Firms' Intention to Use E-commerce

	Frequency	Percentage
Yes	27	38
No	45	63
Total	72	100

3.2.7. E-commerce Period of Firms

Table-17 shows e-commerce period of 22 firms performing e-commerce reported in table-15. In accordance with the table, 25% of the firms are seen to have been implementing e-commerce for 4-9 years and 42% for 1-3 years. In addition, the rate of use of this kind of commerce for less than 1 year and more than 10 years is 17%.

Table 17: Time of E-commerce Usage by Firms

	Frequency	Percentage
Less than 1 Year	2	17
1-3 Years	5	41
4-9 Years	3	25
More than 10 Years	2	17
Total	12	100

3.2.8. E-commerce Methods of Firms

Table-18 shows that 67% of 12 firms benefitting from e-commerce use this kind of trading between the company-customer, while the remaining 33% perform e-commerce between company-company.

Table 18: E-commerce Types of Firms Using E-commerce

	Frequency	Percentage
Business2Business	4	33
Business2Costumers	8	67
Business2Government	0	0
Total	12	100

3.2.9. Provision of E-commerce Training by the Firms

Table-19 shows that 67% of 12 firms performing electronic commerce do not provide training to their employees about e-commerce, whereas 33% perform training about e-commerce. When the Frequency is analyzed within the table, 4 firms provide e-commerce training to their employees.

Table 19: Status of Providing Training by Firms to Their Employees

	Frequency	Percentage
Yes	4	33
No	8	67
Total	12	100

Trained personnel status of firms providing training to their employees as shown in Table-19 is presented in Table-20. According to the table, 50% of these firms have implemented training, but the remaining half has not conducted any training for their employees.

Table 20: Status of Trained Personnel of Firms Providing Training to Their Employees

Number of Personnel	Frequency	Percentage
1-3	2	50
4-5	0	0
More than 5	2	50
Total	4	100

3.2.10. Status of Incentive or Project Support by Firms for E-commerce

Table 21 presents any e-commerce related incentive or project support status of those firms operating in DOSB and performing e-commerce. According to the table, 75% of the firms have not received any incentive or project support, while the remaining 25% has benefitted from incentive or project supports.

Table 21: Status of Receiving Incentive or Project Support

	Frequency	Percentage
Yes	3	25
No	9	75
Total	12	100

Table-22 shows that 92% of the firms using e-commerce are not a member of any related organization, but the remaining 8% have memberships.

Table 22: Status of Membership to Any Organization in Terms of E-commerce

	Frequency	Percentage
Yes	1	80%
No	11	92%
Total	12	100%

3.2.11. Reasons for Non-usage of E-commerce by the Firms

When the firms responding the questionnaire were asked about the reasons for non-usage of e-commerce, participants pointed out as the most important issue with the fact that *it is not a widely accepted trading type within the sector they serve* (Table-23). Other issues are stated as *non-preference of e-trading by the customers, security problem, inadequate technical infrastructure, high costs and lack of competent personnel in this area*. Ineffective usage of e-commerce or non-application of this process can be correlated with obstacles encountered during searching for infrastructure and competent personnel.

Table 23: Reasons for Non-Using E-commerce

Reasons	Average	Priority Order
Not Being an Established Commercial Type Within the Sector	0,77	1
Non-preference of E-commerce by Our Consumers	0,81	2
Lack of Technical Infrastructure	1,01	3
Security Issue	1,01	3
Rising Cost	1,12	4
Lack of Qualified (Technical) Personnel	1,35	5

3.2.12. Activities of the Firms covered by the scope of E-commerce

When the firms were asked to prioritize proceedings they perform via e-commerce, it was identified that companies perform all e-commerce activities in similar frequencies or try to use e-commerce efficiently. These activities mainly cover increase of competitiveness, management of purchasing and sales processes as well as customer satisfaction phases (Table-24).

Table 24: Reasons for E-commerce Use

Activities	Average	Priority Order
Take Orders	0,35	1
Make Product Marketing	0,40	2
Give orders	0,43	3
Make the Transactions Conducted With providers	0,44	4
Respond to the Questions of Customers	0,52	5
Sales	0,55	6
Collect Knowledge regarding Rivals	0,64	7

3.2.13. Reasons to Perform E-commerce

When the firms were asked to prioritize the reasons to perform e-commerce, the important response such as “*access to the new markets*” could be explained as utilization of new processes efficiently by the firms. In addition, emergence of specific innovations related with business processes shows that the firms are aware of benefits provided by the e-commerce applications. If the reasons stated are evaluated, it is possible to analyze that e-commerce approach of companies is similar to the conventional understanding (Table-25).

Table 25: Reasons for E-commerce Use

Reasons	Average	Priority Order
Gain Access to New Markets	0,55	1
Enhance Competitive Power of Company	0,58	2
Get Cost Advantage	0,62	3
Enhance Efficiency Within Company	0,68	4
Ensure Customer Satisfaction	0,69	5
Increase Companies' Sales	0,71	6
Promote Company and its Products	0,85	7
Simplify Processes within Company	0,86	8
Ensure easy accessibility to companies in Provision Chain	0,91	9
Shorten Order and Provision Process	0,92	10
Create New Employment Opportunities	0,94	11
Perform Banking Transactions	0,96	12
Gain advantage in Product Developping	1,21	13

3.2.14. E-commerce Related Bottlenecks Encountered by the Firms

When the bottlenecks encountered by the firms during use of e-commerce were analyzed, it was determined that such matters have parallels with the reasons for non-usage of e-commerce (Table-26). Problems encountered during usage stage were reported to be inadequate infrastructure, limited capital, reliability problem of customers, training problems, most of which are similar to the daily matters of e-commerce.

Table 26: Challenges Encountered While Performing E-commerce

Challenges	Average	Priority Order
Non-preference of E-commerce by Firm's established customers due to Security Reasons	0,11 TL	1
Inadequacy of Training Regarding E-commerce	0,21 TL	2
Unwillingness of Customers not to buy Anything without Touching it	0,25 TL	3
Not Benefitting from E-commerce due to Lack of Firm's Infrastructure	0,25 TL	4
Limitation of Company's Operating Capital Necessary to Adapt to Technological Changes	0,27 TL	5
Non-solution of Problems Encountered due to Unavailability of Sufficient Qualified Personel with Adequate Knowledge	0,31 TL	6

In accordance with analysis and evaluation results of findings obtained by means of this study, the results are presented below.

4. Conclusion and Recommendations

The companies need to adopt improvements in communication technologies to sustain their competitiveness and increase their profitability in today's world where improvements related with communication technologies disseminate rapidly, economic globalization increase despite specific adverse points of globalization and a sharp competition environment is experienced between the facilities. In order for provision of opportunities or advantages, companies should have accurate and timely information about production and product range of rival companies at national level, and firms as well as customers in foreign countries. Therefore, companies should use technology efficiently, indicating the importance of e-commerce in terms of the companies.

The following results were obtained as a result of the study performed in the Diyarbakır Organized Industrial Zone: 92% of the companies participating in the questionnaire are involved in manufacturing sector, followed by agriculture (4,8%) and service (3,5%) sectors. Of the companies, 80% have limited company status, whereas incorporated companies are ranked as second with a rate of 14%; 95% of the firms have internet connection; 50% of the firms not having internet connection plan to set up internet connection; 69% of the firms have web page and the remaining 31% do not have any web page; 38% of the firms not having web page plan to create a web page. Although 95% of the firms have internet connection, 31% of participants have web page, indicating that these firms cannot use internet technologies in synchronized manner. In addition, 83% of the firms in DOSB use e-mail. Reasons to use e-mail are customer relations (79%), product marketing (11%), advertisement (1%) and other (9%) reasons. While 14% of the companies responded the question "do you perform electronic commerce?" as "yes", the respond of the remaining 86% is "no".

Those responding "no" prioritize the related reasons as "**it is not a widely accepted trading type within the sector they serve**" ranked 1st, "**inadequate technical infrastructure**" ranked 2nd and "**non-preference of e-commerce by the customers**" ranked 3rd. 62,5% of the participants not using e-commerce (86%) responded "**no**" to the question "**do you plan to make use of e-commerce?**" and the remaining 37,5% responded "**yes**". 41,7% of those performing e-commerce use this technology for 1-3 years, 25% use it for 4-9 years, 16,7% for more than 10 years and 16,6% of the firms perform e-commerce for less than 1 year. On the other side, 67% of these firms performing e-commerce conduct this type of trading between company-customer and remaining 33% implements it between company-company. The companies state the reason for usage of e-commerce as "**product promotion**", "**order**" and "**sales**", respectively. Of the participants, 42% identify the reason for e-commerce as "access to new markets". Any significant difference was not found between other reasons. When the firms were asked about "**e-commerce related bottlenecks encountered by the firms**", they identified the "**other**" option ranked first (25%). "**Inadequate use of e-commerce for technical infrastructure failures**", "**insufficient training about e-commerce**" and "**non-preference to buy any product which is not seen and touched by the company's customers**" have the same values (17%).

In conclusion, when it is considered that 86% of the firms operating in the DOIZ do not perform e-commerce, it may be interpreted that these firms do not have adequate knowledge about opportunities of e-commerce; infrastructure problems and training matters draw attention, security issue is considered a significant bottleneck despite important advances in the security of information, document and payment means. Therefore, in order to benefit from opportunities of e-commerce, public institutions and entities supporting the SMEs and companies as well as all other related parties should fulfill their responsibilities; e-commerce related concerns should be minimized by dissemination of electronic signature and similar applications in the region, infrastructure problems should be eliminated, training should be provided about awareness to the companies, and about internet usage and e-commerce issues to their employees.

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